SECTION 14

SOIL

TABLE OF CONTENTS

SECTION	SECTION TITLE	PAGE NUMBER
SECTION 14	SOIL	1
14.1	General Nature of the Survey Area	1
14.2	Soil Types	2
14.2.1	Soil Series Classification	2
14.2.2	Description of Soil Mapping Units	2
14.3	Topdressing Availability	2
14.3.1	Volume of Topdressing Available for Reclamation	3
14.4	Prime Farmland Reconnaissance Inspection Results	3
14.4.1	Results of Prime Farmland Inspection	4
14.5	Soil Information Collection and Analysis	4
14.6	References	4

SECTION 14

SOIL

LIST OF TABLES

TABLE NUMBER	TABLE TITLE
14-1	Hydrologic Group and Family Classification of Each Soil Series Identified in the No Name Permit Area
14-2	Baseline Soil Survey Laboratory Analysis Results
14-3	OSMRE Topsoil and Topsoil Substitute Suitability Criteria for the Southwestern United States
14-4	Soil Mapping Units and Map Symbols
14-5	Area, Percent of Survey Area, and Volume of Topdressing Material Available From Each Soil Mapping Unit in the No Name Permit Area
14-6	Estimated Volume of Topdressing Available for Reclamation within the No Name Permit Area

SECTION 14

SOIL

LIST OF EXHIBITS

EXHIBIT NUMBER	EXHIBIT TITLE
14-1	No Name Permit Area Baseline Soil Survey

SECTION 14

SOIL

LIST OF APPENDICES

APPENDIX NUMBER	APPENDIX TITLE
14-A	Navajo Mine Extension Project Soil Survey Report
14-B	Analysis of Navajo Mine Extension Project Soil Survey Data for No Name Permit Area Topdressing Replacement Volume Estimate
14-C	Key to Soils of the No Name Permit Area
14-D	Prime Farmland Determination Correspondence

SECTION 14

SOIL

LIST OF REVISIONS DURING PERMIT TERM

REV. NUMBER	REVISION DESCRIPTION	DATE APPROVED

14 SOIL

The No Name Permit area comprises approximately 11,526 ac in the southern portion of the Navajo Transitional Energy Company's (NTEC) coal lease (Exhibit 14-1). Buchanan Consultants, Ltd. conducted Order 2 soil surveys in 1998 and 2008 for the areas formerly known as Area 4 South and Area 5 of the NTEC coal lease. Combined, these soil surveys describe soil resources in the No Name Permit area and approximately 1,073 acres of the southern portion of the adjacent Pinabete Permit area. A detailed soil survey report (Buchanan Consultants, Ltd. 2008) including extent and proportion of soils, locations, and estimated volume of available topdressing, results from laboratory analysis, soil profile descriptions, and prime farmland inspection results is provided in Appendix 14-A. In 2025, the soil survey data presented in Appendix 14-A were analyzed to determine the extent and proportion of soils, locations, and estimated volume of available topdressing within the No Name Permit area (Appendix 14-B). The following subsections provide a summary of the 1998 and 2008 soils information, as it pertains to the No Name Permit, as re-evaluated in 2025.

14.1 General Nature of the Survey Area

The No Name Permit area is located within the Colorado Plateau physiographic province (Fenneman 1931; Hunt 1956). The Colorado Plateau has within its borders a wide diversity of topography, geologic materials, soils, and vegetation. The general terrain in the vicinity of the No Name Permit area is characterized by rough and broken topography, badlands, plateaus, and mesas, intermingled with escarpments, and valleys or washes. Many of the soils in the survey area are formed from alluvium and eolian sediments derived from shale and sandstone associated with the Fruitland formation. Some soils have a residual component. Most of the soils in the survey area have been forming only since the late Pleistocene and during the Holocene Era. It is very common to find buried soils that date to the Pleistocene Era. The annual precipitation for the survey area generally averages between 5 and 6 in and the mean annual air temperature is near 55°F (Section 12, Climate). Therefore, the survey area is described as having an aridic moisture regime and a mesic temperature regime.

An Order 3 soil survey of the No Name Permit area was issued in November 1980 as the Soil Survey of San Juan County New Mexico, Eastern Part (Keetch 1980). The Natural Resources Conservation Service (NRCS) soil survey was presented at scales of 1:24,000 and 1:63,360. Copies of the survey are available from the United States Department of Agriculture (USDA) state office in Albuquerque, NM or from the local office in Aztec, New Mexico. Many of the soil series names used in the No Name Permit survey are the same as those used in the 1980 soil survey. Additional series used for the No Name Permit area come from other NRCS soil surveys conducted in Arizona, Colorado, New Mexico, and Utah. The soil series names used to describe the soil resources of the permit area represent the current correlation of soil series for the NTEC mining lease (Appendix 14.A).

14.2 Soil Types

The soils of the No Name Permit area are highly complex and variable. In most cases, the geomorphic surfaces have been influenced by constructional and erosional processes, resulting in a high occurrence of buried and truncated soils. Nearly all of the soils have developed under the influence of erosion, as indicated by the frequency of moderate and severely eroded surfaces. Additionally, many profiles are described with lithologic discontinuities. A total of 1,001 soil profiles are described for the survey area, 230 of those profiles fall outside of the No Name Permit area and are not included in the calculation for the estimated volume of topdressing replacement material (Appendix 14-B). The location of each profile with northing and easting coordinates, soil type, depth of topdressing, and depth to bedrock is given in Appendix 14-A. The coordinate system used to designate each profile is the State Plane New Mexico West, North American Datum 1927.

14.2.1 Soil Series Classification

A total of 26 soil series are identified in the No Name Permit soil survey as either Aridisols or Entisols. Each series is classified to the family level (Soil Survey Staff 2006) and each assigned a hydrologic group (Soil Survey Staff 2008) (Table 14-1). Soil series descriptions and associated laboratory data are provided in Appendix 14-A. Results from laboratory analysis within the No Name Permit area (Table 14-2) were used to aid in soil classification. These data in combination with the Office of Surface Mining Reclamation and Enforcement (OSMRE) Topsoil and Topsoil Substitute Suitability Criteria for the Southwestern United States (Table 14-3) were also used to determine topdressing suitability (OSMRE 1999). All of the soil series used in this survey are included in Appendix 14-C. The interpretations for soil classification and topdressing suitability are limited to the upper 60 inches of unconsolidated material.

14.2.2 Description of Soil Mapping Units

In total, 32 mapping units are described using 26 soil series, and 2 miscellaneous land types (Badlands and Rock Outcrop) within the No Name Permit area (Exhibit 14-1). Twenty-four of the 32 mapping units are consociations, five are complexes, and three are undifferentiated units (Table 14-4). Within the survey area, the Natrargids were mapped by soil type (series) as consociations, complexes, or undifferentiated units. Some of these sodium-affected soils have surface deposits of eolian material that provide suitable sources of topdressing. The map components used to name the majority of the map units are phases of soil series, using surface texture, depth of suitable topdressing, and slope as phase criteria. A description of each soil mapping unit, including the proportion and distribution of named components and inclusions, is provided in Appendix 14-B. The location and extents of the mapping units are presented in Exhibit 14.1-1.

14.3 Topdressing Availability

One objective of this soil survey is to determine available soil resources for use as topdressing during reclamation of areas disturbed by mining activities. Soils are mapped at an appropriate scale (1:14,440) to

produce mapping units of similar soil types. It is assumed that if similar soils can be mapped together, then characteristics of a few samples within the unit can be extrapolated for the entire unit. The assumption is valid for homogeneous areas or areas where small delineations can be made to maintain homogeneous components. The scale used in this survey allows delineations of 0.5 ac. In areas of very heterogeneous soils the delineations tend to be smaller, and more samples are required to describe the soils than in homogeneous areas where the delineations tend to be larger. Topdressing volume of any given map unit delineation is the product of its area and its mean depth of suitable topdressing. Total topdressing volume for any given mapping unit is the sum of its mapping unit delineations. The volume of topdressing available for salvage from the No Name Permit area is presented in Section 14.3.1. Detailed calculations of available topdressing for each soil mapping unit and location coordinates for soil test sites are provided in Appendix 14-B. The extent, proportion, and volume of topdressing available from each soil mapping unit delineation along with locations of soil survey sites are shown on Exhibit 14-1.

14.3.1 Volume of Topdressing Available for Reclamation

The total estimated volume of topdressing available within the No Name Permit area is approximately 24,830,271 bank cubic yards (bcy) (Table 14-5). Considering a conservative handling loss of 10%, this volume will provide for a topdressing replacement depth of 14.4 inches for reclamation of the No Name Permit area (Table 14-6).

Approximately 45% of the No Name Permit area consists of nine mapping units (Badlands, Benally sandy clay loam, Hoskay clay loam, Huerfano clay loam, Muff and Fajada soils, Patel clay, Patel sandy loam, Patel-Chipeta clays, and Patel-Huerfano complex) which only contribute approximately 1% of the available topdressing volume. Nearly 36% of the No Name Permit area consists of six mapping units (Bacobi sandy loam, Jocity-Gilco complex, Monierco sandy loam, Razito loamy sand, Razito loamy sand moderately deep, and Shiprock-Bacobi-Mayqueen sandy loams), which contribute approximately 73% of the available topdressing volume (Appendix 14-B).

The interpretations in this survey with regard to soil classification and suitability are limited to the upper 60 inches of unconsolidated material. Potentially suitable sources of topdressing material below a depth of 60 inches (i.e., regolith) likely exist within the No Name Permit area. However, these potential sources of topdressing were not evaluated in this survey since sufficient quantities of suitable soil materials are available from the No Name Permit area to support successful reclamation without consideration of potential regolith deposits.

14.4 Prime Farmland Reconnaissance Inspection Results

In 2008, an investigation was conducted to determine if lands within the No Name Permit area soil survey are classified as prime farmland. Allen Maez, District Conservationist from the NRCS at the time, was

requested to determine if the 2008 survey area (including the No Name Permit area) contained prime farmland and to write a letter regarding the results of his investigation.

14.4.1 Results of Prime Farmland Inspection

1. The area within the survey area has not been historically used as cropland.
2. The area within the survey area has an average annual precipitation of 6 in and has no naturally sub-irrigated lands.
3. The area within the survey area has no soil mapping units that can be classified as prime farmland under the definition of prime farmland by the USDA-NRCS (7 CFR 657.5).
4. Letters from Allen Maez, District Conservationist USDA-NRCS, and Bruce Buchanan, President Buchanan Consultants, Ltd., verify no prime farmlands are present within the survey area (Appendix 14-D).

14.5 Soil Information Collection and Analysis

Detailed soils information including methods and procedures are described in the preceding sections and are fully detailed in the Baseline Soil Survey Report (Appendix 14-A).

14.6 References

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Soil Survey Staff. 2008. Official Soil Series Descriptions. Natural Resources Conservation Service, U.S. Department of Agriculture, Lincoln, Nebraska. URL: https://www.nrcs.usda.gov/resources/data-and-reports/official-soil-series-descriptions-osds (Verified July 2025).

Table 14-1: Hydrologic Group and Family Classification of Each Soil Series Identified in the No Name Permit Area

Series	Taxonomic classification of soils	Hydrologic group
Badlands	Miscellaneous land type	D
Bacobi	Fine-loamy, mixed, superactive, mesic Typic Haplargids	C
Beebe	Sandy, mixed, mesic Typic Torrifluvents	A
Benally	Fine-loamy, mixed, active, mesic Typic Natrigypsids	D
Blancot	Fine-loamy, mixed, superactive, mesic Ustic Haplargids	B
Chipeta	Clayey, mixed, calcareous, mesic, shallow Typic Torriorthents	D
Doak	Fine-loamy, mixed, active, mesic Typic Haplargids	B
Fajada	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D
Farb	Loamy, mixed, calcareous, mesic Lithic Torriorthents	D
Fruitland	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torriorthents	B
Fruitvale	Fine-loamy, mixed, active, mesic Typic Argigypsids	B
Gilco	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents	B
Grieta	Fine-loamy, mixed, superactive, mesic Typic Calciargids	B
Hoskay	Fine, mixed, superactive, mesic Vertic Natrigypsids	D
Huerfano	Loamy, mixed, superactive, mesic, shallow Typic Natrargids	D
Jocity	Fine-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents	B
Mayqueen	Coarse-loamy, mixed, superactive, mesic Typic Haplargids	B
Monierco	Loamy, mixed, superactive, mesic, shallow Typic Haplargids	D
Muff	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D
Patel	Fine, mixed, active, mesic Typic Natrargids	D
Persayo	Loamy, mixed, active, calcareous, mesic, shallow Typic Torriorthents	D
Razito	Sandy, mixed, mesic Typic Torripsamments	A
Rock outcrop	Miscellaneous land type	D
Shiprock	Coarse-loamy, mixed, superactive, mesic Typic Haplargids	B
Sogzie	Coarse-loamy, mixed, superactive, mesic Typic Calciargids	B
Stumble	Mixed, mesic Typic Torripsamments	A
Tsaya	Loamy-skeletal, mixed, superactive, calcareous, mesic Lithic Torriorthents	D
Uffens	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00432	Bacobi	#45	A	0-4	7.2	4.32	25	2.8	0.42	0.9	0.7	81	8	11	SL	2.0	0.00	0.00	21	20.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00433	Bacobi	#45	Bt	4-11	7.1	0.35	28	2	0.35	1.1	1.0	75	10	15	SL	5.0	0.00	0.00	46	46.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00434	Bacobi	#45	2Bk	11-26	7.6	0.84	37	0.95	0.26	7.8	10.0	51	21	28	SCL	11.0	0.00	1.00	119	118.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00514	Bacobi	#12	A	0-4	7.3	0.34	25	2.65	0.34	0.5	0.0	76	12	12	SL	2.4	0.01	0.31	17	16.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00519	Bacobi	#12	Bt	4-16	7.5	0.41	28	2.1	0.24	1.83	2.0	79	8	13	SL	5.1	0.01	0.31	37	37.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00506	Bacobi	#12	Bk1	16-27	8.2	0.67	27	3.05	0.38	6.26	5.0	76	10	14	SL	8.9	0.01	0.31	63	63.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00536	Bacobi	#12	Bk2	27-40	8.3	1.36	34	0.62	0.22	13.7	21.0	81	5	14	SL	3.6	0.02	0.62	30	29.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00547	Bacobi	#25	Bt	3-21	7.6	0.74	45	2.96	0.8	11.3	8.0	34	23	43	C	5.2	0.04	1.30	57	56.1	.	.	.	.	.	<0.50	0.35	<0.015
0398S00510	Bacobi	#40	2Btk	7-16	7.5	0.55	29	1.81	0.17	4.4	4.0	71	7	22	SCL	5.3	0.02	0.62	40	39.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00429	Bacobi	#43	A	0-10	7.6	0.58	25	2.1	0.44	4.5	4.0	72	13	15	SL	4.0	0.00	1.00	46	45.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00430	Bacobi	#43	Btk	10-19	7.7	0.62	30	1.9	0.29	6	5.8	58	19	23	SCL	13.0	0.00	1.00	134	134.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00431	Bacobi	#43	2Ck	19-32	7.8	1.56	35	1.1	0.35	14	16.2	41	36	23	L	17.0	0.00	1.00	165	165.0	.	.	.	.	.	<0.50	0.25	<0.015
0398S00435	Bacobi	#46	2Bk2	18-26	7.5	0.55	38	0.83	0.23	4.2	5.8	31	41	28	CL	14.0	0.00	0.00	129	129.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00559	Bacobi	#77	A	0-6	7.6	0.52	24	3.51	0.65	1.19	1.0	76	11	13	SL	1.2	0.01	0.31	15	15.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00560	Bacobi	#77	Btk	6-22	7.5	0.48	29	3.23	0.54	2.16	2.0	70	10	20	SCL	3.4	0.01	0.31	40	39.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00561	Bacobi	#77	Bk	22-32	7.7	7.37	28	2.38	0.22	6.31	6.0	71	11	18	SL	14.0	0.01	0.31	150	150.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00548	Bacobi	#84	Btk	12-21	7.8	1.08	35	3.85	0.57	11.1	7.0	59	13	28	SCL	13.0	0.02	0.62	140	139.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00549	Bacobi	#84	2Ck	21-39	8.0	1.57	37	1.69	0.48	17.3	17.0	61	19	20	SCL	12.0	0.03	0.94	124	123.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00604	Bacobi	#95	2Btkn	11-22	8.0	1.01	46	0.6	0.15	10.5	17.0	35	32	33	CL	11.0	0.01	0.31	100	100.0	.	.	.	.	.	<0.50	0.25	<0.015
0398S00619	Bacobi	#124	A	0-3	7.5	0.75	23	6.97	0.85	0.57	0.0	76	13	11	SL	1.7	0.02	0.62	15	14.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00620	Bacobi	#124	Bt	3-11	7.6	0.50	26	1.11	0.17	3.51	4.0	75	10	15	SL	5.3	0.01	0.31	33	33.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00621	Bacobi	#124	Btk	11-17	7.8	0.51	27	0.66	0.11	5.55	9.0	73	12	15	SL	8.1	0.02	0.62	56	55.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00623	Bacobi	#131	A	0-3	7.6	0.44	25	3.05	0.34	0.52	0.0	65	20	15	SL	2.5	0.07	2.20	24	21.6	.	.	.	.	.	<0.50	0.45	<0.015
0398S00624	Bacobi	#131	Bt1	3-10	7.5	0.39	31	2.01	0.17	1.98	2.0	58	14	28	SCL	2.7	0.05	1.60	24	21.9	.	.	.	.	.	<0.50	0.35	<0.015
0398S00625	Bacobi	#131	Bt2	10-20	7.5	0.43	34	1.07	0.09	3.71	5.0	65	7	28	SCL	2.8	0.03	0.94	22	21.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00626	Bacobi	#131	Btk	20-29	7.4	0.99	34	2.81	0.2	6.86	6.0	58	17	25	SCL	11.0	0.10	3.10	133	130.1	.	.	.	.	.	<0.50	0.45	<0.015
0398S00662	Bacobi	#153	Bt	3-16	7.3	0.49	27	2.13	0.33	2.23	2.0	73	9	18	SL	3.9	0.02	0.62	42	41.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00663	Bacobi	#153	2Bk	16-35	7.6	0.65	32	1.32	0.28	5.61	6.0	66	13	21	SCL	6.9	0.04	1.30	71	70.1	.	.	.	.	.	<0.50	0.25	<0.015
0398S00677	Bacobi	#180	Btk	10-16	7.7	0.68	32	1.27	0.29	5.5	6.0	63	14	23	SCL	8.4	0.03	0.94	95	93.9	.	.	.	.	.	<0.50	0.25	<0.015
0398S00678	Bacobi	#180	2Bk	16-26	7.9	0.75	43	1.11	0.14	7.33	9.0	26	44	30	CL	11.0	0.03	0.94	98	96.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00681	Bacobi	#208	AB	0-13	7.4	0.32	25	1.85	0.11	0.63	1.0	81	6	13	SL	2.6	0.02	0.62	33	32.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00682	Bacobi	#208	Btk	13-33	7.7	0.48	27	1	0.25	4.23	5.0	73	7	20	SCL	4.8	0.02	0.62	50	49.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00683	Bacobi	#209	AB	0-4	7.3	0.36	24	2.56	0.37	0.4	0.0	75	12	13	SL	1.6	0.03	0.94	21	20.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00684	Bacobi	#209	Bt	4-20	7.3	0.38	27	1.81	0.17	1.8	2.0	73	11	16	SL	5.0	0.02	0.62	52	51.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00805	Bacobi	#215	Bk	17-26	7.5	0.62	35	1.8	0.31	4.7	5.0	53	22	25	SCL	9.9	0.01	0.31	97	96.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00955	Bacobi	#266	Btk	5-19	7.3	0.43	33	1.5	0.13	2.1	2.3	70	6	24	SCL	5.7	0.02	0.62	48	47.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01197	Bacobi	#390	2Btk	15-28	7.7	0.83	44	0.93	0.21	7.2	10.0	53	12	35	SC	8.1	0.06	1.90	69	67.0	.	.	.	.	.	0.3	0.90	<0.015
0398S03122	Bacobi	#608	AB	0-12	7.7	1.13	28	1.6	0.36	8.6	9.0	68	10	22	SCL	3.1	0.03	0.94	27	26.5	.	.	.	.	.	0.3	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S03123	Bacobi	#608	2Bk	12-28	7.4	9.22	42	28	5	55	14.0	40	45	15	L	1.9	1.95	61.00	16	-44.8	2	0	0	0	16.2	1.4	0.35	<0.015
S-1501	Bacobi	216B	A	0-8	7.5	0.60	29	3.45	0.65	0.89	0.6	80	14	6	LS	2.0	0.02	0.74	20	19.4	.	.	.	.	.	<0.50	<0.15	<0.015
S-1502	Bacobi	216B	Bt	8-16	7.4	0.32	32	0.92	0.14	2.14	2.9	70	18	13	SL	6.0	0.03	1.05	60	59.4	.	.	.	.	.	<0.50	<0.15	<0.015
S-1503	Bacobi	216B	Btk	16-25	7.0	0.57	31	0.86	0.15	4.48	6.3	58	28	15	SL	11.2	0.03	0.88	112	111.0	.	.	.	.	.	1.2	<0.15	<0.015
S-1525	Bacobi	224B	AC	0-12	7.5	0.43	27	2.72	0.43	0.53	0.4	88	3	10	LS	1.2	0.02	0.75	12	11.7	.	.	.	.	.	0.6	<0.15	<0.015
S-1526	Bacobi	224B	Btb	12-22	7.4	0.38	47	2.43	0.25	1.09	0.9	53	13	35	SCL/SC	9.8	0.04	1.35	98	96.7	.	.	.	.	.	1.0	0.33	<0.015
S-1606	Bacobi	252B	A	0-7	8.0	2.60	30	25.8	6.83	2.11	0.5	78	13	10	SL	3.4	0.34	10.72	34	22.9	.	.	.	.	.	0.7	0.28	<0.015
S-1607	Bacobi	252B	Bt	7-16	8.6	0.57	36	1.11	0.37	4.39	5.1	49	23	29	SCL	18.7	0.07	2.16	187	185.3	.	.	.	.	.	0.8	0.38	<0.015
S-1608	Bacobi	252B	Btk	16-23	8.5	1.11	44	2.09	0.79	8.18	6.8	39	24	38	CL	20.8	0.10	3.01	208	204.6	.	.	.	.	.	1.6	1.03	<0.015
S-1553	Bacobi	326B	A	0-5	7.3	0.37	30	2.25	0.38	0.64	0.6	80	6	14	SL	1.7	0.04	1.23	17	16.1	.	.	.	.	.	0.5	<0.15	<0.015
S-1554	Bacobi	326B	Bt	5-15	7.5	0.32	26	1.16	0.26	1.87	2.2	70	15	15	SL	7.2	0.04	1.28	72	70.8	.	.	.	.	.	0.6	<0.15	<0.015
S-1555	Bacobi	326B	Btk	15-27	8.0	0.68	33	1.14	0.38	5.18	5.9	60	15	25	SCL	19.9	0.04	1.39	199	197.5	.	.	.	.	.	0.9	<0.15	<0.015
S-1062	Bacobi	A5-1	A1	0-4	8.1	0.30	30	1.79	0.34	0.68	0.7	74	11	15	SL	6.3	0.02	0.58	63	62.2	.	.	.	.	.	<0.50	<0.15	<0.015
S-1063	Bacobi	A5-1	A2	4-9	8.2	0.28	29	1.62	0.31	0.80	0.8	74	13	14	SL	8.7	0.02	0.61	87	86.7	.	.	.	.	.	<0.50	<0.15	<0.015
S-1064	Bacobi	A5-1	Bt	9-16	8.2	0.33	33	1.22	0.35	1.88	2.1	73	11	16	SL	8.5	0.02	0.72	85	84.6	.	.	.	.	.	<0.50	<0.15	<0.015
S-1065	Bacobi	A5-1	Bk	16-23	8.6	0.47	33	0.36	0.15	4.48	8.9	69	13	19	SL	9.2	0.02	0.67	92	91.5	.	.	.	.	.	<0.50	<0.15	<0.015
S-1050	Bacobi	A5-6	A	0-6	8.0	0.43	30	2.77	0.53	0.76	0.6	71	15	14	SL	1.2	0.03	0.97	12	10.6	.	.	.	.	.	<0.50	<0.15	<0.015
S-1050R	Bacobi	A5-6	A	0-6	8.0	0.43	31	2.82	0.53	0.75	0.6	71	15	14	SL	1.3	0.03	0.99	13	11.6	.	.	.	.	.	0.5	<0.15	<0.015
S-1051	Bacobi	A5-6	Bt	6-12	8.1	0.28	33	1.07	0.26	1.71	2.1	60	19	21	SCL	6.8	0.03	0.87	68	67.6	.	.	.	.	.	0.7	<0.15	<0.015
S-1052	Bacobi	A5-6	Bk	12-26	8.3	0.71	39	0.81	0.32	6.18	8.2	39	33	29	CL	35.6	0.08	2.49	356	353.9	.	.	.	.	.	1.0	<0.15	<0.015
S-1078	Bacobi	A5-7	A1	0-4	8.1	0.40	24	2.62	0.45	0.79	0.6	69	15	16	SL	3.4	0.03	0.91	34	33.3	.	.	.	.	.	<0.50	<0.15	<0.015
S-1079	Bacobi	A5-7	Bt	4-13	8.1	0.27	34	1.45	0.26	1.14	1.2	56	23	21	SCL	20.0	0.03	0.84	200	199.4	.	.	.	.	.	<0.50	<0.15	<0.015
S-1080	Bacobi	A5-7	Btk	13-24	8.4	0.78	32	0.67	0.19	7.31	11.1	30	49	21	L	36.8	0.06	1.72	368	366.7	.	.	.	.	.	<0.50	0.93	<0.015
S-1080R	Bacobi	A5-7	Btk	13-24	8.4	0.76	31	0.65	0.18	7.05	10.9	30	49	21	L	36.7	0.06	1.89	367	365.6	.	.	.	.	.	<0.50	0.95	<0.015
0398S00673	Benally	#175	Btkn	0-6	7.8	1.05	30	6.75	0.87	8.04	4.0	68	9	23	SCL	5.1	0.02	0.62	52	51.5	.	.	.	.	.	<0.50	0.30	<0.015
0398S00674	Benally	#175	Btkn2	6-20	7.6	7.97	36	24.2	3.46	73.6	20.0	73	7	20	SCL	3.1	0.56	17.00	41	23.6	.	.	.	.	.	1.2	0.85	0.020
0398S00675	Benally	#175	Bty	20-40	7.6	10.10	34	26.7	7.22	94.6	23.0	87	2	11	LS	1.9	1.93	60.00	22	-37.9	1.2	0	0.7	21.9	0.5	1.4	0.35	0.030
0398S00676	Benally	#175	Cy	40-60	7.6	9.54	34	27.5	10.2	82.7	19.0	87	3	10	LS	1.9	1.72	54.00	22	-32.0	0.36	0	0	0	21.7	1.3	<0.15	<0.015
0398S04615	Benally	#641	Btn	0-6	8.2	1.04	27	6.7	1.5	10	5.0	70	8	22	SCL	3.1	0.02	0.62	33	32.1	.	.	.	.	.	0.8	0.30	<0.015
0398S04616	Benally	#641	Cky	6-22	8.0	12.30	30	20	2.3	130	38.0	78	5	17	SL	2.8	0.24	7.50	27	19.8	.	.	.	.	.	1.2	0.55	0.110
0398S04617	Benally	#641	C	22-46	7.9	11.20	23	19	3.5	100	30.0	88	2	10	LS	1.7	0.15	4.70	22	17.5	.	.	.	.	.	0.4	0.35	0.050
0398S04629	Benally	#681	Btkyn	0-8	7.9	6.93	32	9.2	0.97	64	28.0	81	5	14	SL	2.1	0.08	2.50	17	14.6	.	.	.	.	.	0.5	8.30	0.260
0398S04630	Benally	#681	2Btkyn	8-18	8.4	11.60	90	19	4.5	130	37.0	48	22	30	SCL	4.6	0.42	13.00	46	10.5	.	.	.	.	.	2.9	6.00	2.900
0398S00988	Benally	#352-A	AC	0-8	7.4	0.71	36	2.0	0.02	5.4	5.4	53	19	28	SCL	2.8	0.05	1.6	26	24.9	.	.	.	.	.	<0.50	0.30	<0.015
S-1545	Benally	329B	AB	0-9	7.7	0.71	37	3.21	0.66	2.61	1.9	53	18	30	SCL	4.0	0.04	1.26	40	39.1	.	.	.	.	.	0.9	<0.15	<0.015
S-1546	Benally	329B	Btk	9-16	7.6	0.68	36	1.69	0.35	4.44	4.4	55	13	33	SCL	10.6	0.04	1.24	106	104.4	.	.	.	.	.	0.8	0.28	<0.015
0398S04597	Beebe Variant	#616	C1	0-14	7.5	0.39	22	1.8	0.27	1.8	1.8	84	3	13	LS	14.0	0.02	0.62	13	12.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04598	Beebe Variant	#616	C2	14-35	7.8	0.32	24	0.86	0.37	2.3	3.0	89	1	10	LS	1.3	0.02	0.62	15	14.1	.	.	.	.	.	<0.50	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S04599	Beebe Variant	#616	C3	35-60	7.8	1.03	24	0.95	0.25	9	12.0	86	3	11	LS	1.5	0.02	0.62	15	14.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04626	Beebe Variant	#675	A	0-5	7.5	0.44	26	2.4	0.29	1.9	1.6	88	3	9	LS	1.2	0.02	0.62	11	10.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04627	Beebe Variant	#675	C1	5-20	7.5	1.33	23	4.4	0.47	8.6	5.6	80	8	12	SL	1.5	0.03	0.94	16	15.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04628	Beebe Variant	#675	C2	20-60	7.7	3.26	24	8.7	1.2	26	12.0	94	0	6	S	1.4	0.06	1.90	14	12.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04706	Beebe Variant	#712	A	0-7	8.0	12.60	99	19	3	130	40.0	32	26	42	C	4.8	0.93	29.00	47	17.5	.	.	.	.	.	2.0	<0.15	<0.015
0398S04707	Beebe Variant	#713-A	C1	4-33	7.7	2.50	22	8.5	0.99	17	7.7	88	4	8	LS	1.5	0.04	1.30	18	16.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04708	Beebe Variant	#713-A	C2	33-60	7.8	4.76	25	11	2.4	49	19.0	95	0	5	S	1.5	0.07	2.20	18	15.5	.	.	.	.	.	<0.50	0.25	<0.015
S-1073	Blancot	A5-5	A	0-3	8.2	0.91	39	0.63	0.08	8.66	14.5	46	20	34	SCL	2.9	0.03	0.80	29	28.5	.	.	.	.	.	<0.50	<0.15	0.017
S-1074	Blancot	A5-5	Bt	3-10	8.5	1.52	59	0.61	0.07	14.6	25.0	44	18	39	CL	3.0	0.03	1.01	30	29.3	.	.	.	.	.	<0.50	0.30	0.024
S-1075	Blancot	A5-5	Btk	10-21	7.9	8.33	51	18.5	1.36	70.0	22.2	41	18	41	C	2.9	0.30	9.40	29	19.9	.	.	.	.	.	<0.50	0.30	0.020
S-1076	Blancot	A5-5	Ck	21-46	8.0	5.31	50	7.68	0.85	46.5	22.5	51	15	34	SCL	2.4	0.08	2.59	24	21.8	.	.	.	.	.	<0.50	0.28	0.024
S-1077	Blancot	A5-5	C	46-50	8.1	6.54	41	13.0	1.65	56.5	20.9	61	13	26	SCL	2.0	0.07	2.20	20	17.4	.	.	.	.	.	<0.50	<0.15	0.032
0398S01479	Chipeta	DH-J	AC	0-8	7.9	1.18	40	3.9	0.4	8.5	6.0	39	25	36	CL	5.6	0.03	0.94	56	54.7	.	.	.	.	.	<0.50	0.30	<0.015
0398S01480	Chipeta	DH-J	Btyb	8-26	7.5	8.06	51	47	3	57	11.0	29	28	43	C	5.7	0.14	4.40	57	52.3	.	.	.	.	.	<0.50	0.35	<0.015
0398S01481	Chipeta	DH-J	Cdy	26-68	7.5	8.70	54	49	3.9	60	12.0	16	29	55	C	4.9	0.43	13.00	51	37.5	.	.	.	.	.	<0.50	0.40	0.020
0398S01482	Chipeta	DH-J	2C	68-80	4.7	10.00	63	69	8.6	55	9.0	49	31	20	L	0.2	3.43	110.00	4	-103.4	3.4	0.04	0.04	1.2	2.5	0.2	5.00	0.160
0398S00966	Doak	#296	A	0-5	7.7	0.85	23	1.7	0.09	5.6	5.9	80	7	13	SL	2.3	0.01	0.31	17	16.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00967	Doak	#296	Bt	5-15	7.9	0.73	25	2.1	0.65	8.9	7.6	75	10	15	SL	2.0	0.01	0.31	14	13.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00968	Doak	#296	Btk	15-36	7.4	7.79	45	24	13	62	14	53	14	33	SCL	8.3	0.14	4.4	69	64.2	.	.	.	.	.	0.3	<0.15	<0.015
0398S00969	Doak	#296	C	36-45	7.3	5.62	28	25	9.9	35	8.4	85	5	10	LS	1.4	0.12	3.8	12	8.5	.	.	.	.	.	<0.50	0.25	<0.015
0398S00970	Doak	#296	2Ck	45-60	7.4	5.41	35	21	8.5	38	9.8	68	13	19	SL	11	0.04	1.3	86	84.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00540	Doak	#15	Bk1	19-30	7.6	0.47	28	1.83	0.18	2.79	3.0	26	56	18	SIL	14.0	0.01	0.31	106	105.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00538	Doak	#15	Bk2	30-46	8.0	0.53	27	1.09	0.13	4.84	6.0	71	12	17	SL	11.0	0.01	0.31	90	90.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00522	Doak	#17	A	0-3	7.5	0.48	26	3.26	0.31	0.71	1.0	74	12	14	SL	2.1	0.02	0.62	15	14.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00534	Doak	#17	Bt1	3-18	7.5	0.35	29	1.37	0.16	1.85	2.0	76	5	19	SL	2.1	0.01	0.31	17	16.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00504	Doak	#17	BC	18-38	7.7	0.78	27	1.2	0.15	4.82	6.0	81	7	12	SL	2.4	0.01	0.31	15	15.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00532	Doak	#17	C	38-60	7.6	1.24	27	2.08	0.66	7.57	6.0	86	2	12	LS	1.8	0.02	0.62	13	12.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00511	Doak	#19	A	0-2	7.4	0.36	27	1.81	0.27	1.55	2.0	61	17	22	SCL	2.9	0.04	1.30	28	26.8	.	.	.	.	.	<0.50	0.30	<0.015
0398S00513	Doak	#19	Bt	2-17	7.5	0.72	40	2.14	0.4	5.72	5.0	54	10	36	SC	3.9	0.03	0.94	33	32.3	.	.	.	.	.	<0.50	0.30	<0.015
0398S00512	Doak	#19	Btk	17-29	7.3	2.10	36	5.79	0.78	15	8.0	69	7	24	SCL	1.4	0.03	0.94	10	9.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00515	Doak	#19	Ck	29-60	7.3	2.44	30	6.68	1.15	15.5	8.0	76	7	17	SL	2.3	0.02	0.62	15	14.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00553	Doak	#33	A	0-5	7.2	0.42	25	4.81	0.21	1.09	1.0	71	11	18	SL	5.4	0.03	0.94	62	61.2	.	.	.	.	.	<0.50	0.40	<0.015
0398S00554	Doak	#33	2Btk	5-14	7.0	2.05	29	26.4	1.61	3.61	1.0	71	9	20	SCL	8.7	0.05	1.60	94	92.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00555	Doak	#33	2Bk	14-37	7.3	4.86	33	26.7	7.38	34.3	8.0	79	5	16	SL	3.1	0.38	12.00	40	28.5	.	.	.	.	.	0.2	<0.15	<0.015
0398S00556	Doak	#33	2Ck	37-60	7.4	8.23	33	29.7	15.5	62.8	13.0	71	11	18	SL	5.2	0.32	10.00	61	50.7	.	.	.	.	.	0.6	0.25	0.040
0398S00809	Doak	#211	A	0-6	7.3	1.62	35	9.8	1.5	20	8.0	53	19	28	SCL	3.0	0.04	1.30	26	25.1	.	.	.	.	.	<0.50	0.30	<0.015
0398S00810	Doak	#211	Bt	6-24	7.1	0.55	33	2.6	0.47	3.3	3.0	60	14	26	SCL	2.3	0.03	0.94	20	19.4	.	.	.	.	.	<0.50	0.35	<0.015
0398S00811	Doak	#211	Btb	24-41	7.2	0.80	39	1.8	0.4	6.2	6.0	55	15	30	SCL	2.4	0.04	1.30	20	18.5	.	.	.	.	.	<0.50	0.30	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00812	Doak	#211	Ck	41-60	7.2	1.98	32	7.8	1.3	11	5.0	73	9	18	SL	2.3	0.03	0.94	17	16.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00817	Doak	#227	A	0-7	7.4	0.84	29	4	0.58	5.6	4.0	65	15	20	SCL	3.3	0.02	0.62	25	24.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00818	Doak	#227	Bt1	7-18	7.0	2.67	33	31	4.4	8.4	2.0	58	17	25	SCL	4.3	0.05	1.60	37	35.9	.	.	.	.	.	<0.50	0.25	<0.015
0398S00819	Doak	#227	Bt2	18-40	7.1	1.26	29	10	1.9	4.8	2.0	73	9	18	SL	3.5	0.03	0.94	23	21.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00820	Doak	#227	Btb	40-60	6.9	1.51	26	13	2.9	2.5	1.0	78	4	18	SL	2.1	0.02	0.62	11	10.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00957	Doak	#273	Btkb	36-49	7.3	0.86	33	4.0	0.74	2.9	1.9	68	8	24	SCL	3.1	0.01	0.31	24	24.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00974	Doak	#322	2Bk	21-32	8.2	1.07	44	1.2	0.29	11	13	60	20	20	SCL	14	0.01	0.31	105	104.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01454	Doak	#395	2Btk	15-29	7.7	1.01	33	3.2	0.48	6.7	5.0	74	6	20	SCL	7.3	0.03	0.94	52	50.7	.	.	.	.	.	<0.50	0.25	<0.015
S-1543	Doak	327B	ABtn	0-27	7.5	1.18	37	1.05	0.30	9.53	11.6	40	25	35	CL	4.1	0.04	1.38	41	39.9	.	.	.	.	.	1.0	0.30	<0.015
S-1599	Doak	303B	A	0-6	8.3	0.49	29	3.32	0.54	0.71	0.5	58	21	21	SCL	3.1	0.04	1.22	31	29.5	.	.	.	.	.	0.6	0.28	<0.015
S-1600	Doak	303B	Bt	6-13	8.4	0.26	29	1.31	0.27	1.18	1.3	60	18	23	SCL	2.7	0.03	1.08	27	25.8	.	.	.	.	.	0.7	0.25	<0.015
S-1600R	Doak	303B	Bt	6-13	8.4	0.26	28	1.26	0.26	1.20	1.4	59	19	23	SCL	2.7	0.04	1.11	27	25.8	.	.	.	.	.	0.7	0.30	<0.015
S-1601	Doak	303B	Btk	13-28	8.2	1.44	34	8.28	1.43	5.87	2.7	43	24	34	CL	6.2	0.07	2.22	62	59.3	.	.	.	.	.	0.8	0.35	<0.015
S-1602	Doak	303B	C	28-45	8.0	3.12	24	25.3	4.07	9.05	2.4	74	11	15	SL	6.5	0.10	3.14	65	62.2	.	.	.	.	.	0.5	0.30	<0.015
S-1492	Doak	269B	A	0-4	7.3	0.62	35	3.85	0.84	0.93	0.6	63	21	16	SL	2.1	0.03	1.08	21	20.3	.	.	.	.	.	0.5	<0.15	<0.015
S-1493	Doak	269B	Bt1	4-12	7.3	0.30	47	1.20	0.23	1.39	1.6	40	26	34	CL	3.2	0.03	1.07	32	31.1	.	.	.	.	.	<0.50	<0.15	<0.015
S-1494	Doak	269B	Bt2	12-32	7.1	0.36	54	0.52	0.14	2.94	5.1	38	26	36	CL	3.6	0.04	1.33	36	34.5	.	.	.	.	.	0.6	<0.15	<0.015
S-1495	Doak	269B	Btk	32-39	7.4	1.19	47	2.56	0.72	8.09	6.3	40	29	31	CL	4.9	0.04	1.09	49	48.2	.	.	.	.	.	1.0	<0.15	<0.015
S-1496	Doak	269B	C	39-54	7.3	1.43	35	2.49	0.89	9.96	7.7	70	15	15	SL	4.1	0.04	1.10	41	40.1	.	.	.	.	.	0.9	<0.15	<0.015
S-1544	Fajada	320B	AB	0-12	7.5	0.99	28	1.95	0.29	6.87	6.5	65	15	20	SL/SCL	5.4	0.03	1.03	54	52.8	.	.	.	.	.	0.8	0.25	<0.015
S-1550	Fajada	156B	AC	0-5	8.1	2.13	31	2.20	0.20	17.7	16.2	53	23	25	SCL	3.7	0.07	2.16	37	34.4	.	.	.	.	.	0.9	0.33	<0.015
S-1550R	Fajada	156B	AC	0-5	8.1	2.15	29	2.22	0.20	17.9	16.3	53	23	25	SCL	3.7	0.06	1.89	37	35.6	.	.	.	.	.	0.9	0.30	<0.015
S-1551	Fajada	156B	2Btnky	5-12	7.8	9.09	73	13.9	0.84	80.0	29.5	35	53	13	SiL	3.8	1.49	46.49	38	-8.0	.	.	.	.	.	0.7	0.48	<0.015
S-1552	Fajada	156B	2Btky	12-22	7.7	14.40	83	17.2	1.91	132	42.8	35	53	13	SiL	3.0	1.98	61.95	30	-32.2	1.932	0.047	0.004	0.12	29.66	1.0	0.43	0.017
S-1070	Fajada	A5-2	A	0-3	8.4	0.38	25	0.59	0.13	3.36	5.6	71	13	16	SL	2.6	0.03	0.82	26	25.5	.	.	.	.	.	2.5	<0.15	<0.015
S-1070R	Fajada	A5-2	A	0-3	8.4	0.40	25	0.65	0.14	3.57	5.7	71	13	16	SL	2.5	0.03	0.84	25	24.5	.	.	.	.	.	<0.50	<0.15	<0.015
S-1071	Fajada	A5-2	Btkn	3-13	8.5	1.54	62	0.54	0.16	14.8	25.0	14	40	46	C	4.1	0.05	1.61	41	39.5	.	.	.	.	.	<0.50	0.48	0.038
S-1072	Fajada	A5-2	Cy	13-22	8.0	6.70	59	16.2	5.96	53.5	16.1	9	43	49	SiC	1.5	0.68	21.40	15	-6.9	0.663	0.019	0.003	0.09	14.4	2.0	0.35	0.029
S-1081	Fajada	A5-4	A	0-4	8.0	0.57	26	1.97	0.29	3.68	3.5	66	15	19	SL	3.3	0.03	0.79	33	32.5	.	.	.	.	.	<0.50	<0.15	<0.015
S-1082	Fajada	A5-4	Btnky	4-14	8.0	6.36	51	17.5	1.77	53.1	17.1	21	68	11	SiL	4.1	0.99	31.01	41	10.1	.	.	.	.	.	<0.50	0.45	0.020
S-1083	Fajada	A5-4	C	14-22	8.1	9.32	53	17.3	3.41	81.3	25.3	16	73	11	SiL	2.7	2.09	65.32	27	-38.0	2.061	0.026	0.004	0.12	27.2	<0.50	0.45	0.029
S-1066	Fajada	A5-9	A	0-2	8.3	1.39	29	1.60	0.15	11.7	12.6	56	18	26	SCL	6.4	0.05	1.50	64	62.3	.	.	.	.	.	<0.50	<0.15	<0.015
S-1067	Fajada	A5-9	Btn	2-7	8.6	2.79	44	0.98	0.09	24.6	33.7	46	20	34	SCL	4.3	0.04	1.33	43	41.8	.	.	.	.	.	<0.50	0.28	0.021
S-1068	Fajada	A5-9	Btky	7-12	8.2	12.20	49	15.6	0.26	109	38.7	44	45	11	L	2.0	3.22	100.72	20	-81.1	3.198	0.023	0.003	0.09	19.5	<0.50	0.58	0.110
S-1069	Fajada	A5-9	B/C	12-21	8.4	11.90	54	14.6	0.31	107	39.4	44	45	11	L	1.8	2.73	85.19	18	-67.6	2.697	0.024	0.006	0.19	17.4	<0.50	0.43	0.080
0398S00958	Fruitland	#275	C	0-9	6.6	1.07	32	9.9	0.76	0.98	0.4	68	9	23	SCL	5.3	0.05	1.6	40	38.0	.	.	.	.	.	0.2	0.30	<0.015
0398S00959	Fruitland	#275	2Ck	9-26	7.2	2.72	28	21	2.2	11	3.2	78	6	16	SL	5.3	0.03	0.94	38	37.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00960	Fruitland	#275	2C1	26-48	6.8	4.40	29	27	5.6	25	6.1	88	2	10	LS	0.81	0.12	3.8	7	3.2	.	.	.	.	.	<0.50	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00961	Fruitland	#275	2C2	48-60	5.3	5.32	29	26	6.7	29	7.2	79	6	15	SL	0.31	0.20	6.3	3	-3.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00509	Fruitland	#56	A	0-4	7.3	0.62	30	4.7	0.14	0.91	1.0	74	9	17	SL	3.0	0.02	0.62	26	25.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00526	Fruitland	#56	Bw	4-13	7.3	2.41	31	30.3	0.66	2.33	1.0	84	4	12	LS	1.6	0.07	2.20	13	10.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00507	Fruitland	#56	Cy1	13-24	7.2	3.66	32	26.4	1.81	16.7	4.0	81	5	14	SL	1.7	0.36	11.00	13	1.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00529	Fruitland	#56	Cy2	24-55	8.2	18.40	37	17.2	9.94	193	52.0	76	7	17	SL	1.8	0.27	8.40	17	8.2	.	.	.	.	.	0.5	<0.15	<0.015
0398S00822	Fruitland	#242	C2	15-42	7.5	0.91	28	2.9	0.64	5.3	4.0	83	7	10	LS	2.2	0.05	1.60	19	17.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00823	Fruitland	#245	C1	0-19	7.6	0.73	24	2.5	0.38	4.3	4.0	75	12	13	SL	2.4	0.02	0.62	20	18.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00824	Fruitland	#245	C2	19-38	7.5	7.09	25	20	4.1	56	16.0	80	7	13	SL	4.6	0.04	1.30	30	29.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00863	Fruitland	#250	2C	47-62	7.2	7.63	38	32	6.8	49	11	51	23	26	SCL	3.7	0.06	1.9	34	32.4	.	.	.	.	.	<0.50	0.25	<0.015
0398S00865	Fruitland	#254	AB	0-15	7.4	0.67	27	3.1	0.037	2.2	2	76	13	11	SL	3.1	0.01	0.31	29	28.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00866	Fruitland	#254	C	15-51	7.3	3.33	29	25	2.6	15	4	73	9	18	SL	3.2	0.06	1.9	27	25.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00870	Fruitland	#256	Ck	13-45	7.6	1.40	27	3.2	0.61	12	8	81	4	15	SL	2.4	0.03	0.94	24	23.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01182	Fruitland	#364	Cky	8-27	7.4	5.53	31	22	3.5	44	12.0	80	5	15	SL	2.5	0.48	15.00	20	5.1	.	.	.	.	.	0.4	0.40	<0.015
0398S01183	Fruitland	#364	Ck	27-60	7.5	7.92	40	21	5.9	65	18.0	65	17	18	SL	6.4	0.08	2.50	51	48.9	.	.	.	.	.	0.4	0.25	0.070
0398S01189	Fruitland	#384	C1	0-12	7.7	0.58	26	0.47	0.09	5	9.0	75	12	13	SL	8.4	0.01	0.31	81	81.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01190	Fruitland	#384	C2	12-28	7.8	0.61	34	0.5	0.58	6.4	9.0	75	10	15	SL	10.0	0.01	0.31	104	103.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01191	Fruitland	#384	C3	28-43	7.5	5.67	41	19	1.9	44	14.0	70	12	18	SL	8.9	0.08	2.50	84	81.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04610	Fruitland	#634	2Btk	8-19	7.8	0.55	22	1.8	0.21	4.3	4.3	76	6	18	SL	10.0	0.02	0.62	98	97.1	.	.	.	.	.	0.2	<0.15	<0.015
0398S04611	Fruitland	#636	C	0-15	7.6	0.37	21	1.8	0.15	1.8	1.8	82	6	12	SL	3.0	0.01	0.31	30	30.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04612	Fruitland	#636	Ck	15-23	7.9	0.92	26	0.86	0.15	7.8	11.0	78	8	14	SL	4.6	0.02	0.62	47	46.4	.	.	.	.	.	0.2	<0.15	<0.015
0398S04613	Fruitland	#636	C	23-60	8.3	0.69	23	0.44	0.34	6.1	9.8	89	2	9	LS	2.1	0.03	0.94	21	20.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04623	Fruitland	#669	Bk	4-19	8.1	0.85	33	0.64	0.15	8.6	14.0	82	6	12	SL	3.0	0.01	0.31	27	27.2	.	.	.	.	.	0.4	<0.15	<0.015
0398S04624	Fruitland	#669	Ck	19-60	8.2	3.30	37	1.5	0.5	30	30.0	90	2	8	S	1.3	0.03	0.94	12	10.8	.	.	.	.	.	0.9	<0.15	<0.015
0398S04638	Fruitland	#691	Bw	0-14	8.0	8.30	30	21	2.6	71	21.0	76	12	12	SL	1.9	0.08	2.50	16	13.4	.	.	.	.	.	0.4	0.25	<0.015
0398S04639	Fruitland	#691	2CK	14-43	8.8	13.20	32	19	9.8	240	62.0	76	11	13	SL	2.1	0.25	7.80	19	11.5	.	.	.	.	.	1.2	0.25	0.090
0398S04640	Fruitland	#691	2C	43-60	8.7	15.70	27	18	8.2	170	48.0	88	3	9	LS	1.7	0.17	5.30	16	10.6	.	.	.	.	.	1.5	0.25	0.070
0398S04703	Fruitland	#698	2Ck	17-42	7.8	6.23	27	23	3.1	51	14.0	89	5	6	S	1.6	0.15	4.70	13	8.6	.	.	.	.	.	0.9	0.25	<0.015
0398S00627	Fruitvale	#135	Bt	3-10	7.6	0.43	31	1.41	0.14	2.68	3.0	65	6	29	SCL	4.9	0.03	0.94	39	37.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00628	Fruitvale	#135	Btky1	10-23	7.3	4.43	46	33.7	7	23.1	5.0	50	27	23	SCL	5.2	0.09	2.80	45	42.1	.	.	.	.	.	0.4	0.35	<0.015
0398S00629	Fruitvale	#135	Btky2	23-44	7.3	7.71	53	53.8	15.2	36.4	6.0	53	22	25	SCL	4.3	0.38	12.00	38	26.4	.	.	.	.	.	0.5	0.30	0.150
0398S00537	Fruitvale	#41	2Bt	4-21	7.4	0.41	41	2.24	0.19	1.86	2.0	56	12	32	SCL	2.7	0.03	0.94	26	25.4	.	.	.	.	.	<0.50	0.35	<0.015
0398S00505	Fruitvale	#41	2Bky	21-34	7.3	1.10	40	5.78	0.62	3.96	2.0	64	4	32	SCL	11.0	0.03	0.94	93	92.0	.	.	.	.	.	0.3	<0.15	<0.015
0398S00599	Fruitvale	#65	Btk	2-17	7.6	5.70	44	23.8	4.27	46	12.0	45	22	33	SCL	4.4	0.06	1.90	44	41.7	.	.	.	.	.	0.2	<0.15	<0.015
0398S00671	Fruitvale	#173	2Btk	11-28	7.5	1.94	40	6.92	0.83	13.8	7.0	43	27	30	CL	14.0	0.05	1.60	149	147.2	.	.	.	.	.	<0.50	0.35	<0.015
0398S00672	Fruitvale	#174	Btk	0-10	7.4	0.99	38	7.91	0.32	2.05	1.0	57	13	30	SCL	7.3	0.04	1.30	89	87.7	.	.	.	.	.	<0.50	0.40	<0.015
0398S01198	Fruitvale	#392	Btk	0-13	7.2	3.45	46	27	1.3	14	4.0	43	19	38	CL	4.5	0.15	4.70	47	42.2	.	.	.	.	.	<0.50	0.25	<0.015
0398S01199	Fruitvale	#392	Btk2	13-34	7.4	6.18	56	21	1.6	44	13.0	43	19	38	CL	4.3	0.31	9.70	42	32.6	.	.	.	.	.	<0.50	0.25	<0.015
0398S01200	Fruitvale	#392	C	34-59	7.8	9.81	34	19	4.3	97	28.0	73	9	18	SL	3.3	0.39	12.00	37	25.3	.	.	.	.	.	<0.50	0.40	0.020

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00605	Grieta	#97	A	0-4	7.5	0.72	23	2.54	0.27	4.11	3.0	73	17	10	SL	3.0	0.01	0.31	23	22.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00606	Grieta	#97	Bt	4-10	7.3	0.45	28	1.93	0.28	2.19	2.0	68	12	20	SCL	5.2	0.00	0.00	54	53.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00607	Grieta	#97	2Btk	10-21	7.5	0.57	29	0.87	0.13	5.73	8.0	65	12	23	SCL	15.0	0.03	0.94	93	91.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00608	Grieta	#97	2Ck	21-48	7.3	4.66	28	29.6	9.25	33.7	8.0	83	4	13	SL	4.2	0.18	5.60	30	24.7	.	.	.	.	.	0.2	<0.15	<0.015
0398S00535	Grieta	#39	A	0-4	7.6	0.53	23	2.77	0.42	2.33	2.0	79	8	13	SL	1.9	0.02	0.62	14	13.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00533	Grieta	#39	Bt	4-10	7.5	0.41	27	2.24	0.23	1.76	2.0	71	10	19	SL	6.4	0.01	0.31	49	49.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00508	Grieta	#42	Bk	11-20	7.9	0.74	42	1.48	0.21	6.28	7.0	31	32	37	CL	19.0	0.02	0.62	183	182.8	.	.	.	.	.	<0.50	0.25	<0.015
0398S00539	Grieta	#42	2Bky	20-29	7.6	8.89	55	23.1	11.2	73.2	18.0	24	37	39	CL	9.2	0.70	22.00	74	52.6	.	.	.	.	.	0.6	0.70	<0.015
0398S00614	Grieta	#110	Bk	9-20	7.7	0.47	27	0.83	0.1	4.07	6.0	68	14	18	SL	17.0	0.02	0.62	156	154.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00615	Grieta	#110	Ck	20-40	7.9	8.12	32	22.6	1.95	81.9	23.0	69	16	15	SL	10.0	0.08	2.50	79	76.4	.	.	.	.	.	<0.50	0.35	<0.015
0398S00680	Grieta	#206	2Btk	13-31	7.9	1.18	38	0.83	0.2	12	17.0	51	21	28	SCL	14.0	0.02	0.62	144	143.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00788	Grieta	#246	2Bk	17-26	7.6	0.57	31	1.1	0.34	3.6	4.0	65	17	18	SL	17.0	0.01	0.31	156	156.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00595	Grieta	DH A	A	0-5	7.4	0.44	3	3.15	0.37	0.79	1.0	84	6	10	LS	1.0	0.01	0.31	8	7.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00596	Grieta	DH A	Bt	5-21	7.4	0.38	28	1.28	0.33	2.26	3.0	78	8	14	SL	3.3	0.01	0.31	23	23.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00597	Grieta	DH A	Btk	21-27	7.8	0.62	38	0.64	0.2	5.9	9.0	55	21	24	SCL	16.0	0.01	0.31	131	130.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00598	Grieta	DH A	2Ck	27-51	7.9	1.42	45	1.09	0.47	15.2	17.0	55	25	20	SCL	18.0	0.00	0.00	167	166.8	.	.	.	.	.	<0.50	<0.15	<0.015
S-1053	Grieta	A5-8	A	0-5	8.0	0.44	30	3.11	0.51	0.63	0.5	79	8	14	SL	1.6	0.02	0.68	16	15.0	.	.	.	.	.	<0.50	<0.15	<0.015
S-1054	Grieta	A5-8	Bt	5-15	8.1	0.26	29	1.26	0.24	1.23	1.4	69	13	19	SL	3.6	0.00	0.06	36	36.1	.	.	.	.	.	<0.50	<0.15	<0.015
S-1055	Grieta	A5-8	Btk1	15-26	8.2	0.56	30	0.98	0.23	4.39	5.6	70	9	21	SCL	4.6	0.04	1.24	46	44.7	.	.	.	.	.	0.7	<0.15	<0.015
S-1056	Grieta	A5-8	Btk2	26-40	7.9	4.07	50	23.7	4.68	21.5	5.7	41	25	34	CCL	22.8	0.21	6.55	228	221.2	.	.	.	.	.	2.4	0.40	0.029
S-1057	Grieta	A5-8	2Bk	40-56	7.9	5.06	52	28.9	5.40	24.4	5.9	29	33	39	CL	6.7	0.50	15.60	67	51.2	.	.	.	.	.	<0.50	0.45	0.032
S-1058	Grieta	A5-8	2C	56-60	7.6	5.67	52	32.5	5.53	23.5	5.4	26	26	51	C	0.9	0.10	3.17	9	5.6	.	.	.	.	.	<0.50	0.35	0.054
S-1556	Hoskay	324B	AB	0-8	7.4	0.43	34	1.57	0.29	2.22	2.3	50	23	28	SCL	3.0	0.04	1.25	30	28.5	.	.	.	.	.	0.8	<0.15	<0.015
S-1557	Hoskay	324B	Btk	8-21	7.4	1.00	44	1.92	0.44	6.79	6.2	45	18	38	CL/SC	3.5	0.05	1.50	35	33.1	.	.	.	.	.	1.3	0.35	<0.015
S-1558	Hoskay	324B	C	21-32	7.4	1.06	33	1.72	0.46	7.35	7.0	69	6	25	SCL	2.3	0.04	1.16	23	21.9	.	.	.	.	.	1.6	0.28	<0.015
S-1578	Hoskay	152B	Btn	5-16	8.5	0.59	94	0.78	0.20	4.61	6.6	33	29	39	CL	3.0	0.04	1.20	30	28.6	.	.	.	.	.	1.2	0.38	<0.015
S-1559	Hoskay	152B	Bky	16-39	7.7	1.25	49	1.46	0.37	9.61	10.1	45	18	38	CL/SC	2.7	0.05	1.48	27	25.4	.	.	.	.	.	1.7	0.35	<0.015
0398S00631	Huerfano	#147	Btn	0-21	7.9	2.14	42	2.99	0.44	18.4	14.0	43	22	35	CL	4.0	0.04	1.30	37	35.5	.	.	.	.	.	0.2	0.55	<0.015
0398S00630	Huerfano	#142	BC	0-6	7.7	0.86	29	4.14	0	4.05	3.0	50	25	25	SCL	6.4	0.02	0.62	60	59.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00679	Huerfano	#188	Btkn	0-13	7.6	3.13	46	14	0.86	23.8	9.0	43	21	36	CL	4.9	0.05	1.60	59	57.5	.	.	.	.	.	<0.50	0.25	<0.015
0398S03115	Jocity	#601	C1	0-13	8.1	1.14	31	1	0.39	12	15.0	80	8	12	SL	1.4	0.01	0.31	12	11.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S03116	Jocity	#601	C2	13-28	7.6	6.55	52	21	2.3	53	16.0	26	45	29	CL	7.4	0.09	2.80	74	71.3	.	.	.	.	.	0.3	<0.15	<0.015
0398S03117	Jocity	#601	C3	28-60	7.6	5.89	48	15	1.6	48	17.0	42	32	26	L	7.0	0.06	1.90	71	68.9	.	.	.	.	.	0.3	<0.15	<0.015
0398S00524	Jocity	#55	A	0-3	7.4	1.52	33	9.28	0.59	3.9	2.0	61	15	24	SCL	4.2	0.03	0.94	40	39.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00531	Jocity	#55	Bw	3-18	7.6	0.61	33	1.79	0.1	3.33	3.0	56	20	24	SCL	4.0	0.02	0.62	38	37.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00666	Jocity	#159	AB	0-8	7.4	0.69	33	5.31	0.19	1.56	1.0	63	12	25	SCL	7.4	0.06	1.90	80	77.9	.	.	.	.	.	<0.50	0.50	<0.015
0398S00667	Jocity	#159	2Ck1	8-50	7.3	4.99	34	26.3	6.19	32.2	8.0	71	9	20	SCL	11.0	0.89	28.00	113	85.3	.	.	.	.	.	0.3	0.45	0.020
0398S00668	Jocity	#159	2Ck2	50-60	7.3	6.03	35	17.5	6.84	41.8	12.0	68	13	19	SL	20.0	0.06	1.90	196	194.4	.	.	.	.	.	<0.50	0.25	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00875	Jocity	#262	CA	0-9	7.6	1.59	38	7.0	1.0	7.2	4	41	29	30	CL	5.6	0.04	1.3	55	53.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00876	Jocity	#262	BC	9-33	7.1	4.30	32	32	7.0	9.7	2	56	24	20	SCL	5.0	0.03	0.94	45	44.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00877	Jocity	#262	C	33-50	7.1	2.56	26	15	3.2	5.3	2	71	9	20	SCL	3.9	0.02	0.62	34	33.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00878	Jocity	#262	Btb	50-60	7.2	1.55	34	7.7	1.6	4.3	2	48	24	28	SCL	4.5	0.02	0.62	40	39.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00956	Jocity	#271	C	0-13	7.5	0.37	28	1.4	0.07	1.8	2.1	55	26	19	SL	5.7	0.02	0.62	51	50.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00978	Jocity	#330	C	0-18	7.5	3.41	37	24	0.81	18	5.3	50	20	30	SCL	6.8	0.07	2.2	65	63.0	.	.	.	.	.	<0.50	0.45	<0.015
0398S00982	Jocity	#346	C1	0-16	7.8	1.91	48	7.1	0.12	12	6.3	38	27	35	CL	5.1	0.05	1.6	49	47.4	.	.	.	.	.	<0.50	0.40	<0.015
0398S00983	Jocity	#346	C2	16-45	7.4	5.33	43	31	1.9	31	7.8	43	24	33	CL	4.7	0.10	3.1	46	42.5	.	.	.	.	.	<0.50	0.35	<0.015
0398S00984	Jocity	#348	C1	0-12	7.9	10.3	34	2.8	0.34	9.4	7.5	53	21	26	SCL	5.2	0.03	0.94	48	46.7	.	.	.	.	.	<0.50	0.25	<0.015
0398S00985	Jocity	#348	C2	12-21	7.9	1.24	29	2.5	0.28	11	8.9	80	10	10	SL	1.4	0.02	0.62	14	12.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00986	Jocity	#348	C3	21-39	7.6	6.38	41	18	1.8	61	20	58	21	21	SCL	2.5	0.05	1.6	22	20.7	.	.	.	.	.	0.6	<0.15	<0.015
0398S01180	Jocity	#362	AC	0-17	7.3	1.88	39	12	0.76	7.9	3.0	50	21	29	SCL	4.5	0.03	0.94	43	42.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01181	Jocity	#362	C	17-36	7.2	3.04	36	25	2.1	12	3.0	58	16	26	SCL	4.3	0.34	11.00	38	27.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01192	Jocity	#385	AB	0-16	7.7	6.25	31	22	2.1	52	15.0	63	19	18	SL	7.7	0.01	0.31	89	88.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01193	Jocity	#385	Cy	16-40	7.5	6.64	46	20	1.9	61	19.0	48	27	25	SCL	8.6	0.14	4.40	86	81.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01194	Jocity	#385	C	40-60	8.3	1.26	28	0.39	0.23	13	23.0	88	6	6	LS	6.0	0.01	0.31	59	58.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01195	Jocity	#388	AC	0-15	7.7	0.58	28	0.55	0.39	5.6	8.0	68	14	18	SL	5.2	0.01	0.31	49	48.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01196	Jocity	#388	C	15-41	7.7	4.96	35	4.1	0.44	46	31.0	80	7	13	SL	6.0	0.04	1.30	60	58.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01451	Jocity	#394	AC	0-16	7.9	1.12	34	1.4	0.19	8.3	9.0	86	4	10	LS	1.3	0.01	0.31	13	12.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01452	Jocity	#394	Cy	16-36	8.5	20.30	41	23	7.4	250	64.0	71	11	18	SL	2.1	0.37	12.00	20	8.3	.	.	.	.	.	<0.50	0.25	0.020
0398S01453	Jocity	#394	C	36-60	8.4	15.80	34	20	4.6	180	51.0	89	3	8	LS	1.5	0.19	5.90	14	7.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S03112	Jocity	#600	Bn	0-5	7.9	1.39	47	1.4	0.29	14	16.0	34	32	34	CL	9.0	0.01	0.31	88	88.1	.	.	.	.	.	0.5	<0.15	<0.015
0398S03113	Jocity	#600	C	5-15	7.8	10.10	41	23	1.6	87	25.0	52	26	22	SCL	9.5	0.05	1.60	93	91.6	.	.	.	.	.	0.3	<0.15	<0.015
0398S03114	Jocity	#600	2Cy	15-35	7.9	9.43	41	20	2.9	73	21.0	60	20	20	SCL	9.4	0.21	6.60	93	86.8	.	.	.	.	.	0.3	0.25	<0.015
0398S04600	Jocity	#617	AB	0-5	8.0	5.92	29	5.3	0.72	58	33.0	68	14	18	SL	1.8	0.02	0.62	18	17.2	.	.	.	.	.	0.6	<0.15	<0.015
0398S04601	Jocity	#617	Cy1	5-36	7.8	14.50	33	28	3.9	170	42.0	72	12	16	SL	1.5	0.11	3.40	13	9.8	.	.	.	.	.	0.5	<0.15	<0.015
0398S04602	Jocity	#617	Cy2	36-60	8.8	14.30	45	20	8.7	290	76.0	44	28	28	CL	2.5	0.41	13.00	24	11.5	.	.	.	.	.	0.9	<0.15	<0.015
0398S04603	Jocity	#620	Bw	0-12	7.9	0.79	23	1.5	0.26	5.5	5.9	68	13	19	SL	2.5	0.01	0.31	27	26.4	.	.	.	.	.	0.3	<0.15	<0.015
0398S04604	Jocity	#620	C1	12-20	7.9	7.95	37	20	2.6	69	21.0	50	20	30	SCL	4.1	0.12	3.80	48	43.8	.	.	.	.	.	1.3	0.35	<0.015
0398S04605	Jocity	#620	C2	20-37	7.8	5.24	26	7.3	1.2	44	21.0	72	10	18	SL	2.7	0.03	0.94	26	25.0	.	.	.	.	.	0.3	<0.15	<0.015
0398S00439	Mayqueen	#49	Bt	12-34	7.2	0.78	27	1.8	0.59	4.7	4.3	75	12	13	SL	2.0	0.00	0.00	16	16.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00440	Mayqueen	#50	A	0-3	7.1	0.50	25	3.8	0.49	0.68	0.5	76	11	13	SL	2.0	0.00	1.00	22	21.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00441	Mayqueen	#50	Bt1	3-7	7.2	0.34	27	2.1	0.38	1.4	1.2	73	12	15	SL	3.0	0.00	0.00	24	24.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00442	Mayqueen	#50	Bt2	7-17	7.3	0.39	27	1.5	0.33	2.8	2.9	76	10	14	SL	4.0	0.00	0.00	32	31.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04606	Mayqueen	#622	2BCk	38-60	8.0	5.07	38	5.9	3.5	42	20.0	56	21	23	SCL	12.0	0.05	1.60	111	109.1	.	.	.	.	.	1.3	<0.15	0.020
0398S04614	Mayqueen	#637	Bt	14-28	7.5	0.30	23	2.1	0.5	1.1	0.9	78	8	14	SL	2.8	0.01	0.31	23	22.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04526	Mayqueen	#639	Bw	0-11	7.5	0.33	23	1.7	0.1	1.1	1.1	86	4	10	LS	1.1	0.01	0.31	10	9.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04527	Mayqueen	#639	Btb	11-35	8.2	0.79	28	3	0.35	8.4	6.5	76	9	15	SL	2.8	0.01	0.31	25	24.5	.	.	.	.	.	0.4	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S04528	Mayqueen	#639	2Ck	35-60	7.9	5.19	27	8.2	1.65	60	27.0	86	3	11	LS	2.4	0.05	1.60	25	23.5	.	.	.	.	.	0.5	<0.15	0.030
S-1059	Mayqueen	A5-3	A	0-12	8.2	0.26	32	1.39	0.29	0.70	0.8	84	5	11	LS	0.5	0.02	0.69	5	4.1	.	.	.	.	.	<0.50	<0.15	<0.015
S-1060	Mayqueen	A5-3	Btk	12-28	8.4	0.43	34	0.52	0.22	3.75	6.2	69	10	21	SCL	4.4	0.02	0.72	44	43.2	.	.	.	.	.	<0.50	<0.15	<0.015
S-1060R	Mayqueen	A5-3	Btk	12-28	8.3	0.42	33	0.52	0.22	3.61	5.9	69	10	21	SCL	4.3	0.02	0.62	43	42.4	.	.	.	.	.	<0.50	<0.15	<0.015
S-1061	Mayqueen	A5-3	2Btk	28-45	8.1	5.77	50	18.6	9.54	38.8	10.3	21	33	46	C	18.2	0.48	15.08	182	166.5	.	.	.	.	.	<0.50	0.78	0.044
0398S00528	Monierco	#18	A	0-4	7.4	0.50	24	2.66	0.24	1.69	1.0	51	21	28	SCL	9.3	0.02	0.62	92	91.5	.	.	.	.	.	<0.50	0.25	<0.015
0398S00527	Monierco	#18	Btk	4-9	7.8	0.49	30	1.2	0.07	3.68	5.0	34	37	29	CL	19.0	0.02	0.62	190	189.0	.	.	.	.	.	<0.50	0.25	<0.015
0398S00530	Monierco	#18	Bk	9-16	8.3	0.93	43	0.87	0.07	7.59	11.0	19	54	27	SICL	9.6	0.01	0.31	189	188.6	.	.	.	.	.	<0.50	0.50	<0.015
0398S00550	Monierco	#89	A	0-4	7.3	0.47	24	3.42	0.66	1.18	1.0	76	14	10	SL	1.2	0.01	0.31	15	14.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00551	Monierco	#89	Bt	4-11	7.2	0.41	28	2.86	0.42	1.42	1.0	70	11	19	SL	2.5	0.01	0.31	31	30.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00552	Monierco	#89	Btk	11-16	7.2	0.49	31	3	0.43	2.79	2.0	61	15	24	SCL	7.2	0.02	0.62	80	79.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00603	Monierco	#94	Bt	0-8	7.6	0.95	25	1.98	0.35	7.02	7.0	68	14	18	SL	6.8	0.02	0.62	58	57.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00815	Monierco	#223	Bt	3-9	8.0	1.60	29	1.6	0.56	16	15.0	80	5	15	SL	2.2	0.02	0.62	14	13.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00816	Monierco	#226	AB	0-6	7.4	0.44	29	2.9	0.43	2.9	2.0	65	10	25	SCL	8.4	0.02	0.62	64	63.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04518	Monierco	#598	Btk	3-8	8.2	0.74	23	1.1	0.2	6.8	8.4	88	4	8	LS	5.8	0.21	6.60	68	61.2	.	.	.	.	.	<0.50	0.60	<0.015
0398S04519	Monierco	#598	Ck	8-20	8.0	0.57	20	1.1	0.25	5	6.2	76	6	18	SL	5.6	0.07	2.20	64	61.5	.	.	.	.	.	0.2	0.35	<0.015
0398S00544	Monierco	#21	2Bky	9-19	7.3	2.98	46	32.12	2	8.8	2.0	83	8	9	LS	6.7	7.78	240.00	65	-177.7	7.8	0	0	0	65.3	<0.50	0.50	<0.015
0398S00600	Muff	#86	Btn	0-3	7.9	0.83	40	1.17	0.23	8.35	10.0	45	12	43	SC	13.0	0.02	0.62	113	112.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00601	Muff	#86	Btkn	3-10	8.0	0.77	34	0.65	0.05	8.15	14.0	60	10	30	SCL	8.3	0.06	1.90	68	66.0	.	.	.	.	.	0.2	0.30	<0.015
0398S00602	Muff	#86	Ck	10-18	7.6	6.80	33	24.2	3.4	65.8	18.0	68	9	23	SCL	4.7	0.53	17.00	37	20.9	.	.	.	.	.	0.4	0.70	0.030
0398S00557	Muff	#73	Btkn	0-7	7.8	5.34	31	8.42	1.23	60.81	28.0	59	16	25	SCL	9.6	0.03	0.94	103	102.2	.	.	.	.	.	0.2	<0.15	<0.015
0398S00558	Muff	#73	Ck	7-17	7.6	10.40	37	23.7	3.94	108	29.0	41	34	25	L	12.0	0.04	1.30	126	124.5	.	.	.	.	.	0.2	0.30	<0.015
0398S00613	Muff	#108	Bt	0-7	7.7	0.56	27	0.98	0.15	5.21	7.0	55	22	23	SCL	7.2	0.02	0.62	53	52.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01474	Patel	DH-H	AC	0-4	7.9	9.55	47	28	1.7	91	23.0	39	23	38	CL	5.7	0.16	5.00	55	49.6	.	.	.	.	.	0.2	0.55	0.020
0398S01475	Patel	DH-H	Btyn	4-16	8.2	20.60	66	26	9.7	260	61.0	26	26	48	C	5.0	1.35	42.00	50	7.8	.	.	.	.	.	1.9	0.70	0.170
0398S01476	Patel	DH-H	By	16-34	8.3	21.70	63	22	23	220	46.0	31	21	48	C	4.5	1.67	52.00	47	-5.6	1.7	0.03	0	0	46.8	4.9	0.55	0.150
0398S01477	Patel	DH-H	Cy	34-49	7.1	22.90	47	23	37	280	51.0	56	24	20	SCL	2.2	3.75	120.00	23	-94.5	3.7	0.04	0.02	0.6	22	4.4	0.80	0.060
0398S00502	Patel	#60	A	0-3	7.6	1.15	48	1.8	0.22	9.46	9.0	26	30	44	C	7.7	0.04	1.30	66	65.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00517	Patel	#60	Btn	3-6	7.5	3.99	61	12.5	0.55	31.9	12.0	29	29	42	C	8.4	0.08	2.50	77	74.6	.	.	.	.	.	0.2	0.30	<0.015
0398S00503	Patel	#60	Btkyn	6-17	7.5	9.63	56	23.5	1.51	4.82	1.0	24	30	46	C	7.8	0.91	28.00	73	45.0	.	.	.	.	.	<0.50	0.45	0.040
0398S00525	Patel	#60	Cdy	17-60	7.5	8.82	64	27	2.47	76.1	20.0	14	30	56	C	5.8	0.80	25.00	57	32.4	.	.	.	.	.	<0.50	0.35	0.110
0398S00617	Patel	#118	Bty1	0-19	7.7	1.04	44	2.81	0.18	7.47	6.0	30	29	41	C	4.8	0.02	0.62	46	45.1	.	.	.	.	.	<0.50	0.30	<0.015
0398S00618	Patel	#118	Bty2	19-32	7.2	8.24	53	56.5	6.36	47.1	8.0	21	35	44	C	2.6	0.31	9.70	38	28.0	.	.	.	.	.	0.4	<0.15	<0.015
0398S00962	Patel	#283	Btkyn	0-15	7.9	8.62	71	17	0.72	94	32	35	22	43	C	2.4	1.67	52	24	-27.9	1.67	0.0	0.0	0.0	24.3	0.3	0.40	0.06
0398S00980	Patel	#340	Btn	0-6	7.7	2.57	57	5.1	0.30	26	16	23	29	48	C	5.3	0.09	2.8	50	47.3	.	.	.	.	.	<0.50	0.50	<0.015
0398S00981	Patel	#340	Btyn	6-23	7.4	12.4	59	38	2.6	120	26	30	25	45	C	5.0	0.45	14	45	31.3	.	.	.	.	.	<0.50	0.70	0.14
0398S01467	Patel	DH-B	Btn	0-10	7.9	3.60	50	4	0.8	38	25.0	41	20	39	CL	7.7	0.05	1.60	66	64.2	.	.	.	.	.	<0.50	0.25	<0.015
0398S01468	Patel	DH-B	Bky	10-21	7.9	9.85	75	27	5.7	98	24.0	25	27	48	C	6.9	3.73	120.00	61	-55.2	3.7	0	0.03	0.9	60.4	0.3	0.40	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S01470	Patel	DH-D	Btn	0-4	7.6	7.87	63	26	2.1	73	19.0	36	19	45	C	5.4	0.27	8.40	57	48.7	.	.	.	.	.	0.3	0.35	<0.015
0398S01471	Patel	DH-D	Btyn	4-9	7.9	10.80	91	24	2.9	110	31.0	26	21	53	C	4.7	1.41	44.00	46	1.6	.	.	.	.	.	0.6	0.55	0.090
0398S00580	Patel	#8	2Btknb	13-26	7.9	8.24	59	22.3	8.27	73	19.0	21	37	42	C	14.0	0.03	0.94	132	130.6	.	.	.	.	.	<0.50	0.25	<0.015
0398S00685	Patel	#168	C	0-10	7.6	1.22	37	4.96	0.29	6.54	4.0	53	17	30	SCL	2.3	0.08	2.50	29	26.2	.	.	.	.	.	<0.50	0.60	<0.015
0398S00686	Patel	#186	C	0-7	7.5	3.03	35	31.3	2.87	8.83	2.0	51	24	25	SCL	3.6	0.17	5.30	41	35.9	.	.	.	.	.	<0.50	0.35	<0.015
0398S00963	Patel	#287	C	0-10	7.4	0.81	38	3.4	0.06	3.5	2.7	55	17	28	SCL	4.9	0.04	1.3	50	48.5	.	.	.	.	.	<0.50	0.45	<0.015
0398S00964	Patel	#287	2Btn	10-19	7.2	1.54	51	11	0.59	5.4	2.2	40	22	38	CL	6.2	0.07	2.2	61	58.5	.	.	.	.	.	<0.50	0.60	<0.015
0398S00965	Patel	#295	C	0-8	7.8	1.46	28	1.9	0.49	17	15	78	7	15	SL	5.8	0.02	0.62	53	52.1	.	.	.	.	.	<0.50	0.25	<0.015
0398S01362	Patel	DH-F	AC	0-7	7.8	0.74	22	1.2	0.2	5.8	7.0	83	2	15	SL	1.7	0.01	0.31	14	13.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01363	Patel	DH-F	2Btn	7-12	8.0	0.83	34	2.1	0.92	8.9	7.0	68	6	26	SCL	4.1	0.01	0.31	40	39.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01364	Patel	DH-F	2Btkn	12-22	7.9	2.83	53	2.4	0.52	31	25.0	43	19	38	CL	3.5	0.03	0.94	30	29.4	.	.	.	.	.	0.3	<0.15	<0.015
0398S01365	Patel	DH-F	2Cky	22-32	7.7	8.31	55	22	5.7	69	18.0	35	30	35	CL	1.7	0.34	11.00	15	4.1	.	.	.	.	.	0.2	<0.15	<0.015
S-1539	Patel	321B	A	0-3	7.7	0.73	28	1.49	0.28	4.83	5.1	58	18	25	SCL	3.4	0.03	1.07	34	32.6	.	.	.	.	.	0.9	0.25	<0.015
S-1540	Patel	321B	Bt	3-12	7.5	0.44	34	0.97	0.16	3.26	4.3	53	13	35	SCL/SC	5.3	0.03	1.01	53	51.8	.	.	.	.	.	1.9	0.33	<0.015
S-1540R	Patel	321B	Bt	3-12	7.4	0.44	36	0.97	0.16	3.24	4.3	51	14	35	SCL/SC	5.3	0.03	0.97	53	51.9	.	.	.	.	.	1.7	0.38	<0.015
S-1541	Patel	321B	Btk1	12-18	7.7	1.40	47	3.25	0.70	9.26	6.6	43	20	38	CL	6.8	0.06	1.84	68	66.4	.	.	.	.	.	1.8	0.48	<0.015
S-1542	Patel	321B	Btk2	18-36	7.3	3.31	54	17.0	3.93	15.66	4.8	23	38	40	CL/C	4.7	0.11	3.55	47	43.5	.	.	.	.	.	2.8	0.50	<0.015
0398S01472	Persayo	DH-E	AC	0-3	7.8	0.70	39	3.5	0.3	3	2.0	44	18	38	CL	4.7	0.03	0.94	48	47.0	.	.	.	.	.	<0.50	0.40	<0.015
0398S01473	Persayo	DH-E	C	3-15	7.7	0.76	39	3	0.3	4.9	4.0	46	16	38	SC	4.1	0.04	1.30	44	42.4	.	.	.	.	.	<0.50	0.45	<0.015
0398S00616	Persayo	#116	AC	0-4	7.6	0.41	31	2.56	0.3	1.29	1.0	48	19	33	SCL	9.2	0.02	0.62	97	96.7	.	.	.	.	.	<0.50	0.25	<0.015
0398S00622	Persayo	#126	C	0-4	8.0	1.92	39	2.26	0.6	21.9	18.0	28	37	35	CL	15.0	0.01	0.31	142	142.0	.	.	.	.	.	<0.50	0.25	<0.015
0398S00787	Persayo	#201	AC	0-6	7.4	1.74	35	19	2.8	3	1.0	38	26	36	CL	13.0	0.02	0.62	120	119.5	.	.	.	.	.	<0.50	0.30	<0.015
0398S00856	Persayo	#230	AC	0-8	7.3	0.65	26	3.1	0.083	5.8	5	73	12	15	SL	3.9	0.03	0.94	37	36.2	.	.	.	.	.	<0.50	<0.15	0.02
0398S00864	Persayo	#253	C	0-20	7.4	3.21	32	22	1.4	17	5	63	19	18	SL	4.9	0.04	1.3	44	43.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04633	Persayo	#687	2Ck	2-11	8.0	8.43	48	19	2.1	120	35.0	30	36	34	CL	3.4	0.99	31.00	34	3.1	.	.	.	.	.	1.4	0.70	<0.015
0398S00813	Razito	#217	C	0-41	7.4	1.32	27	2.3	0.48	8.8	8.0	88	4	8	LS	1.6	0.01	0.31	10	9.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00814	Razito	#217	Ck	41-60	7.4	1.35	28	2.8	0.97	8.4	6.0	83	6	11	LS	3.0	0.01	0.31	20	19.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00806	Razito	#220	C	4-18	7.2	0.35	27	2.5	0.39	1.3	1.0	83	4	13	SL	2.7	0.01	0.31	23	22.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00807	Razito	#220	Ck	18-42	7.7	0.57	26	1.4	0.31	5.3	6.0	85	2	13	LS	1.9	0.01	0.31	10	9.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00808	Razito	#220	2C	42-60	7.8	0.86	28	0.55	0.26	7.4	12.0	93	2	5	S	0.7	0.01	0.31	4	3.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00867	Razito	#255	AB	0-13	7.5	0.37	27	3.8	0.56	1.2	1	86	4	10	LS	1.3	0.01	0.31	10	9.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00868	Razito	#255	Ck	13-26	7.5	0.43	28	3.4	0.57	2.5	2	86	4	10	LS	2.1	0.01	0.31	15	14.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00869	Razito	#255	2Btk	26-43	7.9	0.80	35	4.2	0.87	8.6	5	66	14	20	SCL	6.4	0.02	0.62	55	54.3	.	.	.	.	.	0.2	<0.15	<0.015
0398S00871	Razito	#257	AC	0-16	7.4	0.41	29	4.1	0.43	1.4	1	83	7	10	LS	2.4	0.01	0.31	19	18.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00872	Razito	#257	Ck	16-29	7.2	2.72	31	27	2.2	6.6	2	81	9	10	LS	3.6	0.07	2.2	25	22.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00873	Razito	#257	Cy1	29-48	7.5	5.54	31	22	5.3	45	12	86	3	11	LS	0.41	0.30	9.4	2	-7.0	0.300	0	0	0	2.4	0.5	<0.15	<0.015
0398S00874	Razito	#257	Cy2	48-60	7.8	8.72	36	20	7.8	86	23	75	10	15	SL	0.11	2.79	87	1	-86.1	2.79	0	0	0	1.1	1.1	<0.15	<0.015
0398S00975	Razito	#323	C	0-22	7.3	0.50	25	2.3	0.26	2.9	2.6	83	4	13	SL	1.8	0.01	0.31	14	13.8	.	.	.	.	.	<0.50	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00976	Razito	#323	2Btk	22-44	7.7	0.82	26	3.0	0.54	8.1	6.1	75	10	15	SL	3.9	0.01	0.31	29	28.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00977	Razito	#323	2Ck	44-60	7.7	2.78	28	2.0	0.57	24	21	83	7	10	LS	4.9	0.02	0.62	35	34.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01186	Razito	#375	AB	0-18	7.4	0.31	25	1.2	0.078	0.9	1.0	85	5	10	LS	2.3	0.01	0.31	19	18.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01187	Razito	#375	Ck1	18-42	7.9	0.55	25	0.31	1.8	6.1	6.0	88	4	8	LS	3.3	0.01	0.31	23	22.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01188	Razito	#375	Ck2	42-60	8.1	0.79	28	1.9	1	5.7	5.0	93	2	5	S	1.2	0.01	0.31	11	10.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04621	Razito	#668	A	0-5	7.4	0.23	22	1.6	0.24	0.31	0.3	90	2	8	S	0.7	0.01	0.31	6	5.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04622	Razito	#668	C	5-65	7.5	0.30	23	1.7	0.29	1.1	1.1	90	2	8	S	0.8	0.01	0.31	7	6.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00562	Razito	#83	A	0-4	7.4	0.39	24	3.93	0.56	0.57	0.0	84	6	10	LS	1.7	0.01	0.31	20	19.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00563	Razito	#83	BC	4-18	7.3	0.37	27	4.56	0.65	0.86	1.0	84	6	10	LS	3.0	0.01	0.31	35	34.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00564	Razito	#83	2Ck	18-32	7.5	0.45	26	2.53	0.55	3.17	3.0	81	6	13	SL	3.8	0.01	0.31	43	43.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00857	Razito	#232	C	0-22	7.4	0.90	26	3.2	0.15	4.9	4	76	9	15	SL	2.1	0.03	0.94	16	14.9	.	.	.	.	.	<0.50	0.25	<0.015
0398S01175	Razito	#359	AB	0-13	7.9	1.01	27	2.3	0.048	9.4	9.0	88	3	9	LS	1.9	0.01	0.31	19	19.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01176	Razito	#359	Bk	13-27	8.0	3.23	33	1.1	0.061	33	44.0	88	4	8	LS	1.6	0.02	0.62	13	12.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01177	Razito	#359	Ck	27-39	7.9	10.10	31	19	4.9	100	30.0	83	7	10	LS	2.6	0.15	4.70	21	16.2	.	.	.	.	.	0.2	<0.15	<0.015
0398S01178	Razito	#360	AC	0-21	7.5	0.40	26	1.2	0.049	2.4	3.0	85	5	10	LS	3.5	0.01	0.31	26	25.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01179	Razito	#360	C	21-30	8.2	0.92	30	0.13	1	8.7	11.0	90	2	8	S	1.6	0.01	0.31	15	14.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01184	Razito	#373	AC	2-21	7.5	0.40	29	1.4	0.16	1.6	2.0	75	10	15	SL	2.9	0.01	0.31	23	23.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01185	Razito	#373	C	21-34	7.6	0.50	26	0.49	0.027	4	8.0	80	7	13	SL	2.6	0.01	0.31	20	19.4	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04609	Razito	#632	C	0-32	8.0	2.26	24	2	0.21	19	18.0	88	2	10	LS	3.4	0.08	2.50	37	34.8	.	.	.	.	.	0.2	0.30	<0.015
0398S01484	Razito	DH-V	A	0-4	7.4	0.45	25	5.2	0.8	0.6	0.0	84	6	10	LS	3.1	0.01	0.31	30	30.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01485	Razito	DH-V	Bw	4-12	7.3	0.39	27	5	0.7	0.6	0.0	84	5	11	LS	5.3	0.01	0.31	31	31.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01486	Razito	DH-V	Ck	12-24	7.4	0.39	29	3.2	0.6	1.9	1.0	81	6	13	SL	5.5	0.01	0.31	44	43.9	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01487	Razito	DH-V	2Ck	24-36	7.8	0.61	32	1.9	0.2	5.1	5.0	64	16	20	SCL	9.8	0.02	0.62	84	83.5	.	.	.	.	.	<0.50	<0.15	<0.015
S-1510	Razito	180B	A	0-4	7.2	0.41	30	2.64	0.44	0.51	0.4	88	9	4	S	1.4	0.02	0.75	14	13.1	.	.	.	.	.	0.7	<0.15	<0.015
S-1510R	Razito	180B	A	0-4	7.2	0.41	29	2.66	0.44	0.52	0.4	88	8	5	S/LS	1.2	0.02	0.71	12	10.8	.	.	.	.	.	0.7	<0.15	<0.015
S-1511	Razito	180B	C	4-16	7.2	0.29	28	1.71	0.34	0.68	0.7	85	3	13	LS	2.6	0.02	0.53	26	25.4	.	.	.	.	.	0.7	<0.15	<0.015
S-1512	Razito	180B	Ck	16-24	7.2	0.36	34	1.32	0.35	1.97	2.2	70	10	20	SL/SCL	12.6	0.03	0.83	126	125.1	.	.	.	.	.	0.8	<0.15	<0.015
S-1615	Razito	246B	AC	0-12	8.0	0.32	30	2.06	0.39	0.65	0.6	86	5	9	LS	1.2	0.03	1.00	12	10.5	.	.	.	.	.	<0.50	<0.15	<0.015
S-1616	Razito	246B	2C	12-21	8.1	0.43	31	1.82	0.47	2.53	2.4	73	8	20	SL/SCL	2.9	0.04	1.32	29	27.5	.	.	.	.	.	0.7	0.35	<0.015
S-1617	Razito	246B	3Btkb	21-34	8.4	1.10	36	1.21	0.48	9.31	10.1	40	31	29	CL	2.9	0.07	2.22	29	26.6	.	.	.	.	.	1.2	0.38	<0.015
S-1618	Razito	246B	3C	34-60	7.9	4.24	29	18.9	7.56	25.0	6.9	78	6	16	SL	1.4	0.40	12.53	14	1.9	.	.	.	.	.	1.6	0.33	0.021
0398S03118	Shiprock	#602	A	0-5	7.5	0.60	24	4.4	0.84	1.4	1.0	76	8	16	SL	2.8	0.01	0.31	23	23.0	.	.	.	.	.	0.2	<0.15	<0.015
0398S03119	Shiprock	#602	Bt	5-17	7.5	0.58	28	1.6	0.39	5.1	5.0	76	6	18	SL	2.7	0.02	0.62	19	18.0	.	.	.	.	.	0.3	<0.15	<0.015
0398S03120	Shiprock	#602	Btk	17-31	8.0	1.39	27	1.8	0.58	12	11.0	76	10	14	SL	4.6	0.02	0.62	31	30.4	.	.	.	.	.	0.5	<0.15	<0.015
0398S03121	Shiprock	#602	Ck	31-51	7.7	3.53	27	6.1	3.5	25	12.0	88	3	9	LS	1.6	0.02	0.62	10	9.6	.	.	.	.	.	0.7	<0.15	<0.015
0398S00858	Shiprock	#247	A	0-6	7.4	0.78	28	2.9	0.27	6.4	5	83	7	10	LS	2.1	0.01	0.31	17	17.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00859	Shiprock	#247	Bt	6-15	7.3	0.57	29	2.7	0.30	3.4	3	78	9	13	SL	3.8	0.01	0.31	27	26.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00860	Shiprock	#247	Bk	15-40	7.1	4.23	27	25	7.0	24	6	81	6	13	SL	4.7	0.04	1.3	28	26.9	.	.	.	.	.	<0.50	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
0398S00861	Shiprock	#247	Btkyb	40-50	7.4	13.2	31	27	23	120	23	68	17	15	SL	4.5	0.32	10	33	22.9	.	.	.	.	.	0.8	0.25	<0.015
0398S00862	Shiprock	#247	Ck	50-72	7.5	10.4	27	27	17	85	18	78	12	10	SL	2.7	0.06	1.9	22	19.8	.	.	.	.	.	0.5	<0.15	<0.015
0398S04523	Shiprock	#627	C	0-14	7.6	0.52	24	1.6	0.15	2.7	2.8	82	8	10	LS	2.1	0.02	0.62	20	19.5	.	.	.	.	.	0.2	<0.15	<0.015
0398S04524	Shiprock	#627	Btb	14-27	7.7	0.70	23	1.6	0.25	6.2	6.5	76	10	14	SL	2.7	0.01	0.31	27	26.5	.	.	.	.	.	0.2	<0.15	<0.015
0398S04525	Shiprock	#627	C	27-60	7.8	0.64	25	1.1	0.1	4.3	5.7	78	10	12	SL	2.2	0.02	0.62	21	20.6	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04607	Shiprock	#628	Btn	5-21	8.2	2.48	33	1.9	0.38	25	23.0	72	11	17	SL	3.5	0.03	0.94	38	37.4	.	.	.	.	.	0.4	<0.15	<0.015
0398S04608	Shiprock	#628	C	21-39	8.0	7.76	34	16	2.7	70	23.0	70	14	16	SL	3.5	0.08	2.50	37	34.4	.	.	.	.	.	0.4	0.25	<0.015
0398S04625	Shiprock	#673	2Btb	37-60	7.5	1.75	34	8.2	1.1	8.7	4.0	56	18	26	SCL	2.7	0.03	0.94	28	26.8	.	.	.	.	.	0.2	0.25	<0.015
0398S04631	Shiprock	#683	Btkn	0-8	8.1	1.73	24	1.6	0.28	17	17.0	80	6	14	SL	4.7	0.03	0.94	48	46.8	.	.	.	.	.	0.3	0.35	<0.015
0398S04632	Shiprock	#683	C1	8-21	7.9	9.49	26	20	1.6	90	28.0	86	4	10	LS	4.0	0.34	11.00	40	29.5	.	.	.	.	.	0.8	0.35	<0.015
0398S04634	Shiprock	#688	Btb	15-30	8.5	1.25	32	0.93	0.29	12	15.0	82	5	13	SL	3.8	0.01	0.31	35	34.3	.	.	.	.	.	0.4	0.25	<0.015
0398S04635	Shiprock	#689	Bw	0-14	7.8	0.47	24	1.4	0.26	2.9	3.1	90	2	8	S	0.9	0.01	0.31	7	7.0	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04636	Shiprock	#689	Btknb	14-34	8.0	8.25	29	13	3.4	81	28.0	84	2	14	SL	2.1	0.09	2.80	18	14.9	.	.	.	.	.	0.4	<0.15	<0.015
0398S04637	Shiprock	#689	C	34-60	8.6	5.07	31	2.4	1.1	46	35.0	90	2	8	S	0.9	0.04	1.30	6	5.1	.	.	.	.	.	0.6	<0.15	0.040
0398S04704	Shiprock	#709	Btn	5-17	8.1	4.60	33	4.2	0.94	40	25.0	88	4	8	LS	1.5	0.03	0.94	13	12.4	.	.	.	.	.	0.4	<0.15	<0.015
0398S04705	Shiprock	#709	2Cky	17-60	8.4	12.80	31	19	12	120	31.0	87	3	10	LS	1.5	0.39	12.00	13	1.1	.	.	.	.	.	1.8	<0.15	<0.015
0398S00971	Shiprock	#298	2Btk	11-22	7.8	6.09	28	0.97	0.21	5.8	7.6	73	11	16	SL	12	0.01	0.31	96	95.8	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00972	Shiprock	#298	2Bk	22-45	7.9	1.96	30	0.73	0.08	19	30	80	5	15	SL	4.6	0.01	0.31	33	32.3	.	.	.	.	.	<0.50	<0.15	<0.015
0398S00973	Shiprock	#298	2Ck	45-60	7.9	2.03	42	1.0	0.27	22	27	60	20	20	SCL	6.2	0.02	0.62	49	48.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04709	Shiprock	#718	2Btk1	9-23	8.3	1.32	25	0.97	0.13	14	19.0	89	3	8	LS	2.9	0.01	0.31	26	25.3	.	.	.	.	.	0.3	0.25	<0.015
0398S04710	Shiprock	#718	3Cky	23-41	8.3	14.20	36	18	4.9	150	43.0	89	3	8	LS	2.9	0.17	5.30	24	19.0	.	.	.	.	.	2.8	<0.15	<0.015
S-1513	Shiprock	226B	A	0-5	7.5	0.52	23	2.34	0.41	1.75	1.5	85	3	13	LS	1.1	0.03	0.84	11	9.7	.	.	.	.	.	0.6	<0.15	<0.015
S-1514	Shiprock	226B	Bw	5-14	6.9	0.30	28	1.19	0.21	1.18	1.4	83	3	15	SL	1.4	0.03	0.78	14	13.6	.	.	.	.	.	0.7	<0.15	<0.015
S-1515	Shiprock	226B	Btb1	14-29	7.4	0.49	25	0.70	0.18	3.91	5.9	68	10	23	SCL	2.4	0.02	0.67	24	23.3	.	.	.	.	.	0.9	<0.15	<0.015
S-1516	Shiprock	226B	Btb2	29-56	7.2	2.41	40	5.09	1.97	16.4	8.8	55	10	35	SCL/SC	2.2	0.04	1.11	22	21.0	.	.	.	.	.	1.4	0.30	0.018
S-1517	Shiprock	226B	C	56-60	7.3	2.50	30	5.69	2.34	16.5	8.2	78	5	18	SL	3.0	0.03	0.96	30	28.8	.	.	.	.	.	0.8	<0.15	0.020
S-1624	Shiprock	298B	AB	0-11	8.2	0.47	26	2.83	0.53	0.99	0.8	76	11	13	SL	1.7	0.03	1.08	17	16.2	.	.	.	.	.	0.6	<0.15	<0.015
S-1625	Shiprock	298B	Btk	11-24	8.2	0.46	28	1.91	0.66	2.03	1.8	73	8	20	SL/SCL	6.5	0.03	1.07	65	64.3	.	.	.	.	.	0.7	<0.15	<0.015
S-1626	Shiprock	298B	C	24-54	8.1	1.47	30	4.22	2.62	8.44	4.6	81	6	13	SL	4.0	0.04	1.26	40	39.1	.	.	.	.	.	0.8	<0.15	<0.015
S-1504	Shiprock	231B	A	0-3	7.2	0.39	30	2.44	0.37	0.71	0.6	68	18	15	SL	3.8	0.04	1.29	38	36.3	.	.	.	.	.	1.1	<0.15	<0.015
S-1505	Shiprock	231B	Bt	3-16	7.5	0.38	30	0.82	0.12	2.84	4.1	76	9	15	SL	4.5	0.03	0.92	45	43.9	.	.	.	.	.	1.5	<0.15	<0.015
S-1506	Shiprock	231B	Ck	16-30	7.1	5.29	30	19.9	6.62	32.3	8.9	73	13	15	SL	6.1	0.16	5.05	61	56.0	.	.	.	.	.	2.6	<0.15	<0.015
S-1627	Sogzie	291B	A	0-6	8.1	0.26	31	1.44	0.26	0.62	0.7	86	4	10	LS	0.6	0.03	0.90	6	4.9	.	.	.	.	.	<0.50	<0.15	<0.015
S-1628	Sogzie	291B	Btk1	6-17	8.1	0.39	27	2.64	0.47	0.89	0.7	75	10	15	SL	8.6	0.05	1.68	86	84.8	.	.	.	.	.	0.7	0.28	<0.015
S-1609	Sogzie	291B	Btk2	17-29	8.4	0.47	33	1.30	0.38	3.28	3.6	35	44	21	L	5.0	0.06	1.73	50	48.2	.	.	.	.	.	1.0	0.25	<0.015
S-1610	Sogzie	291B	Ck	29-50	8.1	3.79	44	20.0	7.18	20.1	5.4	21	71	8	SiL	33.3	0.75	23.42	333	309.1	.	.	.	.	.	1.9	0.38	<0.015
S-1610R	Sogzie	291B	Ck	29-50	8.1	3.77	45	19.3	6.93	19.4	5.3	23	73	5	SiL	33.6	0.73	22.71	336	313.7	.	.	.	.	.	1.7	<0.15	<0.015
S-1507	Sogzie	235B	A	0-5	7.2	0.48	24	2.50	0.42	1.34	1.1	80	13	8	LS	2.8	0.03	0.82	28	26.9	.	.	.	.	.	0.9	<0.15	<0.015

Table 14.2-2 Baseline Soil Survey Laboratory Analysis Results

Lab ID	Soil series	Sample site	Soil horizon	Sample depth	pH s.u.	EC mmhos/cm	Saturation %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %	Texture USDA	$CaCO_3$ %	Sulfur total %	AB total S t/kt	NP t/kt	ABP total S t/kt	SO4 %	Organic sulfur %	Pyritic sulfur %	AB pry. S t/kt	ABP pry. S t/kt	Boron sol. mg/kg	Se total mg/kg	Se sol. mg/kg
S-1508	Sogzie	235B	Bw	5-12	7.0	0.38	28	1.81	0.26	1.41	1.4	78	11	11	SL	7.9	0.03	0.78	79	78.0	.	.	.	.	.	1.0	<0.15	<0.015
S-1489	Sogzie	235B	Bt	12-23	7.3	0.32	32	1.20	0.21	1.77	2.1	73	15	13	SL	17.2	0.02	0.74	172	171.7	.	.	.	.	.	<0.50	<0.15	<0.015
S-1490	Sogzie	235B	Btk	23-36	7.3	0.81	27	1.12	0.22	6.39	7.8	59	25	16	SL	29.1	0.04	1.19	291	290.3	.	.	.	.	.	0.9	<0.15	<0.015
S-1490R	Sogzie	235B	Btk	23-36	7.4	0.79	30	1.08	0.22	6.35	7.9	59	24	18	SL	27.6	0.04	1.21	276	274.9	.	.	.	.	.	0.9	<0.15	<0.015
S-1491	Sogzie	235B	C	36-52	7.2	3.79	27	22.6	5.81	18.0	4.8	83	8	10	LS	1.9	0.08	2.44	19	16.8	.	.	.	.	.	1.5	<0.15	<0.015
0398S04520	Stumble	#625	A	0-5	7.4	0.40	21	2.4	0.2	0.95	0.8	88	5	7	LS	1.6	0.01	0.31	15	14.7	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04521	Stumble	#625	C	5-28	7.5	0.32	25	1.8	0.15	0.8	0.8	94	0	6	S	1.6	0.01	0.31	14	13.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04522	Stumble	#625	2Ck	28-60	7.7	2.71	24	8.6	2.2	22	9.3	90	4	6	S	2.1	0.04	1.30	20	19.0	.	.	.	.	.	0.2	<0.15	<0.015
0398S04618	Stumble	#666	Bw	0-14	7.4	0.45	23	2.9	0.35	0.63	0.5	86	4	10	LS	2.0	0.01	0.31	16	15.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04619	Stumble	#666	2Ck	14-30	7.5	0.38	24	1.8	0.31	1.5	1.4	88	2	10	LS	5.2	0.02	0.62	53	52.1	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04620	Stumble	#666	2C	30-60	8.2	1.08	28	0.66	0.21	8.8	13.0	88	2	10	LS	1.9	0.01	0.31	17	16.2	.	.	.	.	.	0.2	<0.15	<0.015
0398S04641	Stumble	#697	A	0-6	7.8	0.49	27	3.5	0.52	0.97	0.7	92	2	6	S	1.0	0.01	0.31	9	8.2	.	.	.	.	.	<0.50	<0.15	<0.015
0398S04642	Stumble	#697	C1	6-32	7.9	0.38	28	1.7	0.28	1.7	1.7	95	0	5	S	0.9	0.01	0.31	8	7.3	.	.	.	.	.	0.2	<0.15	<0.015
0398S04643	Stumble	#697	C2	32-49	8.4	1.92	28	1.2	0.56	16	17.0	94	1	5	S	0.9	0.01	0.31	8	7.3	.	.	.	.	.	0.7	<0.15	<0.015
0398S04644	Stumble	#697	2C	49-60	8.5	8.56	35	8.6	3.9	83	33.0	80	6	14	SL	2.0	0.09	2.80	17	14.4	.	.	.	.	.	2.7	<0.15	<0.015
0398S00664	Tsaya	#156	A	0-3	7.4	0.33	30	2.35	0.36	0.78	1.0	41	26	33	CL	8.0	0.02	0.62	94	93.5	.	.	.	.	.	<0.50	0.40	<0.015
0398S00665	Tsaya	#156	Ck	3-8	7.3	0.49	30	3.11	0.34	1.39	1.0	38	34	28	CL	20.0	0.01	0.31	207	206.8	.	.	.	.	.	<0.50	0.70	<0.015
0398S01469	Tsaya	DH-C	AC	0-10	7.4	1.38	28	8.2	1.5	5.4	2.0	54	27	19	SL	17.0	0.01	0.31	158	157.5	.	.	.	.	.	<0.50	<0.15	<0.015
0398S01478	Tsaya	DH-I	AC	0-7	8.1	1.77	31	2.4	0.7	18	14.0	31	41	28	CL	16.0	0.01	0.31	155	155.1	.	.	.	.	.	<0.50	<0.15	<0.015

Table 14-3: OSMRE[1] Topsoil and Topsoil Substitute Suitability Criteria for the Southwestern United States

Parameter	Material quality		
	Good	Marginal	Unsuitable
pH	6.0-8.4	5.5-6.0	<5.5
EC [2] (mmhos/cm)	< 4.0	4.0-12.0	>12.0
SAR [2,3]			
sl and coarser	<12.0	12.0-18.0	>18.0
l and cl	<10.0	10.0-16.0	>16.0
40% clay	<8.0	8.0-14.0	>14.0
Texture [4]	ls, sl, l, sil, with 35% c	s, lcs, cl, sicl, with 45% c	>45% c
Saturation %	25-80	25-80	<25 or >80
CaCO3 %	0-15	15-30	> 30
Coarse fragments [5]			
< 3 inch %	15	15-35	35
> 3 inch %	3	3-10	10
Erosion factor [6]	<0.37	<0.37	
Acid-base potential	+5 T CaCo3 Equiv./1000T	+0 T CaCo3 Equiv./1000T	< -5 T CaCo3 Equiv./1000T
Boron	5 ppm	5 ppm	>5 ppm
Selenium (total)		≤0.8 ppm	>0.8 ppm
Selenium (extractable)		≤0.15 ppm	>0.15 ppm

[1] OSMRE (1999) suitability criteria may be modified on a case-by-case basis if sufficient data are submitted to support the modifications and the submitted data technically represent the site-specific nature of the modification

[2] When EC is less than 2.0, then SARs cannot be >18.

[3] SAR values can be modified if adequate data is submitted to support proposed modification(s).

[4] ls=loamy sand; lcs=loamy coarse sand; sl=sandy loam; l=loam; sil=silt loam; scl=sandy clay loam; s=sand; cl=clay loam; sicl=silty clay loam; cl=clay.

[5] For topsoil substitutes/supplements, percentage can be increased if it is shown that the higher percentage will increase slope stability and/or vegetation establishment. Suitability will be determined on a site-specific basis.

[6] For each material proposed to reclaim slopes ≥ 25% (4h:1v), a K factor must be determined from the results of appropriate physical and chemical analyses, as outlined in the National Soils Handbook (Soil Conservation Service 1983). Material suitability will be determined using the Revised Universal Soil Loss Equation (ARS 1990).

Table 14-4: Soil Mapping Units and Map Symbols

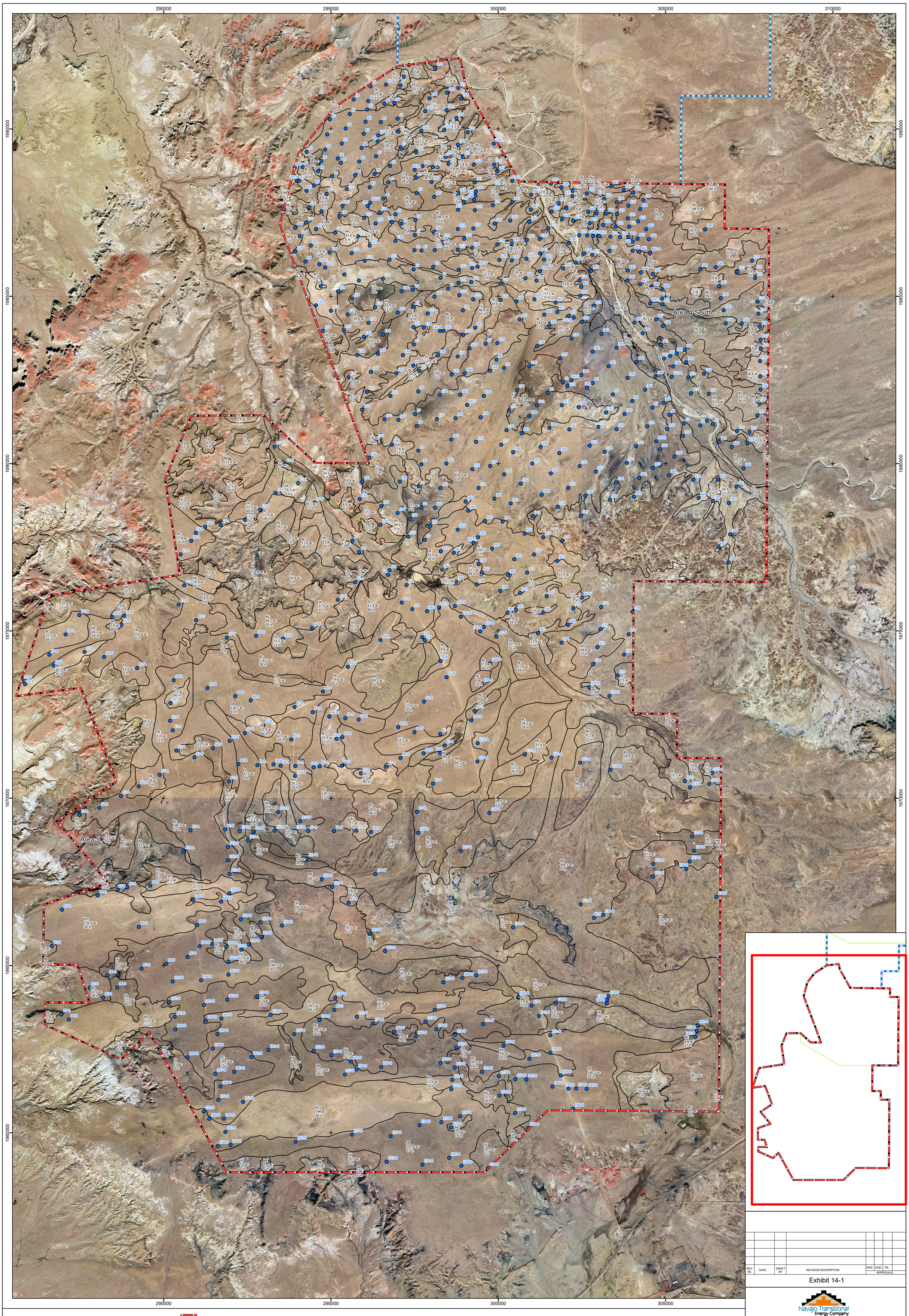
Soil mapping unit symbol	Soil mapping unit name
BA	Badlands
Bb	Beebe loamy sand, 0 to 3% slopes
Bc	Bacobi sandy loam, 0 to 15% slopes
Bl	Blancot sandy clay loam, 0 to 5% slopes
Bn	Benally sandy clay loam, 0 to 3% slopes
Dk	Doak sandy loam, 0 to 5% slopes
Fa	Farb sandy loam, 0 to 15% slopes
Fr	Fruitland sandy loam, 0 to 15% slopes
Fv	Fruitvale-Doak sandy loams, 0 to 5% slopes
Gr	Grieta sandy loam, 0 to 8% slopes
Hf	Huerfano clay loam, 0 to 8% slopes
Hk	Hoskay clay loam, 0 to 3% slopes
Jc	Jocity sandy loam, 0 to 3% slopes
Jf	Jocity-Fruitland sandy loams, 0 to 3% slopes
Jg	Jocity-Gilco complex, 0 to 3% slopes
Mc	Monierco sandy loam, 0 to 15% slopes
MF	Muff and Fajada soils, 0 to 3% slopes
Mq	Mayqueen loamy sand, 0 to 8% slopes
Pc	Patel-Chipeta clays, 0 to 10% slopes
PF	Persayo, Farb, and Rock outcrop soils, 0 to 50% slopes
Ph	Patel-Huerfano complex, 0 to 10% slopes
Po	Patel sandy loam, 0 to 5% slopes,
Ps	Persayo clay loam, 0 to 15% slopes
Pt	Patel clay, 0 to 3% slopes
Rm	Razito loamy sand, moderately deep, 0 to 5% slopes
RO	Rock outcrop
Rz	Razito loamy sand, 0 to 8% slopes
SB	Shiprock, Bacobi and Mayqueen sandy loams, 0 to 5% slopes
Sd	Shiprock sandy loam, very hard, 0 to 8% slopes
Sh	Shiprock sandy loam, 0 to 8% slopes
St	Stumble loamy fine sand, 0 to 15% slopes
Ts	Tsaya loam, 0 to 15% slopes

Table 14-5: Area, Percent of Survey Area, and Volume of Topdressing Material Available from Each Soil Mapping Unit in the No Name Permit Area

Soil Mapping Unit	Area (ac)	Percent of Permit Area	Topdressing Volume (bcy)
Bacobi sandy loam, 0 to 15 % slopes	697	6.1%	2,406,372.21
Badlands	1,418	12.3%	0.00
Beebe loamy sand, 0 to 3 % slopes	163	1.4%	1,182,270.14
Benally sandy clay loam, 0 to 3 % slopes	550	4.8%	142,199.31
Blancot sandy clay loam, 0 to 5 % slopes	92	0.8%	645,143.20
Doak sandy loam, 0 to 5 % slopes	138	1.2%	958,853.29
Farb sandy loam, 0 to 15 % slopes	596	5.2%	199,469.18
Fruitland sandy loam, 0 to 15 % slopes	49	0.4%	246,267.62
Fruitvale-Doak sandy loams, 0 to 5 % slopes	48	0.4%	289,132.19
Grieta sandy loam, 0 to 8 % slopes	69	0.6%	311,294.43
Hoskay clay loam, 0 to 3 % slopes	129	1.1%	0.00
Huerfano clay loam, 0 to 8 % slopes	1,083	9.4%	42,830.68
Jocity sandy loam, 0 to 3 % slopes	33	0.3%	3,255.19
Jocity-Fruitland sandy loams, 0 to 3 % slopes	137	1.2%	693,832.18
Jocity-Gilco complex, 0 to 3 % slopes	235	2.0%	1,739,733.09
Mayqueen loamy sand, 0 to 8 % slopes	7	0.1%	44,089.57
Monierco sandy loam, 0 to 15 % slopes	899	7.8%	1,893,225.46
Muff and Fajada soils, 0 to 3 % slopes	755	6.5%	27,342.96
Patel clay, 0 to 3 % slopes	50	0.4%	0.00
Patel sandy loam, 0 to 5 % slopes	11	0.1%	19,715.06
Patel-Chipeta clays, 0 to 10 % slopes	321	2.8%	15,480.97
Patel-Huerfano complex, 0 to 10 % slopes	915	7.9%	35,774.95
Persayo clay loam, 0 to 15 % slopes	370	3.2%	3,865.16
Persayo, Farb, and Rock Outcrop complex, 0 to 50 % slopes	55	0.5%	0.00
Razito loamy sand, 0 to 8 % slopes	546	4.7%	3,818,351.74
Razito loamy sand, moderately deep, 0 to 5 %	436	3.8%	1,547,804.75
Rock Outcrop	1	0.01%	0.00
Shiprock sandy loam, 0 to 8 % slopes	151	1.3%	1,070,978.15
Shiprock sandy loam, very hard, 0 to 8 % slopes	64	0.6%	146,016.82
Shiprock, Bacobi and Mayqueen sandy loam, 0 to 5 % slopes	1,345	11.7%	6,667,018.24
Stumble loamy fine sand, 0 to 15 % slopes	96	0.8%	679,954.35
Tsaya loam, 0 to 15 % slopes	65	0.6%	0.00
TOTAL	**11,526**	**100.00%**	**24,830,271**

Table 14-6: Estimated Volume of Topdressing Available for Reclamation within the No Name Permit Area

Permit Area	Acres	Topdressing Volume (bcy)	Estimated Handling Loss (10%)	Estimated Volume for reclamation (bcy)	Estimated replacement depth (in)
No Name	11,526	24,830,271	2,483,027	22,347,244	14.4



Coordinate System:
NAD 1927 StatePlane New Mexico West FIPS 3003 Feet
Datum: North American 1927
Units US Feet

N

0 500 1,000 2,000 3,000 Feet
1:14,400
1 inch equals 1,200 feet

- No Name Permit Boundary
- Resource Areas
- NTEC Lease Boundary
- Soil Mapping Unit
- Soil Survey Location

Soil Mapping Unit Labels
Mc - Soil mapping unit
2.9 ac - Acreage of mapped polygon
12 in - Average depth of topdressing

REV. No.	DATE	DRAFT BY	REVISION DESCRIPTION	ENG.	EQD.	PE.
				APPROVALS		

Exhibit 14-1

Navajo Transitional Energy Company

No Name Permit Application Package

Baseline Soil Survey

PREPARED BY: RFB	DRAWN BY: RFB	PAPER SIZE: ARCH D
APPROVED BY: JJ	DATE: 06/26/2025	

Appendix 14-B

Analysis of Navajo Mine Extension Project Soil Survey Data
for No Name Mine Topdressing Replacement Volume Estimate

INTRODUCTION

Buchanan Consultants, Ltd. conducted Order 2 soil surveys in 1998 and 2008 for the areas formerly known as Area 4 South and Area 5 of the NTEC coal lease. Combined, these soil surveys describe soil resources in the No Name Mine permit area and approximately 1,073 acres of the southern portion of the adjacent Pinabete Mine permit area. The detailed soil survey report (Buchanan Consultants, Ltd. 2008) is provided in Appendix 14-A.

In 2025, the soil survey data presented in Appendix 14-A were analyzed to determine the extent and proportion of soils, locations, and estimated volume of available topdressing within the No Name Mine permit area. The methods and results of this analysis are presented herein.

METHODOLOGY

In order to estimate the volume of available topdressing within the No Name Mine, the soil map unit delineations described in the soil survey report (Appendix 14-A) were isolated using ArcGIS to determine the spatial extent of the map unit delineations that fall within the proposed No Name Mine permit boundary (Exhibit 14-1).

Topdressing availability was calculated for each map unit delineation as a volume estimated from the product of mean depth (feet) of suitable material and area (square feet) of the delineation. The summed volumes of each map unit delineation provide the total estimated volume of available topdressing within the proposed No Name Mine permit boundary.

RESULTS

The No Name Mine map unit acreages, proportion of soils, and estimated topdressing volume are presented in Table 14B-1. The soil series, depth of topdressing, depth to bedrock, and coordinates per survey site are presented in Table 14B-2. The depths of topdressing per map unit delineation are presented in Appendix 14-A.

Mapping Unit Descriptions for the No Name Mine

BA - Badlands. This miscellaneous area consists of barren shale uplands that are dissected by intermittent drainages and gullies. Also included are very steep to nearly vertical rock outcrops of sandstone and shale. This unit is mostly void of vegetation except some atriplex species and annuals that occur on micro-sites with eolian and alluvial accumulations. The slopes range from 0 to 100 percent. Included in this unit are small areas of Huerfano, Chipeta, and Patel soils. Badlands are unstable, and most disturbances cause severe water erosion and a high soil blowing hazard. This unit has no usable topdressing material and occupies 1,418 acres or 12.3 percent of the survey area.

Bb - Beebe, loamy sand, 0 to 3 percent slopes. This map unit occurs on flood plains and channel bottoms. These soils have formed from either alluvium or eolian derived primarily from sandstone. Slopes are level to nearly level. Soils in this unit are highly susceptible to frequent flooding. The vegetation is mainly alkali sacaton, galleta, black greasewood, and rabbitbrush. This unit is over 80 percent Beebe and less than 20 percent inclusions. Included in this unit are small areas of Fruitland soils intermingled with Gilco, Jocity, and, to a lesser extent, Huerfano soils. The depth of suitable topdressing ranges from 0 to 60 inches. This unit occupies 163 acres or 1.4 percent of the survey area.

Bc - Bacobi sandy loam, 0 to 15 percent slopes. This map unit is on mesas and plateaus. Slopes are nearly level to moderately steep. Soils have formed from alluvium and eolian materials derived predominantly from sandstone and shale. The native vegetation is mainly galleta, alkali sacaton, shadscale, and broom snakeweed. This unit is about 75 percent Bacobi, 15 percent Monierco, and 10 percent inclusions from adjacent mapping units. Included in this unit are small areas of Shiprock, Doak, Grieta, and Razito moderately deep soils. The Bacobi soils in this unit are moderately deep and generally provide from 10 to 40 inches of topdressing material. This unit occupies 697 acres or 6.1 percent of the survey area.

Bl - Blancot sandy clay loam, 0 to 5 percent slopes. This map unit is on fans, valleys, terraces and mesas. Soils have formed in alluvium derived predominantly from sandstone and shale. This unit is 75 to 90 percent Blancot, sandy clay loam, and Blancot, sandy loam. Blancot soils are on fans and in upland valleys and occur with inclusions on terraces and mesas. Included in this unit are areas of Doak sandy loam (5 percent) and small areas of Shiprock, Grieta, and deep Natrargids. These additional included areas individually make up less than 15 percent of the total acreage. The Blancot soils in this unit are deep and generally provide from 36 to 60 inches of topdressing material. These soils represent some of the most suitable topdressing resources in the survey area. This unit occupies 92 acres or 0.8 percent of the survey area.

Bn - Benally sandy clay loam, 0 to 3 percent slopes. This unit occurs on mesas and plateaus in the concave to level areas between sand ridges or on the nearly level areas of valley floors. These soils have formed in either mixed alluvium or residuum derived primarily from carbonaceous shale. The native vegetation is primarily atriplex species and annuals with alkali sacaton occurring in micro-sites occupied with eolian accumulations of sand. Most delineations either lack vegetation or are sparsely vegetated. This unit is about 75 percent Benally, 0 to 3 percent slopes with 10 percent Uffens, Fajada, and similar soils. The remaining area consists of inclusions of Muff, Patel, and Persayo soils. The depth of suitable topdressing generally ranges from 0 to 30 inches, but typically is 0 inches. This unit occupies 550 acres or 4.8 percent of the survey area.

Dk - Doak sandy loam, 0 to 5 percent slopes. This map unit occurs on mesas and terraces as deep, well developed soils. Slopes are nearly level to gently sloping. These soils are similar to the Shiprock soils but have fine loamy particle size control sections. Doak soils were formed from alluvial and eolian sediments. The vegetation is mainly galleta, alkali sacaton, broom snakeweed, and atriplex species. This unit is about 80 percent Doak, 10 percent Shiprock and similar soils, and 10 percent Blancot and similar soils. The depth of suitable topdressing generally ranges from 27 to 60 inches and is controlled by depth to bedrock or highly contrasting substrata. These soils represent some of the most suitable topdressing resources in the survey area. This unit occupies 138 acres or 1.2 percent of the survey area.

Fa - Farb sandy loam, 0 to 15 percent slopes. These shallow, nearly level to moderately steep soils are located on mesas, hills, ridges, and breaks. These soils are formed in residuum, colluvium, and alluvium derived from sandstone or shale. The current vegetation is mostly galleta, alkali sacaton, sand dropseed, broom snakeweed, and atriplex species. This unit is about 80 percent Farb and similar soils, 5 percent Huerfano and similar soils, and 5 percent Rock Outcrop. The depth of suitable topdressing generally ranges from 0 to 20 inches. This unit occupies 596 acres or 5.2 percent of the survey area.

Fr - Fruitland sandy loam, 0 to 15 percent slopes. This unit occurs on upland fans and on terraces. These soils are deep and well drained. They have formed in eolian and alluvial sediments derived predominantly from sandstone. The vegetation is largely alkali sacaton, sand dropseed, black greasewood, and atriplex species. This unit is about 75 percent Fruitland soils and 15 percent Shiprock, Sogzie, and similar soils. The remaining soils include Beebe, Benally, and other soils of minor extent. The depth of suitable topdressing ranges from 0 to 60 inches and is restricted by depth to bedrock or highly contrasting and limiting substrata. This unit occupies 49 acres or 0.4 percent of the survey area.

Fv - Fruitvale-Doak sandy loams, 0 to 5 percent slopes. This complex of soils is on mesas and upland valleys with undulating slopes. These deep soils formed predominately in alluvium derived from mixed sources. The vegetation is mainly alkali sacaton, galleta, and atriplex species. This unit is nearly 60 percent Fruitvale and similar soils, 30 percent Doak, and 10 percent Huerfano and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 24 to 44 inches and is restricted by depth to bedrock or sodium affected substrata. This unit occupies 48 acres or 0.4 percent of the survey area.

Gr - Grieta sandy loam, 0 to 8 percent slopes. This map unit is found on older stable landscapes where the soils have a well developed calcic layer and occur on mesas and plateaus. Slopes are level to moderately sloping. Soils have developed from both eolian alluvium derived from sandstone and shale. Vegetation is primarily galleta, alkali sacaton, and shadscale. Grieta soils occupy about 75 percent of the unit. Inclusions are Doak, Sogzie and soils from adjoining map units, Bacobi, Shiprock, and Monierco. The depth of suitable topdressing generally ranges from 10 to 60 inches. This unit occupies 69 acres or 0.6 percent of the survey area.

Hf - Huerfano clay loam, 0 to 8 percent slopes. These shallow, well drained, sodium affected soils are on mesas and alluvial plains. Slopes are level to gently sloping. These soils have formed in alluvium and residuum derived from carbonaceous shale and siltstones. The current vegetation includes atriplex species and alkali sacaton; however, perennial vegetation is absent in most areas of this unit. This unit is about 80 percent Huerfano soils, 10 percent Benally and similar soils, and 10 percent Patel and similar soils. The depth of suitable topdressing in this unit ranges from 0 to 20 inches but is typically 0 inches. Sodium absorption ratio and clay content severely restrict the use of soils in this unit for topdressing. This unit occupies 1,083 acres or 9.4 percent of the survey area.

Hk - Hoskay clay loam, 0 to 3 percent slopes. This unit occurs on mesas and or on the nearly level areas of valley floors. These soils have formed in either mixed alluvium or residuum derived primarily from carbonaceous shale. The native vegetation is primarily atriplex species and annuals with alkali sacaton occurring in micro-sites occupied with eolian accumulations of sand. Most delineations either lack vegetation or are sparsely vegetated. This unit is about 75 percent Hoskay, 0 to 3 percent slopes with 10 percent Fajada, Benally, and similar soils. The depth to suitable topdressing in this unit is severely limited by the occurrence of sodium affected, clayey parent materials. The depth of suitable topdressing is generally 0 inches. This unit occupies 129 acres or 1.1 percent of the survey area.

Jc - Jocity sandy loam, 0 to 3 percent slopes. This map unit is on flood plains and alluvial fans. These soils are primarily formed in alluvium from mixed sources. The vegetation is mainly galleta, alkali sacaton, black greasewood, and atriplex species. This unit is about 75 percent Jocity and 5 percent Fruitland, Gilco, and similar soils. The remaining soils are inclusions from adjacent map units. The available topdressing from this unit is controlled by depth to sodium affected, skeletal textured substrata, and occasionally depth to bedrock and ranges from 0 to 60 inches of suitable material. The map unit occupies a total of 33 acres or 0.3 percent of the survey area.

Jf - Jocity-Fruitland sandy loams, 0 to 3 percent slopes. This map unit is on flood plains and streams terraces on level to nearly level slopes. It is also associated with coppice dune areas located along ephemeral stream banks dominated by shrubs. This unit is susceptible to occasional flooding. The native vegetation is mainly alkali sacaton, galleta, black greasewood, and atriplex species. This unit is about 60 percent Jocity soils and 30 percent Fruitland sandy loam soils. The remaining areas of this unit are inclusions of Razito moderately deep soils intermingled with Beebe soils. The depth of topdressing ranges from 0 to 60 inches for these soils and is restricted by depth to sodium affected substrata or to bedrock. This unit occupies 137 acres or 1.2 percent of the survey area.

Jg - Jocity-Gilco complex, 0 to 3 percent slopes. This unit is found as deep alluvial deposits on flood plains. The soils range in texture from sandy to clay loam and are formed from recent alluvium along drainages. These are some of the youngest soils in the survey area. This unit is nearly 45 percent Gilco soils, 40 percent Jocity soils, and 15 percent Blancot, Fruitland, and similar soils. Jocity soils average more than 18 percent clay in the control section and Gilco averages less than 18 percent clay. The components of this map unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included soils consist mainly of Fruitland, Stumble, and Blancot, each generally averaging less than 5 percent of a delineation. When the soils are not sodium affected, they provide a suitable source of topdressing. The depth of topdressing ranges from 0 to 60 inches for these soils. This unit occupies 235 acres or 2.0 percent of the survey area.

Mc - Monierco sandy loam, 0 to 15 percent slopes. These shallow well drained soils are on mesas, ridges, and plateaus. They formed in alluvial and eolian materials overlying sedimentary rock on nearly level to moderately steep slopes. The current vegetation is mainly galleta, alkali sacaton, and shadscale. This unit is nearly 75 percent Monierco soils, 15 percent Bacobi soils, and 5 percent Persayo and similar soils. The remaining soils are inclusions from adjacent map units. The depth of suitable topdressing generally ranges from 0 to 20 inches and is controlled by depth to bedrock. This unit occupies 899 acres or 7.8 percent of the survey area.

MF - Muff and Fajada soils, 0 to 3 percent slopes. This undifferentiated unit is on eroded, nearly level areas of mesas and alluvial plains. These soils formed in residuum and alluvial derived primarily from carbonaceous shale. The vegetation is atriplex species and annuals with alkali sacaton occurring in areas with slight eolian accumulations of sand. This unit is sparsely vegetated. This unit is about 45 percent Muff and about 35 percent Fajada soils with less than 15 percent Monierco and similar soils. Inclusions are primarily Benally and similar soils. The components of this map unit are either intricately intermingled or not present in every delineation, thus it is impractical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 0 to10 inches, but typically is 0 inches. Topdressing availability is severely restricted by the occurrence of sodium affected, clayey substrata. This unit occupies 755 acres or 6.5 percent of the survey area.

Mq - Mayqueen loamy sand, 0 to 8 percent slopes. These deep and very deep soils are on stabilized dunes on mesas and valleys. This map unit is primarily formed from stabilized eolian material derived primarily from sandstone. The vegetation is mainly galleta, sand dropseed, alkali sacaton, and atriplex species. The Mayqueen soils occupy over 80 percent of the unit. The major included soils are Razito, Shiprock, and Sogzie, approximately 5 percent each. The depth of suitable topdressing generally ranges from 20 to 60 inches and is controlled by depth to bedrock and highly contrasting, limiting subsurface horizons. This unit occupies 7 acres or 0.1 percent of the survey area.

Pc - Patel-Chipeta clays, 0 to 10 percent slopes. These shallow and moderately deep, clayey, sodium affected soils area on severely eroded, nearly level to strongly sloping, areas of mesas. These soils formed in alluvium and residuum derived from carbonaceous shale. The vegetation is atriplex species, alkali sacaton, and annuals; however, the area generally lacks vegetation. This unit is nearly 50 percent Patel clay soils with 35 percent Chipeta clay soils. Inclusions are Huerfano and similar soils, and miscellaneous areas of Rock Outcrop and Badlands. The major components of this map unit are so intricately intermingled it was not practical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 0 to 20 inches, but typically is 0 inches. This unit occupies 321 acres or 2.8 percent of the survey area.

PF - Persayo, Farb, and Rock Outcrop soils, 0 to 50 percent slopes. This undifferentiated map unit is on hills, ridges, and mesas. Slopes range from nearly level to very steep. These soils formed in residuum derived mainly from sandstone and shale. The vegetation is primarily galleta, alkali sacaton, and atriplex species. This unit is about 45 percent Persayo and similar soils, 35 percent Farb and similar soils, and 20 percent Rock Outcrop and Badlands. The components of this map unit are so intricately intermingled it was not practical to map them separately at the scale used. Salvageable topdressing depth in this unit

ranges from 0 to 20 inches. Topdressing availability is severely limited because of complex, steep slopes and depth to bedrock. This unit occupies 55 acres or 0.5 percent of the survey area.

Ph - Patel-Huerfano complex, 0 to 10 percent slopes. These shallow, sodium affected soils are on severely eroded, nearly level to strongly sloping areas of mesas and alluvial plains. These soils formed in alluvium and residuum derived primarily from carbonaceous shale. The vegetation is atriplex species, alkali sacaton, and annuals; however, this unit mostly lacks perennial vegetation. This unit is nearly 60 percent Patel clay, 25 percent Huerfano and similar soils, 10 percent Benally and similar soils, and 5 percent miscellaneous areas. The major components of this map unit are so intricately intermingled, it was not practical to map them separately at the scale used. The depth of suitable topdressing in this unit ranges from 0 to 20 inches. However, the occurrence of clayey, sodium affected strata severely restricts availability of topdressing from this unit. This unit does not contain suitable topdressing resources and occupies 915 acres or 7.9 percent of the survey area.

Po - Patel sandy loam, 0 to 5 percent slopes. This map unit is on gently sloping areas of flood plains and alluvial fans. The sandy loam surface is recent sandy alluvium deposited over Patel and similar soils. These soils formed primarily in alluvium derived from mixed sources. The vegetation is mostly alkali sacaton, galleta, atriplex species, and annuals. These soils are found in limited extent throughout the survey area. This unit is nearly 80 percent Patel sandy loam soils. Persayo and similar soils account for more than 10 percent of the inclusions. The remaining inclusions are soils from adjacent map units. The depth of suitable topdressing in this unit generally ranges from 0 to 12 inches. The depth of suitable topdressing is controlled by depth of the sandy alluvium and sodium affected substrata. This unit does not contain suitable topdressing resources and occupies 11 acres or 0.1 percent of the survey area.

Ps - Persayo clay loam, 0 to 15 percent slopes. This map unit is on mesas, hills, and ridges. Slopes cover a wide range of classes from level to strongly sloping. These shallow, well drained soils formed in residuum and alluvium derived from carbonaceous shale, siltstone, and sandstone. Vegetation is mainly alkali sacaton, galleta, and atriplex species. This unit is about 75 percent Persayo, 15 percent Huerfano and similar soils, and 10 percent Patel and similar soils. The depth of topdressing in this unit ranges from 0 to 20 inches and is controlled by depth to bedrock and sodium affected strata. This unit occupies 370 acres or 3.2 percent of the survey area.

Pt - Patel clay, 0 to 3 percent slopes. These moderately deep, clayey, sodium affected soils are on severely eroded areas of mesas and valleys with nearly level slopes. These soils formed in alluvium and residuum derived predominately from carbonaceous shale. The current vegetation is mainly atriplex species, alkali sacaton, and annuals; however, the majority of the area represented by this unit lacks

vegetation. This unit is nearly 90 percent Patel clay with inclusions of Huerfano and Badlands. The depth of suitable topdressing in this unit generally ranges from 0 to 20 inches. However, the occurrence of sodium affected strata severely restricts availability of topdressing from this unit. This unit occupies 50 acres or 0.4 percent of the survey area.

Rm - Razito loamy sand, moderately deep, 0 to 5 percent slopes. This unit consists of moderately deep, excessively drained soils on mesas and backslopes formed in eolian sands. The dominant landform for these soils are wind oriented, longitudinal sand ridges. The vegetation is primarily Indian ricegrass, alkali sacaton, galleta, sand dropseed, broom snakeweed, and atriplex species. This unit is nearly 75 percent Razito loamy sand, moderately deep, 10% Stumble soils, and 5% Shiprock and similar soils. Inclusions are mainly dissimilar soils, such as Huerfano, from adjacent map units. The available topdressing material generally ranges from 20 to 40 inches and is controlled by depth to bedrock or sodium affected substrata. This unit occupies 436 acres or 3.8 percent of the survey area.

RO - Rock Outcrop. This miscellaneous area consists of exposures of barren sandstone on cliffs, breaks, bluffs and ridges. Slope is 0 to 100 percent. This unit is mostly void of vegetation; however, some atriplex species and annuals occur on micro sites with eolian and alluvial accumulations. Included in this unit are small areas of Farb, Persayo, and Huerfano soils. This unit has almost no suitable topdressing material. This unit occupies 1 acres or 0.01 percent of the survey area.

Rz - Razito loamy sand, 0 to 8 percent slopes. This unit consists of deep, excessively drained soils on mesas and backslopes formed in eolian sands. The dominant landform for these soils are wind oriented, longitudinal sand ridges. The vegetation is primarily Indian ricegrass, alkali sacaton, galleta, sand dropseed, broom snakeweed, and atriplex species. The Razito soils occupy over 75 percent of the unit. The major inclusion is Mayqueen soils occupying nearly 15 percent of the unit. These soils are similarly managed as Razito soils. Other inclusions are Shiprock, Sogzie, and Stumble soils. The available topdressing material generally ranges from 40 to 60 inches. This unit occupies 546 acres or 4.7 percent of the survey area.

SB - Shiprock, Bacobi, and Mayqueen sandy loams, 0 to 5 percent slopes. This undifferentiated map unit is on gently sloping areas of mesas, plateaus, and terraces. These soils formed in eolian and alluvial sediments derived from sandstone and shale. The vegetation is predominately galleta, alkali sacaton, sand dropseed, Indian ricegrass, broom snakeweed, and atriplex species. This map unit is about 35 percent Shiprock and similar soils, 30 percent Bacobi and similar soils, 25 percent Mayqueen and similar soils, 5 percent Fruitvale and similar soils, and 5 percent Benally and similar soils. The components of this unit are so intricately intermingled and unpredictable in the landscape that it was not practical to map them

separately at the scale used. The depth of suitable topdressing generally ranges from 10 to 60 inches and is mainly controlled by depth to bedrock. This map unit occupies 1,345 acres or 11.7 percent of the survey area.

Sd - Shiprock sandy loam, very hard, 0 to 8 percent slopes. This map unit occurs on mesas and terraces as deep, well developed soils. The soils and vegetation are similar to Shiprock soils but the substrata are very hard or extremely hard. Typically, the sodium levels in the substrata exceed the topsoil suitability limits. Consistence is strongly associated with the sodicity and therefore is used to characterize this phase of Shiprock soils. Topdressing depth is limited by material that is either very hard or extremely hard. The map unit is about 70 percent Shiprock very hard soils with inclusions of Bacobi, Grieta, Mayqueen, Sogzie, and Razito. The depth of suitable topdressing generally ranges from 0 to 30 inches. This unit occupies 64 acres or 0.6 percent of the survey area.

Sh - Shiprock sandy loam, 0 to 8 percent slopes. The soils are formed in alluvium and eolian material derived from sandstone and shale. This map unit is on mesas and plateaus. The vegetation is mostly galleta, alkali sacaton, sand dropseed, broom snakeweed, rabbitbrush, and atriplex species. The unit is over 75 percent Shiprock soils. Included in this map unit are Grieta and Sogzie soils with minor areas of Doak and Mayqueen soils. These soils represent some of the most suitable sources of topdressing material. The depth of suitable topdressing generally ranges from 40 to 60 inches and is mainly controlled by depth to bedrock or highly contrasting, limiting substrata. This map unit occupies 151 acres or 1.3 percent of the survey area.

St - Stumble loamy fine sand, 0 to 15 percent slopes. This map unit occurs on sides of valleys and alluvial fans. Soils have formed in sandy alluvium and eolian deposits derived from sandstone and shale. The current vegetation is predominately sand dropseed, galleta, Indian ricegrass, broom, snakeweed, rabbitbrush, and atriplex species. This unit is 80 percent Stumble, loamy fine sand. Included are limited areas of Razito and Mayqueen soils. Although the soils are sandy, they generally provide 15 to 60 inches of suitable topdressing material. Depth of suitable topdressing is controlled by depth to bedrock or skeletal textured substrata. This unit occupies 96 acres or 0.8 percent of the survey area.

Ts - Tsaya loam, 0 to 15 percent slopes. This unit is on nearly level to strongly sloping areas of mesas, hills, and ridges. These shallow soils formed in residuum derived mainly from sandstone. Vegetation is mostly atriplex species and annuals with sparse stands of alkali sacaton and galleta occurring in eolian accumulations. This map unit is about 60 percent Tsaya and similar soils and 10 percent Rock Outcrop. Included soils of limited extent are Chipeta clay, Patel clay, Huerfano, and Jocity. Soil material in this unit generally ranges in depth from 0 to 20 inches, but typically are not suitable for use as topdressing

because of high rock content and sodium hazard. This unit occupies 65 acres or 0.6 percent of the survey area.

Appendix 14-C

Key to Soils of the No Name Permit Area

SOIL LACKS DIAGNOSTIC EPIPEDON OR SUBSURFACE HORIZONS

ENTISOLS

1.	<35% rock fragments, loamy fine sand or coarser texture to a depth of 1m or a lithic or paralithic contact.	**Psamments**
2.	Deeper than 25 cm, and either 0.2 percent organic carbon at a depth of 125 cm below the mineral soil surface or an irregular decrease in organic-carbon content.	**Fluvents**
3.	Other Entisols.	**Orthents**

Psamments

Deep (contact > 50cm to lithic or paralithic)	
Formed in Eolian or Alluvial deposits, color 10YR or 2.5Y	Razito
Formed in Eolian or Alluvial deposits, color 10YR or 2.5Y with gravely substratum	Stumble

Fluvents

Deep (contact > 50cm to lithic or paralithic)	
Sandy (loamy fine sand or coarser) Color 10YR or 2.5 Y	Beebe
Fine-loamy (18%-35% clay)	Jocity
Coarse-loamy (<18% clay but non-sandy)	Gilco

Orthents

Lithic or paralithic (contract < 50cm to bedrock)	
Loamy-skeletal (>35% rock fragments)	Tsaya
Loamy (5%-18% clay)	Farb
Loamy (18%-35% clay)	Persayo
Clayey (>35% clay)	Chipeta
Deep (contact > 50cm to lithic or paralithic)	
Coarse-loamy (5%-18% clay)	Fruitland

DIAGNOSTIC SUBSURFACE HORIZON PRESENT

ARIDISOLS

1.	Gypsic horizon	**Gypsids**
2.	Argillic or Natric horizon	**Argids**

Gypsids

Natric horizon	
Fine	Hoskay
Fine-loamy	Benally
Argillic horizon	
Fine-loamy	Fruitvale

Argids

Natric horizon	
(SAR > 13 within 40cm)	*Natrargids*
Calcic horizon	*Calciargids*
Other argids	*Haplargids*

Natrargids

Paralithic contact < 50cm	Huerfano
Paralithic contact from 50 to 100 cm	
Fine-loamy, accumulations of gypsum or carbonates	Fajada
Fine-loamy, no accumulations of gypsum or carbonates	Muff
Fine, accumulations of gypsum or carbonates	Patel
Paralithic contact > 100 cm	
Fine-loamy, no accumulations of gypsum	Uffens

Calciargids

Coarse-loamy	Sogzie
Fine-loamy	Grieta

Haplargids

Lithic or Paralithic contact < 50cm	Monierco
Lithic or Paralithic contact from 50 to 100 cm	Bacobi
Lithic or Paralithic contact > 100cm	
Coarse-loamy, sandy in upper 25cm and lacks a Bk horizon	Mayqueen
Coarse-loamy Bk horizon but not calcic	Shiprock
Fine-loamy lacks a Bk horizon	Blancot
Fine-loamy Bk horizon but not calcic	Doak

Appendix 14-D

Prime Farmland Determination Correspondence

United States Department of Agriculture

NRCS Natural Resources Conservation Service

USDA/NRCS
1427 W. Aztec Blvd, Suite 1
Aztec, New Mexico 87410
Allen.Maez@nm.usda.gov

Phone (505)334-3090 http://www.nm.nrcs.usda.gov Fax (505)334-8659

FILE CODE: 100 **DATE:** February 26, 2008

SUBJECT: Prime and Important Lands Review/Evaluation
Regarding request from BHP Navajo Coal Company

To: Brent Musslewhite
BHP Navajo Coal Company
Navajo Mine Extension
300 W. Arrington
Suite 200
Farmington, NM 87401

Mr. Musslewhite,
I was asked to review an area north of Burnham, NM for the Navajo Coal Company, Navajo Mine Extension.
I reviewed the Prime Farmland Map for San Juan County which is my resource for such requests.
There are no Prime Farmlands in the area north of Burnham, NM.
The San Juan County Soil Survey Eastern Part indicates the land in this area to be arid rangelands. There is no indication of irrigated lands in the site. Irrigated lands are the sites that are classified as Prime Farmlands in San Juan County.

I hope the information I am providing is adequate for your needs. If you have any questions please feel free to contact me.

Allen Maez
District Conservationist

BUCHANAN
CONSULTANTS, Ltd©
ENVIRONMENTAL CONSULTING
Est. 1972

March 14, 2008

Mr. Brent Musslewhite
BHP Navajo Coal Company
Navajo Mine Extension Project
300 W. Arrington, Suite 200
Farmington, NM 87401

Dear Mr. Musslewhite:

On February 26, 2008, I requested Allen Maez, District Conservationist for the USDA-NRCS, Aztec, New Mexico to determine if prime farmlands exist within the BHP Navajo Coal Company – Navajo Extension Project (NMEP) permit area. Mr. Maez and I reviewed the NMEP permit area and the Prime Farmland map for San Juan County. We determined there was no prime farmland for the NMEP permit area. We considered the area from Burnham, New Mexico to Cottonwood Wash. Mr. Maez wrote a letter stating his conclusion, which is attached.

Sincerely,

Bruce A. Buchanan
President, Buchanan Consultants, Ltd.

P.O. Box 2549 ▲ Farmington, NM 87499-2549 ▲ (505) 327-2486 ▲ Fax (505) 327-2485

Appendix A

Laboratory Procedures

Appendix A. Methods of Soil Analysis

ANALYSIS	METHOD
pH	McLean, E.O. 1982. Soil pH and lime requirement. In A. L. Page, R.H. Miller, and D.R. Keeney, (eds.) Methods of soil analysis. Part 2. 2nd ed. Agronomy 9:199-209. Madison, WI.
Electrical Conductivity (EC)	Rhodes, J.D. 1982. Soluble salts. In A. L. Page, R.H. Miller, and D.R. Keeney, (eds.) Methods of soil analysis. Part 2. 2nd ed. Agronomy 9:167-174. Madison, WI. U.S. Salinity Laboratory Staff. 1954. Method 4a, p. 89. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.
Soluble Ca, Mg, Na	U.S. Salinity Laboratory Staff. 1954. Method 3a, Saturation extract. p. 84. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60. Analysis: Inductively Coupled Argon Plasma Atomic Emission Spectrometer (ICP).
Sodium Adsorption Ratio (SAR)	U.S. Salinity Laboratory Staff. 1954. Method 3a, Saturation extract. p. 84. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60. Analysis: Inductively Coupled Argon Plasma Atomic Emission Spectrometer (ICP). U.S. Salinity Laboratory Staff. 1954. Method 20b, Estimation of exchangeable sodium percentage and exchangeable potassium percentage from soluble cations. p. 102. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.

Appendix A. Continued

ANALYSIS	METHOD
Texture	U.S. Department of Agriculture.. Field and Laboratory Methods Applicable to Overburden and Mine Soils. EPA-300/2-78-054. Method 3.4.3.5, pg 122. U.S Environmental Protection Agency, Washington, D.C.
	Day, Paul R.. 1965. Particle fractionation and particle size analysis. In C.A. Black, (ed.) Methods of soil analysis. Part 1. 1st ed. Agronomy 9:545-547. Madison, WI.
	American Society for Testing and Materials. ASTM D 422-68.
Saturation %	Rhoades, J.D. 1982. Soluble salts. In A. L. Page, R.H. Miller, and D.R. Keeney, (eds.) Methods of soil analysis. Part 2. 2nd ed. Agronomy 9:169. Madison, WI.
	U.S. Salinity Laboratory Staff. 1954. Method 27a, p. 107. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.
Boron	Bingham, T Frank. 1982. Boron. In A. L. Page, R.H. Miller, and D.R. Keeney, (eds.) Methods of soil analysis. Part 2. 2nd ed. Agronomy 9:443-444. Madison, WI.
Soluble Selenium	Bingham, T Frank. 1982. Boron. In A. L. Page, R.H. Miller, and D.R. Keeney, (eds.) Methods of soil analysis. Part 2. 2nd ed. Agronomy 9:443-444. Madison, WI.
Total Selenium	Bajo, Sixto. 1978.Analytical Chemistry, Vol. 50(4), 649-651. Modified.

Appendix A. Continued

ANALYSIS	METHOD
$CaCO_3$%	U.S. Salinity Laboratory Staff. 1954. Method 23c, p. 105. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.
Neutralization Potential	U.S. Salinity Laboratory Staff. 1954. Method 23c, p. 105. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.
	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.
Erosion Factor (K)	USDA-SCS, National Soils Handbook. July 1983. Method 603.2-1. p. 603-29.
Coarse Fragment %	Montana Department of State Lands, Reclamation Division. 1983. Draft soil and overburden guidelines. Helena.
	Wyoming Department of Environmental Quality. 1985. Guideline No. 1-Topsoil and overburden. Cheyenne.
Total Sulfur	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.

Appendix A. Continued

ANALYSIS	METHOD
Total Sulfur - Acid Base	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.
	American Society for Testing and Materials. ASTM D 2492-84 with modification.
$CaCO_3$%	U.S. Salinity Laboratory Staff. 1954. Method 23c, p. 105. In L.A. Richards (ed.) Diagnosis and improvement saline and alkali soils. USDA Ag. Handbook No. 60.
Pyritic Sulfur %	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.
	Smith, R. M., W. E. Grube, Jr., T Arkle, Jr., and A. A. Sobek. 1974. Mine spoil potentials for soils and water quality. EPA 670/2-74-70. U.S. Environmental Protection Agency, Washington D.C. p. 49.
	American Society for Testing and Materials. ASTM D 2492-84 with modification.
Organic Sulfur %	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.
	Smith, R. M., W. E. Grube, Jr., T Arkle, Jr., and A. A. Sobek. 1974. Mine spoil potentials for soils and water quality. EPA 670/2-74-70. U.S. Environmental Protection Agency, Washington D.C. p. 49.

Appendix A. Continued

ANALYSIS	METHOD
Pyritic Sulfur Acid-Base	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.
Pyritic Sulfur Acid-Base-Potential	Sobek, A. A., W. A. Schuller, J. R. Freeman, and R. M. Smith. 1978. Field and laboratory methods applicable to overburdens and mine soils EPA 600/2-78-054. U. S. Environmental Protection Agency, Cincinnati, OH.

Appendix B

Soil Profile Descriptions

Soil Description

Soil Type Fa/b - Clarkery Sandy loam File No.

Area No-Name Permit Area Date 2/12/97 Stop No. # 90

Classification

Location

N. veg. (or crop) Spar Afcom Climate

Parent Material Alluvium

Physiography Mid Slope / wetlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) located bottom & small drainages 50-60% Cb on surface

inches

Pit Depth (34)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A/B	0/6			SL			fr					
2Cu	6/34											
2R	34"	S.H Stone										

Soil Description

Soil Type Mariposo File No.

Area No-Name Permit Area Date 7/12/98 Stop No. # 91

Classification ~~Cosse~~ Loamy, Uthic, Haploxeroll Bm

Location

N. veg. (or crop) Afcon, SPG. Climate

Parent Material -

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (20)

Bedrock (20)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (CCG)		
A	0/3			SL	w gr		fr			CSC		
Bt	3/11		10YR 5/4	SL	w sbk		fr			CS		
2Clk	11/20	10YR 8/4		CL	M	h				CV	30% lk	
Cr	20+	Colcareous		Silt	cml	Sandstone						

Soil Description

Soil Type Shiprock Variant — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #92

Classification Fine-loamy, mixed, mesic Typic Haplargid — CA

Location

N. veg. (or crop) Spai, Hija, Atcon, Gusa — Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Continuous & Throughout Chronosequence

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4			sl	wgr		fr				e0	
Bt1	4-16			sl	wsbk		sfi				sle	
Btk	16-36			sl/scl	ssbk	vh					es	
Ck	36-61			scl/cl	m	h					ev	15-20%K

Soil Description

Soil Type Bacobi deep — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #93

Classification Fine Loamy mixed mesic Typic Haplargrid — CA

Location

N. veg. (or crop) Spai, Hija, Atcon — Climate

Parent Material Eolian Sediment - Alluvial Floor

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (51)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			sl	wgr		fr			cg	→ see RH-#1	
Bt	4-12			sl	wsbk		sfi			wsic		
Btk	12-23			scl	stsbk	vh				cv		
2Ck	23-51			scl	m	h				vsic/cv	k nodules	
3Cr	51-60	Lignite										

Soil Description

Soil Type Monico cloded File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #94

Classification Bar

Location

N. veg. (or crop) Aspen Hi Sa Climate

Parent Material Alluvium / colluv

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Similar to #68 - located in Sandy crowd Area
70-80% Ct on surface

	pH	ec	SAR	S	C	K%		
0-8	7.6	.95	7	68	18	6.8	S	Not Natric

inches

Pit Depth (40)

Bedrock (8)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Bt	8/8		10YR 4/4	SCl	wcl		fj			cs		
2Ckt	8/40	Calcareous		Sandstone		grey						
2R	40+											

Soil Description

Soil Type Riccobi — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #95

Classification Fine loamy, mixed, mesic Typic Haplargid

Location

N. veg. (or crop) Small grain — Climate

Parent Material Alluvium

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%			
11-22	8	1.01	17	35	33	11	u	cl	

inches

Pit Depth (33)

Bedrock (33)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 5/4	SL	w gr		vfr			gc		
Bt	3/11		10YR 5/4	SL 1/8	w sbk		sfr			cs		
2Btkn	11/22		2.5Y 6/4	SCL	m sbk	vh				cw	Calcic	2
2Ckn	22/33			Cl	m	h				cw		
2C	33+	Calcareous Sandstone										

Soil Description

Soil Type Bacobi; Clayey Subsoil, Deep — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. 96

Classification Bm1

Location

N. veg. (or crop) Hisa / Sisa — Climate

Parent Material Alluvium

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (50)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-3			sl	wgr		Fr			vs/e		
Bt	3-16			scl	w/msbk		Fi			es -		
2Btk	16-27			scl	wsbk	h				ev		
2Ck	27-50			cl	m	h				ev		
2Ckr	50-57											

e 96

c 95

Soil Description

Soil Type Gricta, deep yellow — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #97

Classification Fine Loamy, Mixed, Mesic Typic Haplargid — CA

Location

N. veg. (or crop) Spai, Hija, Atco^n — Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

0-10 same as we've been seeing in western area

	pH	ec	SAR	S	C	K%			
0-4	7.5	.72	3	73	10	3	S		
4-10	7.3	.45	2	68	20	5.2	S		
10-21	7.5	.57	8	65	23	15	S	calcic	inches
21-48	7.7	4.66	8	83	13	4.2	S	Pit Depth	(58)
								Bedrock	(48)
								Topsoil	(48)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10yr 4/3	sl	wgr		fr				sle	
Bt	4-10		10yr 5/3	scl	wsbk		fi				es	
2Btk	10-21	2.5y 6/4	2.5y 5/4	fscl	msbk	vh					ev	
2Ck	21-48	2.5y 5/6	2.5y 5/4	ls	m	h					sle/ev	
3Cr	48-58	Carbonaceous Shale										

Soil Description

Soil Type Hueco Fano eroded — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #98

Classification Fine Loamy Lithic Natrargid — CA

Location

N. veg. (or crop) Spai, Atco^, Atca — Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Similar to #126 Highly eroded

inches

Pit Depth (17)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		CF
Btn	0-4			cl	mcl	sh			s/e		80-90	on surface
Cyr	4-17			cl		sh			es			
R	17-+											

Soil Description

Soil Type Chipeta Sodic eroded — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. PP 99 BM

Classification Aquic Ustic torriorthent (Sodic)

Location

N. veg. (or crop) Atrex Area Site — Climate

Parent Material ?

Physiography Recessional Uplands rolling to hilly

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3-4% — Moisture

Aspect SW — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Severly eroded area 90% clay surface

inches

Pit Depth (15)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/7			C	M		Fi		es			
2 Ck	7/15			C	M	h			es			
2 Cr	15+	Carbonaceous Shale										

Soil Description

Soil Type Ronald, very deep — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. # 101

Classification Fine-loamy, mixed, mesic Typic Natrargid — CA

Location

N. veg. (or crop) Spa., Atcon — Climate

Parent Material Carbonaceous Alluvium

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%		
0-4	7.8	.65	6	48	24	5.2	3.8	s
4-14	7.5	8.8	24	35	40	5.3	16	u
14-25	7.9	1.44	19	40	35	.84	15.4	u

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Btn1	0-4		10yr 4/2	cl	pr		fr				sle	
Btn2	4-14	10yr 4/3	10yr 4/2	cl/c	pl	h					es	
Btk	14-25	10yr 4/3	10yr 4/2	C	mabk	vh					es	
Cky	25-47	10yr 5/3	10yr 4/1	C	m	h					es	Unsuitable
2By	47-54	10yr 4/3	10yr 5/2	vfscl	ssbk	vh					sle	
2C	54-65	10yr 5/4	10yr 5/3	vfscl	m	sh					vsle	

Soil Description

Soil Type Benally eroded — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. 102

Classification Fine loamy, mixed Aridic Typic Natrargid — 13m

Location

N. veg. (or crop) Mixed Land — Climate

Parent Material Alluvium

Physiography Uplands Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) moderately eroded 30% clean sandstone

	pH	ec	SAR	S	C	K%	
0-19	8	.98	16	50	33	6	5

	inches
Pit Depth	(43)
Bedrock	(43)
Topsoil	(19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7		10YR 4/3	C l	wcl		SFi			CS		
Btkn	7/19		10YR 4/2	C l	Spr	vh				CS		
2Ckq	19/43	10YR 2/1		C	M	vh				CS		
3R	43+	Sandstone										

Soil Description

Soil Type TSay6 File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 103

Classification Fine loamy, skeletal, mixed, frigid Typic Haploxeroll BM

Location

N. veg. (or crop) Spar Artcan Climate

Parent Material Residuum

Physiography Top of knoll

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4.5% Moisture

Aspect SE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 90% CF on surface

inches

Pit Depth (5)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 4/4	SiCl	MSK					CS/CW		
R	5+	Calcareous Sandstone										

Soil Description

Soil Type Patel. - rodd File No.

Area No-Name Permit Area Date 2/16/98 Stop No. A 104

Classification Fine Lithic Ustorthent BM

Location

N. veg. (or crop) Atsh/hybrid - Atca - Atca Climate

Parent Material Residuum

Physiography uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2 %	Moisture	
Aspect NE	Root distrib.	
Erosion highly eroded		
Permeability		

Additional notes:

samples (depth inches) 85-90% CF on surface

inches

Pit Depth (45)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7			C	wcl		Fi			CW		
2 Btn	7/15			Cl	wsbk	h				CW	10-15% fi Continuous Noncalcareous	
2 Ckr	15/45	interseaved		SS and SL						CW/CS		
2 R	45+	Calcareous		Sandstone								

Soil Description

Soil Type Grieta Deep File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 105

Classification Fine loamy ~~typic~~ haplic calcid Bar

Location

N. veg. (or crop) Climate

Parent Material Sandy Ilitic Alluvium - Alluvium

Physiography alluvial plain / valleys

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) See #97

inches

Pit Depth (45)

Bedrock (45)

Topsoil (45)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	9/3		10YR 5/3	SL 13	mar		VFr			VSlc		
Bt	3/9		10YR 5/4	SL 18-20	mSbk		fr			CS		
Btk	9/17	10YR 4/4	10YR 4/2	SL 20	mSbk	h				CV		
2 Btk	17/33	10YR 8/1		Cl	M/mSbk	Sh				CV	Calc. c 25-30 % lk	
2 Ck	33/45	" 3/1		Cl	m	h				CV/gs	(" "	
2 Cg	45	Continuous Strata										

Soil Description

Soil Type Gricta — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. 106

Classification (Fine loamy, mixed mesic Typic Haplocalcid) — CA

Location

N. veg. (or crop) Spaj, Hija, Atcon — Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

0-17 - similar to mantle horizons that have been seen on west side

- Similar to #105

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
AC	0-3			scl	wgr		fr				eo	
Bw	3-10			gl	wsbk		fr				sle	
Bk	10-17			sl	msbk						sle/es	
2Cky	17-33			cl	m						es	Unsuitable
3C	33-55			scl	m						sle	

Soil Description

Soil Type Hurlbarn File No.

Area No-Name Permit Area Date 2/16/98 Stop No. # 107

Classification Fine loamy typic Haploxeroll BLM/CA

Location

N. veg. (or crop) Atpo hybrid Sprs Climate

Parent Material Residuum

Physiography Dissected Area - Toe of hill

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 6%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 65-70% Cl on Surface

inches

Pit Depth (25)

Bedrock (25)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	9/9		10YR 5/3	Cl	mcl					Sic/es		
BCk	9/25			C	M	h				co	Fine sandstone fragments	
R	25+	Sandstone										

Soil Description

Soil Type Muddy — File No.

Area No-Name Permit Area — Date 2/Nov/98 — Stop No. H 108

Classification Fine loamy, Luvic Natrargid — Bw

Location

N. veg. (or crop) Spars Grass — Climate

Parent Material Residuum

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%
0-7 Natrik?	7.7	.56	7	55	23	7.2

S

inches

Pit Depth (43)

Bedrock (32)

Topsoil (7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
$Bt_{(n)}$	0/7		10YR 5/3	SCl	vf SBk/Cl		fi			cw		
Btkn	7/18		2.5Y 6/4	SiCl	SBk					cw	see H95 Unsuit.	
Ck	18/32			Cl/C	M					cs		
Ckr	32/43		Calcareous	Sand Stone						cs		

Soil Description

Soil Type Fc16 File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #109

Classification Loamy, mixed, mesic Lithic Torriorthent CA

Location

N. veg. (or crop) Spar, Hija, Atcon Climate

Parent Material Eolian

Physiography Mesa Top - Near Hinge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (15)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3			sl	wgr		fr				vsle	
2R	3+	Sandstone										

Soil Description

Soil Type Grieta - Deep File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 110

Classification Coarse loamy Typic Calcixerolls CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Eolian

Physiography Mesa Top - Hinge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

5% cf on surface

	pH	ec	SAR	S	C	K%	
9-20	7.7	.47	6	68	18	17	S
20-40	7.9	8.12	23	69	15	10	U

	inches
Pit Depth	(40)
Bedrock	(40)
Topsoil	(20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3			sl	wgr		fr				es	Suit.
Bt	3-9			sl	wsbk		fi				es	Suit.
Bk	9-20		2.5Y 5/3	sl		sh					ev	Calcic
Ck	20-40		2.5Y 5/3	sl	m	sh					ev	-
R	40+	Calcareous S.S.										

Soil Description

Soil Type Shiprock Variant File No.

Area No-Name Permit Area Date 2/16/97 Stop No. # 111

Classification Fine loamy, Typic Haplargid BM/CA

Location

N. veg. (or crop) Sparse Atrex H.sc Climate

Parent Material Alluvium

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Similar to #65 See bpis sht

inches

Pit Depth (50)

Bedrock (50+)

Topsoil (27)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 5/3	cl	wgr		fr			vs/e		
Bt1	3/19	10YR 4/3	pyr 4/4	cl	sub	vh				sle		
Btk	19/27	10YR 4/3	10YR 4/3	cl	msbk	vh				vsle/cs		
2Ck	27/50	10YR 3/1		C	m					s/e		

Soil Description

Soil Type Rozito Moderately Deep File No.

Area No-Name Permit Area Date 2/16/97 Stop No. # 112

Classification Mixed Mesic Typic Torriorthents BM

Location

N. veg. (or crop) Oak Hycon Small Climate

Parent Material colluvium

Physiography Head Slope of Small Drainage

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	N	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (36)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4		10YR 5/3	ls	wk		vfr			CD		
BC	4/9		10YR 5/3	ls	w sbk		vfr			CS		
Ck	9/36	10YR 5/4	10YR 5/3	ls	m		vfr sh			SIC	Few stains	
2Ckr	36+	Shale			m							

Soil Description

Soil Type Chipeta Moderately Deep File No. 113

Area No-Name Permit Area Date 2/16/98 Stop No. A183

Classification Fine Ultic Torriorthent (Sodic) Arroyo

Location

N. veg. (or crop) Atri-a Atpo Grass Area Climate

Parent Material Residuum

Physiography Alluvial Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion Severely eroded		
Permeability		

Additional notes:

samples (depth inches) 80% CF on Surface

inches

Pit Depth (36)

Bedrock (36)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C_1	0/3			cl	vfgr		fi			VSlc		
C_1	3/17			c	m		fi			CO		
Cr	17/36	Cbr	Sandstone	Shale								
R	36+											

Boundary: CO

Soil Description

Soil Type Chinle eroded File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 114

Classification Typic torriorthent (Sodic) BM/CA

Location

N. veg. (or crop) Denuded area Arroyo Climate

Parent Material Residuum

Physiography Shallow Drainage Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded

samples (depth inches)

inches

Pit Depth (3)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/3			C/c	m							
Cr	3+	weathered		rock								

Soil Description

Soil Type Rated eroded File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 115

Classification Fine typic Natrargid BM/CA

Location

N. veg. (or crop) Atriplex hybrid Atca - Grassland cover Climate

Parent Material Alluvium derived from carbon sh

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded

samples (depth inches)

inches

Pit Depth (31)

Bedrock (31)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	ebb Boundary		
Btn1	0/6			C	wcl		sft			vslc		
Btn2	6/14			C		h				vslc		
Cy	14/31			C		sh				vslc		
Cr	31+											

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/17/98 Stop No. 116

Classification Fine loamy, mixed, thermic Typic Calcigid (acid) BLM/CA

Location

N. veg. (or crop) Sagebrush Climate

Parent Material Residuum

Physiography Volcanic fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded 90% of surface

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-4	7.6	.41	1	48	33	9.2	5

inches

Pit Depth (4)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4			SCl	Gr					CS		
R	4+	Cal	SS									

Soil Description

Soil Type Hoskaya | File No.

Area No-Name Permit Area | Date 2/17/98 | Stop No. #117

Classification Fine mixed Torriorthent (Sodic) BM/CA

Location Near Head Medium Drainage

N. veg. (or crop) Atcon, Spai | Climate

Parent Material Carbonaceous Resrdnum

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (35)

Bedrock (35+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Byn	0-11	10yr 4/2		C	mpr		fi				eo/vsle	
Cy	11-35	10yr 3/1		C	m	sh					eo	

Soil Description

Soil Type Hoskay File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #118

Classification Fine Mixed Mesic Typic BM/CA

Location

N. veg. (or crop) Atca, Spai, Atcon Climate

Parent Material Residuum

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-19	7.7	1.04	6	30	41	4.8	S
19-32	7.2	8.24	8	21	44	2.6	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (Ø).

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Btn	0-19	10yr 4/4	10yr 4/3	C	mcl/msbk	vh					es	
Btym	19-32	10yr 4/3	10yr 4/2	C	mabk	eh					sle	
Cdy	32-60	10yr 4/4	10yr 4/3	C	sbk/m						sle	

Soil Description

Soil Type Miscellaneous Area File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #119

Classification BM/CA

Location

N. veg. (or crop) Afcon Climate

Parent Material Residuum

Physiography Knoll / Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

No Material - Rock Outcrop

inches

Pit Depth ( )

Bedrock (0)

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Chineta File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #120

Classification Fine, Lithic Torriorthent (Sodic) BM/CA

Location

N. veg. (or crop) Artcon, Hija Climate

Parent Material Carbonaceous Residuum

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0-4			cl			fr			See	126	
C	4-8			c			fi					
Cr	8+	Shale										

Soil Description

Soil Type Pat. cracked — File No.

Area No-Name Permit Area — Date 2/17/97 — Stop No. #121

Classification Fine, mixed, mesic Lithic Natrargids — BM/CA

Location

N. veg. (or crop) Spa, Hija — Climate

Parent Material Residuum

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (19)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Btn	0-5			cl	wcl		sfr				es	
Cy	5-19			cl/c	m	h					vsle	
Cr	19-30	Shale										
R	30+	Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #122

Classification BM/CA

Location

N. veg. (or crop) Hija, Spai, Atcon Climate :

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Similar to 131.
See 131 for suit.

inches

Pit Depth (38)

Bedrock (38)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-6			scl	wgr/wpl		fr				vsle	
Bt1	6-20			scl	sab/pr	vh/eh					sle	
Bt2	20-36			sl	sab	vh/eh					sle	
2Ck	36-38			cl	m						ev	Carbonaceous Parent
2Cr	38+											Material

Soil Description

Soil Type Persayo | File No.

Area No-Name Permit Area | Date | Stop No. 123

Classification Loamy Lithic Torriorthent | BM/CA

Location

N. veg. (or crop) Spa, Atco | Climate

Parent Material Res.dunr

Physiography Knoll Top near Hinge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect S	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 80% cf on surface

Same as 10Q

inches

Pit Depth (4)

Bedrock (4)

Topsoil (~~0~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
AC	0-4			scl	wgr		fr				eu	
R	4+	Calcareous sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #124

Classification fine loamy typic haplargid Bm/cn

Location

N. veg. (or crop) Big Sa Artem Climate

Parent Material Residuum

Physiography Knoll/hill

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Similar to 110 San Juan Ck

	pH	ec	SAR	S	C	K%	
0-3	7.5	.75	0	76	11	1.7	S
3-11	7.6	.5	4	75	15	5.3	S
11-17	7.8	.51	9	73	15	8.1	S

inches

Pit Depth (50)

Bedrock (32)

Topsoil (32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 5/4	SL 15-	WGR		fr			CD		
Bt	3/11		10YR 6/4	SCL 22-25	WSBK		SH			GE		
Btk	11/17	7.5 6/3	10YR 6/4	SCL 22-2	WSBK	SH				CS	5%	
2Ck	17/32	10YR 8/1		SL	M	SH				CV	10-15%	
2Cr	32/50			S								
2R	50+	Cemented Sandstone										

Soil Description

Soil Type Bacobi - deep File No.

Area No-Name Permit Area Date 2/16/98 Stop No. # 125

Classification Fine Loamy mixed mesic Typic Haplargid Bw

Location

N. veg. (or crop) Soil Smokeweed, Hija, Atco Climate

Parent Material colian

Physiography dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (50)

Bedrock (49)

Topsoil (49)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3			ls	wgr		fr				eo	
Bt1	3-15			sl	wsbk		sfi				eo/vsle	
Bt2	15-23			scl	msbk	h					sle	
Btk	23-37			scl/sl	msbk	h					es	
C	37-49			sl	m	sh/h					eo	
2R	49+	Sandstone										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #126

Classification Fine, mixed, mesic Lithic Torriorthent (Sodic) CA

Location

N. veg. (or crop) Atpo, Atcon Climate

Parent Material Residuum

Physiography Falls on edge of Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-2% Moisture

Aspect W Root distrib.

Erosion

Permeability

Additional notes: 85-90% g on surface

samples (depth inches)

Similar to #67, 68

	pH	ec	SAR	S	C	K%
0-4	8	1.92	18	28	35	15

u cl

inches

Pit Depth (54)

Bedrock (21)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
C	0-4		2.5Y 5/4	cl	m		vfi				vsle	
Cy	4-21	2.5Y 7/6	2.5Y 6/6	cl	m	sh					es	5%g
2Cr	21-54	Carbonaceous Shale										
R	54+	Sandstone										

Soil Description

Soil Type Tsaya Ill/y Clayey Fl. loam — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #127

Classification Fine-Loamy Lithic Torriorthent (Sodic — CA

Location

N. veg. (or crop) Spai, Atcon — Climate

Parent Material Residuum

Physiography Edge of Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Rock outcrops to the South, West, North and NorthEast

90% g on surface
Similar to 126

inches
Pit Depth (10)
Bedrock (2)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
C.	0-2		2.5Y 5/4	vgcl	cl		sfi				eo	
Cr	2-6	Sandstone										
R	6+	Sandstone										

Soil Description

Soil Type Tseya: vcrx chemical clay, loam — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #128

Classification ~~Esa~~ Loamy, mixed, mesic Lithic Torriorthent (Sodic) CA

Location

N. veg. (or crop) Spai, Atpo, Atcon — Climate

Parent Material Residuum

Physiography Edge of Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

90% g on surface

inches

Pit Depth (6)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ Eff		
C	0-3		7.5Y 5/6	vch cl	wgr		fr			vsle		
R	3+											

Soil Description

Soil Type Chipeta very Cheaven Clay loam — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. #129

Classification Fine-Loamy Lithic Torriorthent (Sodic) — CA

Location

N. veg. (or crop) Atcc, Atpo — Climate

Parent Material Residuum

Physiography Edge of Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-20%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

60% cf on surface

Similar to 126

inches

Pit Depth (30)

Bedrock (10)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-4			cl	m		fi				vsle	
2Cy	4-10			cl	m	h						
2Cr	10-20	Carbonaceous shale										
2R	20+	Carbonaceous shale										

Soil Description

Soil Type Bacabi — File No.

Area No-Name Permit Area — Date 2/17/98 — Stop No. 180

Classification — BM/CA

Location

N. veg. (or crop) Hay Sorghum — Climate Semi-arid

Parent Material Alluvium

Physiography Alluvial plain

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	E	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches) Similar to 124

inches

Pit Depth (55)

Bedrock (40)

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 4/3	sl	wgr		Fr			co		
Bt	3/15		10YR 4/2	sl	wsbk		sFi			sie/es		
2BK	15/28	10YR 8/3	10YR 6/4	cl	wsbk	sh				ev	see #44 & #45	
2CK	28/40	10YR 5/6	10YR 5/4	sic	m	sh				ev		
Ckr	40/55	Caliche & Shale										

Soil Description

Soil Type Bacobi deep. File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #131

Classification BM/CA

Location

N. veg. (or crop) Hija, Spai, Atcon Climate

Parent Material Residuum / Alluvium

Physiography Trough

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1% Moisture

Aspect E Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-3	7.6	.44	0	65	15	2.5	S
3-10	7.5	.39	2	58	28	2.7	S
10-20	7.5	.43	5	65	28	2.8	S
20-29	7.4	.99	6	58	25	11	S

inches

Pit Depth (55)

Bedrock (41)

Topsoil (29)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3		10yr 4/2	sl	wgr		fr				eo	
Bt(n)1	3-10		10yr 4/3	cl	msbk		fi				s/e	
Bt(n)2	10-20	10yr 3/3	10yr 4/3	scl	spr	vh					s/e	
Btk	20-29	10yr 4/4	10yr 4/2	cl	wsbk	h					es/ev	
2Ck	29-41	10yr 8/2		scl		h					ev	Unsuitable for K.
2Cr	41-55	Calcareous Sandstone										

Soil Description

Soil Type Huerhuero File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #132

Classification fine loamy, mixed, thermic Typic Haploxeralf (Soil C) RM

Location

N. veg. (or crop) Climate

Parent Material Alpo Hybrid Arroyo Area / Recent Alluvium

Physiography plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded area

samples (depth inches)

inches

Pit Depth (17)

Bedrock (17)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Byn	0/6	2.5Y 4/4	2.5Y 4/4	cl	wcl	sh				co		
Cy	6/17	2.5Y 6/2		cl	m	sh/so				co		
Cr	17+	Shale										

Soil Description

Soil Type Patti cracked File No.

Area No-Name Permit Area Date 2/17/98 Stop No. 133

Classification Fine Little Wetland Bm/CA

Location

N. veg. (or crop) — Climate

Parent Material Colluvium / Residuum Colluvium

Physiography Foot slope at head of Rock outcrop Pt. Reyes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (10)

Bedrock (10)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/10			C/c	wel					clc		
R	10+		Ignite									

Soil Description

Soil Type Huerfano — File No.

Area No-Name Permit Area — Date 2/17/98 — Stop No. 134

Classification Fine loamy Ustic Haplargid — Ochrept

Location

N. veg. (or crop) Aspen — Climate Semiarid

Parent Material Residuum

Physiography Knoll / Backslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 90% Channers on Surface

	inches
Pit Depth	(5)
Bedrock	(5)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			Cl	wcl					s/e		
R	5+	Cobbles			Sandstone							

Soil Description

Soil Type Fruitvale File No.

Area No-Name Permit Area Date 2/17/98 Stop No. #135

Classification Fine loamy, mixed, superactive, typic Haploxeralf BM/CM

Location

N. veg. (or crop) Scrub Hisa Association Climate

Parent Material Carbonaceous alluvium

Physiography Saddle between knolls

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3%	Moisture	
Aspect	NE	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
2-10	7.6	.43	3	65	29	4.9	5
10-23	7.3	4.43	5	50	23	5.2	5
23-44	7.3	7.71	6	53	25	4.3	5

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (44)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10yr 4/1	SCl	wgr		vfr			CS	✓	
Btc	3/10		11	scl 30	msbk		sfr			CS		
Btkym	10/23	10yr 4/2	10yr 4/2	scl 20-30	msbk	h/vh				CS		
Btkym2	23/44	10yr 3/2	10yr 4/2	cl	stpr	vh				CS		
Cy	44/61	10yr 2/2			m	h				SW/CS	Unsuitable Soluble salts	

Soil Description

Soil Type Chinle Mud | File No.

Area No-Name Permit Area | Date 2/17/98 | Stop No. #136

Classification Fine Lithic Torriorthent (Sodic) BM/CH

Location

N. veg. (or crop) Greasewood, Atco- | Climate

Parent Material Carbonaceous Residuum

Physiography Trough - Near Knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect W	Root distrib.	
Erosion severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-7			cl/c	m	h					eo	
Cyr	7-30	Carbonaceous Shale										

Soil Description

Soil Type Chipeta eroded File No.

Area No-Name Permit Area Date 2/17/98 Stop No. 7137

Classification Fine loamy, mixed, superactive (Sodic) Aridic

Location

N. veg. (or crop) Atrex Climate

Parent Material Residium

Physiography Knoll / Rock outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severly eroded - 90% Clay surface

samples (depth inches)

inches

Pit Depth (4)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4			C1	wg					Sle		
Cr	4+	Shale										

Soil Description

Soil Type Huer. fine - Sandy clay loam File No.

Area No-Name Permit Area Date 2/17/98 Stop No. 142

Classification Fine loamy, mixed, ~~active~~ calc Ent / Cpt

Location

N. veg. (or crop) Atrip Spp. Climate

Parent Material Residuum

Physiography plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Scarcely eroded 90% Ch on surface, rabbit sign

	pH	es	SAR	S	C	K%	
0-6	7.7	.86	3	50	25	6.4	5

inches

Pit Depth (29)

Bedrock (15)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
BC	0/6		10YR 4/3	SCl	wcl		fr			s/c		
Ck	6/15			C/cl	M	h				c-s		
Cr	15/29	Carbonaceous Shale										

Soil Description

Soil Type Haverhill Channery Clay loam — File No.

Area No-Name Permit Area — Date 2/17/98 — Stop No. # 143

Classification Fine to Fine Sandy — Brush

Location

N. veg. (or crop) Alder 1 Sp. — Climate

Parent Material Res. Dun

Physiography Valley

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded 90% CF on surface

samples (depth inches) See # 142

inches

Pit Depth (12)

Bedrock (12)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6			CL	wc1		Fi			Sm		
2C	6/12			C/L		Sh				Sm		
2Cr	12+											

Soil Description

Soil Type Hillsboro Clay Loam File No.

Area No-Name Permit Area Date 2/17/98 Stop No. 144

Classification Fine loamy Udic Ustroxept Ent/Cr

Location

N. veg. (or crop) Spec: Aeon Climate

Parent Material

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect SE	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded 80% Channery surface

samples (depth inches) See # 142

inches

Pit Depth (30)

Bedrock (15)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6			Cl	wc1		fi			Sl/c		
2C	6/15			C	m	sh				cs		
2Cr	15/30	Carbonaceous Shale										
3R	30+	Sandstone										

Soil Description

Soil Type Hurlocker cradled — File No.

Area No-Name Permit Area — Date 2/17/98 — Stop No. #145

Classification — BM/CA

Location

N. veg. (or crop) Atcon — Climate

Parent Material Residuum

Physiography Deflational Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect W	Root distrib.	
Erosion Sever		
Permeability		

Additional notes: P 146 located in Barren land - Lava Bed

samples (depth inches) 25% ct at surface 12% ct at surface

	inches
Pit Depth	(30)
Bedrock	(8)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-8		c	cl	wcl		fr				sle	
2Cr	8 to 16	Shale										
3R	16+	Sandstone										

Soil Description

Soil Type Huerhuero - Deep File No.

Area No-Name Permit Area Date 2/17/97 Stop No. 147

Classification Entisol, mixed, thermic Natargid Bm/Cl?

Location

N. veg. (or crop) Atriplex hymenelytra / Atriplex spinifera Climate

Parent Material Alluvium - calcareous

Physiography Alluvial fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded

samples (depth inches) 50-60% CaCO3 throughout

	pH	ec	SAR	S	CaCO3		inches
0-21	7.9	2.14	14	43	35	41	Pit Depth (51)
							Bedrock (41)
							Topsoil (21)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn1	6/12	10yr 2/1	2.5y 3/1	CL	W/mSBk	h	F:			clear/slc		
Btn2	12/21	10yr 3/1	2.5y 3/1	C	Sab	vh/ch				cs		
BCky	21/41	10yr 3/1		C	Lsbk/m	vh				cs		
2Cr	41/51	Shale								cr		

Soil Description

Soil Type Huerhuero - deep File No.

Area No-Name Permit Area Date 7/18/97 Stop No. 148

Classification Fine-loamy, mixed, thermic Abruptic Haploxeralf Btn

Location

N. veg. (or crop) Herb Climate

Parent Material Calcareous alluvium

Physiography Alluvial plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: See S/147

samples (depth inches)

inches

Pit Depth (45)

Bedrock (45+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/8			cl/c	cl		fi			sic		
Btkm	8/15			cl/c	ssk	eh				c s		
Cdy	15/45			cl/c	m	eh				sic		

Soil Description

Soil Type Nutel — File No.

Area No-Name Permit Area — Date 2/18/97 — Stop No. A 149

Classification fine Lithic Haplocalcid — BLM/CA

Location

N. veg. (or crop) Atrip / Spa. — Climate Semi-arid

Parent Material Residuum

Physiography Alluvial Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 170% CF on Surface

inches

Pit Depth (60)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (cgg)		
A	0/3		10YR 4/2	Cl	lagr		fr			sle		
Btn	3/7		10YR 5/3	C	wpl		vfi			sle		
Cyr	7/19			C	M	sh				es	unsuitable for [illegible]	
Cr	19/60	Shale									Shale	

Soil Description

Soil Type Bonilla cracked — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. # 150

Classification Fine Typic Argixeroll — 15 — BM4EA

Location

N. veg. (or crop) Atog Spec — Climate

Parent Material Colluvium

Physiography Alluvial Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 50% CF on surface

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7			cl	MCl		fi			sl/es	See A 157	
Btkn1	7/24			cl/c	MSBk	h/vh				es	5	
Btkn2	24/37			cl/c	MSBk	vh				es		
Bky	37/46			cl/c	MSCk	h/vh				es		
Cky	46/60			cl	m	h				es		

Soil Description

Soil Type Bellilly File No.

Area No-Name Permit Area Date 2/18/98 Stop No. #151

Classification Fine loamy Mixed Typic Argixeroll Bm/CP

Location

N. veg. (or crop) Atos Bravo Climate

Parent Material Alluvium

Physiography Alluvial flats wetlands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Similar to #150 lighter parent material - less eroded

	pH	ec	SAR	S	C	K%	
0-6	7.7	.63	5	41	35	3.6	S
6-18	7.7	6.08	24	38	38	5.5	u

inches

Pit Depth (55+)

Bedrock (55+)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6	10yr 4/3	10yr 4/3	C/c	wcl		fi			slc		
Btkn	6/18	10yr 4/3	10yr 5/3 4/3	Cl	MSBk	h				cs		
Btkyn	18/39	10yr 4/3 4/2	2.5y 4/2	Cl	MSBk	h				cs	Unsuitable	
Cky	39/55	10yr 4/3	2.5y 4/2	Cl	M	vh				cs	S	

Soil Description

Soil Type Haverson cobbly — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. 152

Classification

Location Badlands - Deflational Area

N. veg. (or crop) Hija, Atob — Climate

Parent Material Carbonaceous Residuum

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (14)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Btn	0-6			scl	wpl/wsbk		fi				es	
2C/Cr	6-14	Lignite			m						vsle	hydro phobic
2R	14+	Coal										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/18/98 Stop No. #153

Classification Fine loamy, mixed mesic Typic Haplocalcid

Location

N. veg. (or crop) Spri, Atcon, Sarb, orhy Climate

Parent Material Eolian

Physiography Midslope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3-40% Moisture

Aspect N Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

Nodular carbonates

	pH	ec	SAR	S	C	K%	
3-16	7.3	.49	2	73	18	3.9	S
16-35	7.6	.65	6	66	21	6.9	S

inches

Pit Depth (52)

Bedrock (35)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3		10yr 4/2	lfs	wgr		fr			vs le	Suitable	
Bt	3-9		10yr 4/2	sl	wsbk		fr			s/e		8-10%c
2Bt	9-16		10yr 3/2	scl			fi			es		30%c
2Bk	16-35	10yr 5/2	10yr 3/2	scl	wsbk	h				ev	10%g	15-30%c
3Cr	35-52	Coal										

Soil Description

Soil Type Tsaya — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #154

Classification

Location Near Monitoring station

N. veg. (or crop) Atob — Climate

Parent Material Residuum

Physiography Mid slope of small knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Adjacent to rock outcrops
90% cf on surface

inches
Pit Depth (4)
Bedrock (4)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AC	0-4			vgcl	wgr		fr			sle		
R	4+	Sandstone/shale										

Soil Description

Soil Type Tsaya very channery sandy clay loam — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #155

Classification Loamy skeletal Lithic Torriorthent

Location

N. veg. (or crop) Spai, Hije, Atco — Climate

Parent Material Alluvium

Physiography Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect SE	Root distrib.	
Erosion severe		
Permeability		

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth (8)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ →		
Cy	0-8			gscl	m	sh				sle	50% g	
Cr	8+	shale/siltstone										

Soil Description

Soil Type Tscya File No.

Area No-Name Permit Area Date 2/18/98 Stop No. #156

Classification Loamy skeletal Lithic Torriorthent

Location

N. veg. (or crop) Spar, Atcon Climate

Parent Material Residuum

Physiography Mid-slope small ridge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 85-90% cf. on surface

	pH	ec	SAR	S	C	K%	
0-3	7.4	.33	1	41	33	8	S
3-8	7.3	.49	1	38	28	20	S

	inches
Pit Depth	(8)
Bedrock	(8)
Topsoil	(8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3	10yr 4/3	10yr 4/2	cl	wgr	sh	fr			cv		
Cr	3-8	10yr 5/4	10yr 6/4	gcl	m	sh				cv	25% channers	
R	8+	Sandstone										

Soil Description

Soil Type Patel File No.

Area No-Name Permit Area Date 2/18/97 Stop No. 15 7

Classification fine typic Haplargid BK/CA

Location

N. veg. (or crop) Atoc / Atca Climate

Parent Material Residuum

Physiography Uplands Mountain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Salt seps on surface

#158 located in Burrow lands / Badlands 3" to bedrock No [illegible] veg.

inches

Pit Depth (60)

Bedrock (39)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Bt_{yn}	0/7			C	wc1		fi			S/c		
C	7/39			C	M	sh				S/c		
Cr	39/60	Calcareous			Shale							

Soil Description

Soil Type Jocity — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. # 159

Classification Fine-Loamy Mixed Mesic Typic Torrifluvent

Location

N. veg. (or crop) Atob, Atcon — Climate

Parent Material Alluvium - Stream Terrace

Physiography Backslope

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1-2% — Moisture

Aspect S — Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)	pH	ec	SAR	S	C	K%	
0-8	7.4	.69	1	63	25	7.4	S
8-50	7.3	4.99	8	71	20	11	S
50-60	7.3	6.03	12	68	19	20	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AB	0-8		10yr 4/2	scl	wgr/wsbk		fr			es		
2Ck1	8-50	10yr 7/4	10yr 5/4	scl 25%	m	sh/h				ev/sle	Interbedded fine/coars 5-10%	
2Ck2	50-60	10yr 4/6	10yr 4/4	gscl/sl	m	eh				sle	20% pebbles	

Soil Description

Soil Type Rutal - rocked File No.

Area No-Name Permit Area Date 2/18/97 Stop No. H160

Classification Fine Mic Mesic Aquic Argid Brit CA

Location

N. veg. (or crop) Atpo Atas Climate

Parent Material Residium

Physiography Backslope -

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: adjacent to bedlands Area - Saltsores

samples (depth inches)

inches

Pit Depth (4)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
BAn	0/4			C1/C	wc1	S/6			VSlc			
C1	4+	Grey Shale										

Soil Description

Soil Type Rhizpeta rocked — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #161

Classification

Location

N. veg. (or crop) Atob, Atpb, Atca — Climate

Parent Material Residuum

Physiography Badlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect S	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) 85-90% e f

Adjacent to rock outcrops

inches

Pit Depth (2)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF Boundary		
C	0-2			vcbl	wgr					sle		
Cr	2+	Shale			m							

Soil Description

Soil Type Huerhano File No.

Area No-Name Permit Area Date 2/18/98 Stop No. #162

Classification Fine loamy mixed mesic Typic Haplargid

Location

N. veg. (or crop) Atpo Climate

Parent Material Residuum

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (22)

Bedrock (22)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-6			cl	wcl					wsle		
C	6-22			cl/c	m					wsle		
Cr	22+	shale										

Soil Description

Soil Type Huerfano — File No.

Area No-Name Permit Area — Date 2/18/97 — Stop No. A 163

Classification — RM/CA

Location

N. veg. (or crop) Sparse Aspen — Climate

Parent Material Res: Sedim

Physiography plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely crusted 90% CF

samples (depth inches)

inches

Pit Depth (20)

Bedrock (20)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/8			C/c	mcl	vh				vslc		
C	8/20			c	M	h				vslc		
Cr	20+	grey Shale										

Soil Description

Soil Type Chipeta File No.

Area No-Name Permit Area Date 2/18/97 Stop No. #164

Classification Fine Illitic Torriorthent (Sandy-Skeletal) RM/CA

Location

N. veg. (or crop) Atrip Atrip Climate

Parent Material Residuum / Shale

Physiography Knoll / head slope

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3%	Moisture	
Aspect	N	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

inches

Pit Depth (20)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Cz	0/20			C/cl	M				VSlc			
Cr	20+		Shale		Sicy							

Soil Description

Soil Type Patel — File No.

Area No-Name Permit Area — Date 2/18/97 — Stop No. # 165

Classification fine typic Natrargid — Rock

Location

N. veg. (or crop) Atos / spud — Climate semi arid

Parent Material Alluvium - carbonaceous

Physiography Concave / Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope Nearly level	Moisture	
Aspect	Root distrib.	

Erosion moderate to slight

Permeability

Additional notes:

samples (depth inches) low percent vegetative cover

	inches
Pit Depth	(30)
Bedrock	(30)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/11		10YR 3/2	C	wpl/wcl	vh	fi			clr		
Btkyn	11/30		10YR 3/2	C	pl	h				sle		
2Cr	30+	Grey	silt & lime									

Soil Description

Soil Type Bonadelle File No.

Area No-Name Permit Area Date 2/18/97 Stop No. A166

Classification Fine loamy, Typic Natrixeralf 13M1CA

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches) Moderately to severely eroded 40% Ch on surface

Similar to #175 - This site is more eroded and less dry

	pH	ec	SAR	S	C	K%		
0-6	7.8	.92	7	66	25	7.1	S	
6-28	7.6	9.81	25	77	18	1.4	4	

inches

Pit Depth (56)

Bedrock (39)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6		DY 4/3	SCL	W/mcl		SFI			CS		
Btkyn	6/28	10YR 4/6	+10YR 4/1	SCL 20-25%	Stab/SSBK	Vh/Ch				SIC/ES		
2Cky	28/39	2.5Y 6/2		CL	N/A	Sh				CV		
Cr	39/56	Calcareous		Shale								

Soil Description

Soil Type Rock Outcrop File No.

Area No-Name Permit Area Date 2/15/97 Stop No. #167

Classification BP/CA

Location

N. veg. (or crop) Sparse Climate

Parent Material

Physiography Knoll / Small rock outcrop

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Site located on rock out crop Bedrock exposed at surface

inches

Pit Depth (0)

Bedrock (0)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		

Soil Description

Soil Type Datel - Mon. Wash — File No.

Area No-Name Permit Area — Date 2/19/98 — Stop No #168

Classification Fine Typic Torriorthent (Sodic) — BB/BM

Location

N. veg. (or crop) Spai — Climate

Parent Material Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation 0	Gr. Water	Stoniness
Slope 0-1 1/0	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-10	7.6	1.22	4	53	30	2.3	S

inches

Pit Depth (55)

Bedrock (39)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-10			scl	m		fr			vsle		
2By	10-26			c	wsbk	h	—			vsle	Unsuitable	
2Cy	26-39			c	m					eo	Unsuitable	
2Cr	39-55	Carbonaceous Shale										

Soil Description

Soil Type Chipeta File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #169

Classification Fine Lithic Torriorthent (Sodic) BM/CA

Location

N. veg. (or crop) Atpo Climate

Parent Material Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-2			cl	wgr		vfr			es		
C	2-14			c		h/Nh				sle		
Cy	14-20			c		h				vsle		
2Cr	20+	Coal										

Soil Description

Soil Type Chipeta - Chaney Clay loam — File No.

Area No-Name Permit Area — Date 2/19/98 — Stop No. #170

Classification Fine type torriorthent (Sodic Sodic)

Location

N. veg. (or crop) Atog / Sage — Climate

Parent Material Carbonaceous Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Surveyed by Will Benally w/ GPS

Elev	Northing	Easting
5455	1981383.6	299471.9

Additional notes:

samples (depth inches) Several needed 80-90%? Consistence

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/13			C/cl	m		vfr			sle		
C_y	13/34			C	m	eh				as		
2C	34/55			C	m	vh				sle		

Soil Description

Soil Type Chipeta | File No.

Area No-Name Permit Area | Date 2/19/98 | Stop No. #171

Classification Fine Lithic Natrargid | BM/CA

Location

N. veg. (or crop) ~~Atpo~~, Atob | Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (55)

Bedrock (15-18)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Btn	0-7			C	cl		fr			es		
Bky	7-18			C	sbk	h				es		
Cr	18+	Carbonaceous shale								e0		

Soil Description

Soil Type Clovis ~~series~~ File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #172

Classification Fine Lithic Natrargid BM/CA

Location

N. veg. (or crop) A to b Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (48)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Byn	0-12			c	m					vsle		
R	12+	Lignite										

Soil Description

Soil Type Fruitvale c | File No.

Area No-Name Permit Area | Date 2/19/98 | Stop No. A 173

Classification BAICA

Location

N. veg. (or crop) Wild Spec: Alfalfa | Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: moderately eroded 50% Gravel in surface

samples (depth inches)

	pH	es	SAR	S	C	K%
11-28	7.5	1.94	7	43	30	14	S

inches

Pit Depth (60)

Bedrock (42)

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		Dk 4/2	sl	f gr		sfr			es	Silica	
Bt	3/11		2.5Y 4/2	scl	f/m sbk		fr			cw	Sec	H174
2Btk	11/28	~~5/6~~ 10YR 3/2	10yr 5/3	cl	m sbk	vh/sh				cw		
2Ck	28/42			cl	m	vh				cw		
2Cr	42/60	Siltstone	fsbk									

Soil Description

Soil Type Fruitvale sandy clay loam occ clay sub | File No.

Area No-Name Permit Area | Date 2/18/98 | Stop No. #174

Classification BM/CA

Location

N. veg. (or crop) Atob, spai, Hila | Climate

Parent Material Alluvium Gypsic

Physiography Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-10	7.4	.99	1	57	30	7.3	S

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-2		10yr 4/3	scl	wpl		fr			cv		
Btk	2-10		10yr 5/3	scl 30-35	wsbk		sfi			cv		
2Bkyl	10-20	10yr 5/4	10yr 4/4	sl	wsbk/m	h				cs/sle	3-4% more gyp than sample at 175	
2Bky2	20-35	10yr 4/4	10yr 5/4	sl	wsbk	h				sle/cs		
2Cky	35-55	10yr 3/2	10yr 4/2	scl	m	h				sle		

Soil Description

Soil Type Ronalds very deep — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #175

Classification Fine loamy Natrargid — BM/CA

Location

N. veg. (or crop) Atob, Hija — Climate

Parent Material Alluvium

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%		
0-6	7.8	1.05	4	68	23	5.1	S	
6-20	7.6	7.97	20	73	20	3.1	u	
20-40	7.6	10.1	23	87	11	1.9	u	inches
40-60	7.6	9.54	19	87	10	1.9	u	Pit Depth (60)
								Bedrock (60+)
								Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Eff~~ Boundary		
Btkn1	0-6		10yr 4/3	scl 22-25	mcl		sfi			es		
Btkn2	6-20	10yr 4/4	10yr 5/3	sl 18-20	sab/spr	vh				es/ev	K-nodu	es-stains
Bty1	20-40	10yr 5/6	10yr 5/3	sl 15-13	wabk/m	vh				sle	ky-stains	
Cy	40-60	10yr 4/6	10yr 5/3	sl 15	m	h				vsle		

Soil Description

Soil Type Huerhuero File No.

Area No-Name Permit Area Date 2/18/98 Stop No. 176

Classification Fine Lithic Haploxeralf BM/CA

Location

N. veg. (or crop) Atri Ato6 Climate

Parent Material Colluvium Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Severely eroded / 10m percn. restrict 50% Cr surface

inches

Pit Depth (19)

Bedrock (19)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7	10YR 4/1 4/2		Cl/C	wsbk		SFI			CS/c		
C	7/19	10YR 4/2		Cl/C	M	Sh				CS/c	5% Cgs	
2Cr	19+	Colluvium/s Shale										

Soil Description

Soil Type Miscellaneous Area - Rock Outcrop File No.

Area No-Name Permit Area Date 2/18/97 Stop No. # 17F

Classification BM/CA

Location

N. veg. (or crop) Aspen Area Climate

Parent Material Residuum

Physiography Knoll / Rock outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Bedrock (Shale) exposed at surface.

	inches
Pit Depth	( )
Bedrock	( )
Topsoil	(0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Baccab: Brown — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #178

Classification Fine-Loamy Typic Haplargid — BM/CH

Location

N. veg. (or crop) Spai, Hijo, Atco — Climate

Parent Material

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) Similar to 180

inches

Pit Depth (56)

Bedrock (39)

Topsoil (39)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4		10yr 4/3	sl 10	wgr		vfr			es		
Bt	4-11		10yr 5/3	sl 15-18	wsbk		fr			ev		
BtK	11-20	10yr 5/4	10yr 5/4	scl 20-23	msbk	h				ev	Suitable	
2BK	20-39	10yr 4/4		cl						ev		
2CK/CK1	39-56											

Soil Description

Soil Type Huerfano eroded — File No.

Area No-Name Permit Area — Date 2/18/97 — Stop No. 179

Classification Fine loamy Ustic Haplargid — Hgm/cft

Location

N. veg. (or crop) A-Tob — Climate

Parent Material Alluvium

Physiography Dissected Area / Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded area 90% of surface

samples (depth inches)

	inches
Pit Depth	(37)
Bedrock	(13)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			C/C	wcl/md		fi			sic		
Ck	5/13			C/C	M	h/vh				cv		
2Ckkr	13/22											

Soil Description

Soil Type ? Riverbi Fine Sand — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #180

Classification

Location

N. veg. (or crop) Spai, Hija, Atcon — Climate

Parent Material Residuum

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) - Pit dug 150' south of surveyed site

	pH	ec	SAR	S	C	K%	
10-16	7.7	.68	6	63	23	8.4	Sa/S
16-26	7.9	.75	9	26	30	11	Cl S

	inches
Pit Depth	(56)
Bedrock	(26)
Topsoil	(26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	ESF Boundary		
A	0-3		10yr 4/3	sl	wgr		fr			es	suitable	
Bt	3-10		10yr 4/3	sl	wsbk		sfi			es	suitable	
Btk	10-16	10yr 5/3	10yr 4/2	scl	msbk/ab	h				ev	10%g	
2Bk	16-26	10yr 6/3	10yr 7/4	cl	wsbk/msbk	h				ev		
2Cr	26-50	Shale										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #181

Classification Fine-Loamy Typic Haplargid BB/GM/CA

Location Near Rock outcrops

N. veg. (or crop) Climate

Parent Material Residuum

Physiography Small cuesta Top Near Hinge

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1% Moisture

Aspect N Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) 10% cf at surface

Similar to #206

Btk see 206 for $CaCO_3$

inches

Pit Depth (48)

Bedrock (23)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			fsl	wgr		fr			es		
Bt	5-13			sl	wsbk		fi			es		
2Btk	13-23			cl	pr	h				ev	Unsuitable 8-12% K	
2Ckr	23-48	Shale										

Soil Description

Soil Type Persayo ... Soil: C ... File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #182

Classification Fine Loamy Lithic Torriorthent

Location

N. veg. (or crop) Hija, Spai, Atco Climate

Parent Material Residuum

Physiography Base of Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-20%	Moisture	
Aspect N	Root distrib.	
Erosion severe		
Permeability		

Additional notes:

samples (depth inches)

80% cf at surface

	inches
Pit Depth	(40)
Bedrock	(5)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-5			vgscl							50%	Channers
2Cr	5-20	Shale										
2R	20+	Shale										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #183

Classification Fine Loamy Lithic Torriorthent (Sodic?) CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Small knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 90% cf at surface

inches

Pit Depth (30)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-2											
Cr	2-30	Shale										
R	30+	Siltstone										

Soil Description

Soil Type Huerfano - cracked | File No.

Area No-Name Permit Area | Date 2/25/98 | Stop No. #184

Classification Fine Loamy Lithic Natrargid | CA

Location

N. veg. (or crop) | Climate

Parent Material Residuum

Physiography Mesa Top, Next to Large Wash

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 50% cf at Surface

inches

Pit Depth (36)

Bedrock (6)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Eff)		
Btn	0-6			cl	cl					sle		
2Cr	6-35	Shale										
2R	35+	Siltstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #185

Classification Fine-Loamy Typic Haplargid BM/CA

Location

N. veg. (or crop) Spai, Hija Climate

Parent Material Eolian

Physiography Flats - Small Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) See 180

inches

Pit Depth (24)

Bedrock (24)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-6		10yr 5/3	sl	wgr		vfr			eo	Smt.	
Bt	6-15		10yr 5/3	sl	wsbk		sfr			es	Smt	
2Bk	15-24	10yr 7/3	10yr 5/4	cl	wsbk	h				ev	15% g	12-15% K Noncalcic
2R	24+	Sandstone/Calcareous										

Bac

Soil Description

Soil Type Bacobi Deep File No.

Area No-Name Permit Area Date 2/19/98 Stop No. 185A

Classification BAM BAB Cl

Location

N. veg. (or ~~crop~~) Hya, Saib, Spai Climate

Parent Material colluvium / Alluvium

Physiography upland terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Site was not GPS'd, CA 4/28/98

Sec 180

	inches
Pit Depth	(57)
Bedrock	(52)
Topsoil	(52)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10YR 4/3	SL	wav		vfr			clr		
Bt	4-13		10YR 5/3	SL	wsbk		fr			clr/gs		
Btk	13-25		10YR 5/3 dry	SCL	msbk	vh				~~gs~~		
BC	25-38		10YR 3/2	SL	wsbk	h/vh				gs	highly bioturbated E	
2CK	38-52	10YR 7/2		CL	m	h				cw	15-20% K questionable	
2R	52+	Cont Concrete			Sandstone							

Soil Description

Soil Type Patel - overwashed | File No.

Area No-Name Permit Area | Date 2/19/98 | Stop No. #186

Classification Fine Typic Natrargid | BM/CA

Location

N. veg. (or crop) Itija, Spai, Atob | Climate

Parent Material Residuum

Physiography Flats, Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

Upper C ~~brs~~ pungo brown 7-20" thick sl-scl

	pH	ec	SAR	S	C	K%	
0-7	7.5	3.03	2	51	25	3.6	5

	inches
Pit Depth	(59)
Bedrock	(49)
Topsoil	(7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-7		10yr 4/2	scl	wgr/1m		sfi			sle/es		
Ck	7-12		10yr 4/2	cl	m		sfi			sle		
2Bkyn	12-24		10yr 4/2	cl/c	mpr					vsle		
2C	24-49		10yr 4/2	c	m					eo		
2Cr	49-59	Shale/carbonaceous										

Soil Description

Soil Type Hucleberry - Crodal — File No.

Area No-Name Permit Area — Date 2/18/98 — Stop No. #188

Classification Fine-loamy mixed Lithic Natrargid — BMICA

Location

N. veg. (or crop) Atob, Atpo, Atcon — Climate

Parent Material Residuum

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: #187 - located in Reclaimed Area #10 veg on topsoil

samples (depth inches) 40% cf on surface

	pH	ec	SAR	S	C	K%
0-13	7.6	3.13	9	43	36	4.9

S

	inches
Pit Depth	(60)
Bedrock	(20)
Topsoil	(13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Bndry		
Btn	0-6		2.5Y 4/4	cl	wcl		fi			es		
Btkn	6-13	2.5Y 4/4	2.5Y 4/4	cl	wsbk	h/vh				es/ev		
By	13-20			c	wsbk	h				eo		
Cr	20-60	Shale										

Eff

Soil Description

Soil Type Hueribro - graded — File No.

Area No-Name Permit Area — Date 7/18/98 — Stop No. #189

Classification Fine loamy, mixed, frigid Typic Haplustoll — Br

Location

N. veg. (or crop) Atos — Climate

Parent Material Residuum

Physiography Small Knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 90% cf on surface

inches

Pit Depth (5)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Cy	0/5			Cl	M					Sle		
Cr	5+	Shale										

Soil Description

Soil Type Huerhuero-eroded File No.

Area No-Name Permit Area Date 2/18/98 Stop No. 190

Classification Floodplain Upper Environment Saline Sodic Non Calc

Location

N. veg. (or crop) Atb6 / Atp0 Climate

Parent Material Alluvium Colluvium

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded

samples (depth inches)

inches

Pit Depth (20)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C1	0/8			SCl	M	Sh	SFi			Wde		
Cy	8/20			Cl	M	Sh				CO		
2Cr	20+	fractured bedded limestone and shale										

Soil Description

Soil Type Miscellaneous Area File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #191

Classification CA

Location

N. veg. (or crop) None Climate

Parent Material Residuum

Physiography Badlands Area, Toe of Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0 - 1%	Moisture	
Aspect W	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

100% cf at surface

	inches
Pit Depth	(24)
Bedrock	(0)
Topsoil	(0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				
R		Rock Outcrop Coal										

Soil Description

Soil Type Rosayo - Loamy Clayey Sandy Clay Loam File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #192

Classification CA

Location

N. veg. (or crop) Spai. Atcon Climate

Parent Material Residuum

Physiography Mesa Top, Near Cuesta Edge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 80% cf at surface

inches

Pit Depth (3)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0,3			scl	m					sle		
R	3+	Sandstone										

Soil Description

Soil Type Rock Outcrop File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #193

Classification CA

Location

N. veg. (or crop) Atcon Climate

Parent Material Res. dunn

Physiography Bench between two large washes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 100% cf at Surface

Falls on Rock Outcrop - Sandstone

inches

Pit Depth (0)

Bedrock (0)

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #194

Classification CA

Location

N. veg. (or crop) Atcon, Hija Climate

Parent Material Residuum

Physiography Bench Between two large Washes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 95% of at surface

Bk thickness varies from 18" - 35" in Pit

	inches
Pit Depth	(35)
Bedrock	(35)
Topsoil	(35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			scl	wgr		Fr				es	
Bt	4-12			scl	wsbk		Fr				es	5%g
Bk	12-35			scl	wsbk	sh					el	20%g 15%ak
R	35+	sandstone										

Soil Description

Soil Type Miscellaneous Area - Rock Outcrop File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #195

Classification CA

Location

N. veg. (or crop) Artcom, Spec, Hija Climate

Parent Material Residuum

Physiography Structural Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-10%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Inaccessible to the backhoe. Dug by Hand
Falls on Rock Outcrop, No Available Topsoil
↓ Sandstone

inches

Pit Depth (0)

Bedrock (0)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		

Soil Description

Soil Type Persayo - rocky File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #196

Classification Fine-Loamy Lithic Torriorthent CA

Location

N. veg. (or crop) Sage, Rabbit, Atob Climate

Parent Material Residuum

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 90% of at surface

	inches
Pit Depth	(4)
Bedrock	(3)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-3			scl	m							
R	3+	Sandstone										

Soil Description

Soil Type Persayo - Very Cherty Sandy Clay Loam cracked File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #197

Classification Fine-Loamy Lithic Torriorthent CA

Location

N. veg. (or crop) Atob, spa: Climate

Parent Material Residuum

Physiography Structural Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-40%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 95% of at surface

inches

Pit Depth (5)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-4			scl	m		fr					
R	4+	Sandstone										

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #198

Classification Fine-Loamy, Typic Natrargid CA

Location

N. veg. (or crop) Spai Climate

Parent Material Alluvium

Physiography Flats between two small knolls

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 0-1% | Moisture

Aspect N | Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) Pit was dug 150' west of surveyed site.

20% cf at surface

Similar to #3, but with more clay

	inches
Pit Depth	(65)
Bedrock	(65+)
Topsoil	(25)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-2			scl	wgr		Fr					
Bt/A1	2-14			cl	ssbk		Fi					
Bt/A2	14-26			cl	ssbk	eh						
C	26-65			cl 30	m	eh					15%g	

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #199

Classification Coarse loamy Mixed Mesic Typic Torriorthent CA

Location

N. veg. (or crop) Greasewood, Spai, Hija, Atca Climate

Parent Material Eolian

Physiography Dune down in Wash

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) possible drill site

	pH	ec	SAR	S	C	K%	
0-13	7.6	.53	1	75	15	3.5	S
13-64	7.2	4.44	5	75	18	3.8	S

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (64+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-2			SL			Fr					
BW	2-13			SL			SFr					
C1	13-31			SL		SH						
C2	31-64			SL		SH						

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 3/3/98 Stop No. # 1997

Classification Coarse loamy, mixed Inceptisol K11/C13

Location

N. veg. (or crop) Greasewood/Atri Spaz/Hilo Climate

Parent Material colluvium/alluvium

Physiography Stream terrace (2)

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		

Permeability Site is located adjacent to Kutz Canyon alluvials

Additional notes: GPS w/ 200

samples (depth inches) See 199 Bar Soil

Surface Crusting

inches

Pit Depth (60)

Bedrock (Not)

Topsoil (Not)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	wk		sfi			vcle		
C_1	5/9			LS	m		fi			vcle		
C_2	9/22			SL	m	h				clr		
C_3	22/60			LS	m	sh				clr		

Soil Description

Soil Type Pribmp - crotd - Very Channery Clay loam File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #201

Classification Loamy Lithic Haplargid CA

Location

N. veg. (or crop) Atob, spai, Htja Climate

Parent Material Residuum

Physiography Bench between two large washes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 95% of pt surface

Similar to #202

Very Typical Profile of Natrargids near edges of large washes

0-6 7.4 1.74 1 38 36 13

pH ec SAR S & K% S

inches

Pit Depth (36)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btk	0-6		10yr 4/4	CL cl 25-30	cl		vfr/fi			sle		
2Cr	6-12	Siltstone/Sandstone										
2R	12+	"		"								

Soil Description

Soil Type Persayo Sodic - eroded File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #202

Classification Fine-Loamy Lithic Torriorthent (Sodic) CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Residuur

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 90% cf at surface

Surrounded by rock outcrops

inches

Pit Depth (20)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Eff)		
C	0-3			cl	m		vfr			sle		
R	3+	siltstone										

Soil Description

Soil Type Tsaya File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #203

Classification Fine-Loamy Lithic Torriorthent (Sodic)

Location

N. veg. (or crop) Spai Atob Climate

Parent Material Residuum / Alluvium

Physiography Badlands - Toe of Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 35% cf at surface / low perennial veg cover

Rock outcrops to North

inches

Pit Depth (40)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C1	0-7			scl	m		fi			sle		
C2	7-12			vgscl	m	sh				es		
2R	12+	Highly Carboneceous Shale										

Soil Description

Soil Type Parsaya — File No.

Area No-Name Permit Area — Date 2/25/98 — Stop No. #204

Classification Fine Loamy Like Torriorthent — CA

Location

N. veg. (or crop) Spai, Hija, Atcon — Climate

Parent Material Residuum

Physiography Mid-Slope - Deflational Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4-5%	Moisture	
Aspect E	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

Nodular Carbonates

inches

Pit Depth (60)

Bedrock (22)

Topsoil (4)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	10yr 4-1		Scl	wgr		Fi				co	
2Bk	4-22			C 30-35	sbk	h					es	
2Cr	22-60	Shale										
			Developed from Shale									

Soil Description

Soil Type Grieta - Deep File No.

Area No-Name Permit Area Date 2/19/98 Stop No. 205

Classification BM/CA

Location

N. veg. (or crop) Hija, Spai, Orhy, Atcon, Gusa Climate

Parent Material colluvium over residuum

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 10% cf on surface See 246

Deflational Area

inches

Pit Depth (62)

Bedrock (42)

Topsoil (42)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4		10yr 4/4	fsl	wgr		fr			es		
Bt	4-13		10yr 4/4	scl	wsbk		fr			es		
2Btk	13-22		10yr 8/1	scl		h				ev	Calcic See 246	
2Ck	22-42		10yr 8/1	scl						ev		
2Ckr	42-62	Calcareous Sandstone										

Soil Description

Soil Type Gricta. - Deep File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #206

Classification

Location

N. veg. (or crop) Spai, Itija, Atrcon Climate

Parent Material Residuum

Physiography Mid-slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect N	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%		
13-31	7.9	1.18	15	51	28	14	u	scl

inches

Pit Depth (52)

Bedrock (42)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-7		10yr 5/4	lfs	wgr		vfr			sle	Suit.	
2Bt	7-13		10yr 5/3	scl	wsbk/wabk		fi			es	Suit.	
2Btk	13-31	2.5y 4/4	2.5y 5/2	scl	msbk	h/vh				eu		
3Bk	31-42	2.5y 6/4		cl/c	pr	vh				eu	Unsuitable	
3Cr	42-52	Shale										

Soil Description

Soil Type Gricta - Wabeek - Ken | File No.

Area No-Name Permit Area | Date 2/19/98 | Stop No. #207

Classification Fine-Loamy Typic Calciargid BM/CA

Location

N. veg. (or crop) Spai, It.ja, Atcon, Gusa, Orhy | Climate

Parent Material Residuum

Physiography Mid-slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect N	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(49)
Bedrock	(35)
Topsoil	(16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			fsl			vfi			eo/sle		
Bt	5-16			scl 20			sfr/sfi			es		
2Bk	16-35			cl		h				ev	Calcic	
2Crk	35-49	Shale										

Soil Description

Soil Type Bacobi - brown File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #208

Classification fine loamy, mixed, mesic, Typic Haplargid BM/CA

Location

N. veg. (or crop) Spain, Hija, Atcon Climate

Parent Material Eolian

Physiography Mid-slope into Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect S	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

- No calcic
- Brown phase of Shiprock variant

	pH	EC	SAR	S	C	K%	
0-13	7.4	.32	1	81	13	2.6	S
13-33	7.7	.48	5	73	20	4.8	S

	inches
Pit Depth	(50)
Bedrock	(39)
Topsoil	(33)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-8		10yr 4/3	sl 8	wsr		fr			sle		
Bw	8-13		10yr 4/3	sl 12	wsbk		fr			es		
Btk	13-28	10yr 4/4	10yr 4/3	scl 25	mpr	h				ev		
Bk1	28-33	10yr 5/4	10yr 4/3	sl 18		h				ev	5%g	
Bk2	33-39	10yr 5/2	10yr 4/2	scl 30-35		sh				ev	Unsuitable	
2Cr	39-50											

Soil Description

Soil Type Bruce Loam File No.

Area No-Name Permit Area Date 2/19/98 Stop No. #209

Classification Coarse loamy, mixed, Mesic Typic Haplargid Bay Area, CA

Location

N. veg. (or crop) Grass Scrub Acorn Climate

Parent Material Colluvium

Physiography Rock Slope

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%		
0-4	7.3	.36	0	75	18	1.6	S	
4-20	7.3	.38	2	73	16	5	S	

inches

Pit Depth (60)

Bedrock (32)

Topsoil (20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4		10YR 5/3	SL	1 Fine 2-4 10-12					SK		
Bt1	4/12		10YR 4/2	SL	12-13 15					CU		
Bt2	12/20		10YR 4/2 / 4/3	SL / GrSL	17-18 20-22					CU		
2Bk	20/32		10YR 6/2	SL / GrSL	18-19					CU		
2Cr	32/60		Calcareous	Sandstone								

Soil Description

Soil Type Monerico. File No.

Area No-Name Permit Area Date 2/2-/98 Stop No. #210

Classification Loamy Lithic Haplargid BM/CR

Location

N. veg. (or crop) Sparse Mixed Herbs Climate

Parent Material Residuum

Physiography head of draw

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 10% cf at surface

inches

Pit Depth (45)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-2			ls/sl	wgr	lo				s/e		
Bt	2-6			scl	wsbk		fi			es		
Cr	6+	Calcareous Sandstone/Shale										

Soil Description

Soil Type T. rock Variant - Poso File No.

Area No-Name Permit Area Date 2/26/98 Stop No. # 211

Classification BM/CA

Location

N. veg. (or crop) Spai Hija, Atob Climate

Parent Material Alluvium

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-6	7.3	1.62	8	53	28	3	S
6-24	7.1	.55	3	60	26	2.3	S
24-41	7.2	.8	6	55	30	2.4	S
41-60	7.2	1.98	5	73	18	2.3	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-6	10yr 6/2	10yr 4/2	scl	wpl/wgr		sfi			sle		
Bt1	6-24	10yr 4/2	10yr 4/2	scl	msbk/pr	h/vh				sle/es		
Bt2	24-41	10yr 3/1	10yr 4/1	scl	mpr	vh				sle		
Ck	41-60	10yr 4/3	10yr 4/1	(scl)/cl						sle		

Soil Description

Soil Type Tsoya - Channery Sandy Clay loam — File No.

Area No-Name Permit Area — Date 2/26/98 — Stop No. # 212

Classification Loamy Skeletal Typic Torriorthent — CA

Location

N. veg. (or crop) Spai, Hija — Climate

Parent Material Residuum

Physiography knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 45% cf on surface

	inches
Pit Depth	(60)
Bedrock	(26)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			cscl			fr.			cs		
Ck1	4-8			ecscl			fr			cv	60-70% channers S.S.	
Ck2	8-26			scl		sh				cv	soft weathered channers	
Ckr	26-60	Calc. S.S.										
R	60+	Calcareous Sandstone										

Soil Description

Soil Type Shiprock Known File No.

Area No-Name Permit Area Date 2/26/98 Stop No. 213

Classification Coarse loamy, mixed, mesic Typic Haplocalcid BM/CA

Location

N. veg. (or crop) Atrip SpCi SpCr Climate

Parent Material eolian

Physiography hood slope between 2 Drainage Basins

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60)

Topsoil (48)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10yr 4/2	LS	Gr		fr			cs		
Bw	5/14		10yr 4/3	sl +10	wsbk/m		sfi			vslc		
2Bt/Bt	14/21		10yr 4/2 3/2	sl	wsbk		sfi			slc		
2Btk	21/32	10yr 3/2	10yr 4/1	sl	msbk/cack	h				cs		
3Ck	32/42	10yr 4/4	10yr 4/2	sl	M	sh				slc		
4Ck	42/48	10yr 4/2	10yr 3/1	sl	M	h				vslc		
5Ck	48/60	10yr 7/3		scl	M	h				cv	30% k unc 4 mc	
5R	60+	Cd		SS								

Soil Description

Soil Type Bucobi - Brown File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #214

Classification Ism CA

Location

N. veg. (or crop) Grass Area Climate

Parent Material Colluvium

Physiography Rock Slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-5	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Sec on #209

inches

Pit Depth (60)

Bedrock (32)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0/4			sl	wg		vfr			eo		
Btk	4/19			scl	wsbk	fi/sh				sle/es	10%g	
2Ck	19/32			gscl	m	vh				eu	30%g	channers 15-20%K
3R	32/60	Core										

Soil Description

Soil Type Brown Rock - deep File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #215

Classification Fine loamy mixed frasic Typic haplocryolls

Location

N. veg. (or crop) Brush, sagebrush, grass, some aspen Climate

Parent Material colluvium / residuum

Physiography mountain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-5%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

17.26 pH 7.5 EC .62 SAR 5 S 53 C 25 K% 9.9 S

inches

Pit Depth (50)

Bedrock (50)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			SL	wgr		VFr			co		
Bt	5/17			SL/SCL	wsbk		vfr			sle		
Bk	17/26			SCL	wsbk	h				cv	10%	k
Ck	26/50			SCL	m	sh				cv	15-15%	
Cr	50+	Calcareous Sandstone										

Soil Description

Soil Type Fruitland - Moderately deep - Clayey substratum File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #216

Classification Coarse-Loamy Typic Torriorthent CA

Location

N. veg. (or crop) Spai, Atob, Spcr Climate

Parent Material Residuum

Physiography Deflational Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Adjacent to Rock outcrops

	inches
Pit Depth	(50)
Bedrock	(32)
Topsoil	(17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-8		10yr 5-3	sl	wgr		fr					
Bw	8-17		10yr 5-4	sl	wgr/m		fr					
2Ck	17-32			cl	m	vh					unsuitable	
2Cr	32-50	Shale										
	50+	Shale										

Soil Description

Soil Type Razito — File No.

Area No-Name Permit Area — Date 2/26/98 — Stop No. #217

Classification — CA

Location

N. veg. (or crop) Spcr, Spai, Cela, Atcon, Hija, Gusa Climate

Parent Material Eolian

Physiography Bottom Slope Large Hill – Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Possible Drill Location

	pH	EC	SAR	S	C	K%	
0-41	7.4	1.32	8	88	8	1.6	S
41-63	7.4	1.35	6	83	11	3	S

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
C1	0-7			ls			sf				vsl c	
C2	7-41			ls		sh	"				es	
CK	41-63			ls		sh					ev	

Soil Description

Soil Type Bacobi - Brown File No.

Area No-Name Permit Area Date 2/26/08 Stop No. M 218

Classification Fine loamy, typic haplargid

Location

N. veg. (or crop) [illegible] Climate

Parent Material [illegible]

Physiography [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (27)

Bedrock (27)

Topsoil (12)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6			SL	GR		VFr			CS		
Bt	6/12			SL/SCL	WSBK		fr			CS		
2Ck	12/27			SCL	M	Sh				CW	Gr Shale Sm Pebbles Sm Gravel	
2Ckr	27+	Calcareous		Sandstone								

Soil Description

Soil Type Bacobi Brown File No.

Area No-Name Permit Area Date 2/26/98 Stop No. H 219

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4-5%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Similar to H 218

inches

Pit Depth (45)

Bedrock (19)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4		10yr 5/3 4/3	sl 8	wgr		vfr			co/usc		
Bt	4/11		10yr 4/3	sl 18/20	wsbk		fr/cfi			cs	5% ss channels	
2Ck	11/19		2.5y 6/4	scl 26	m	sh				ev	5-8% ck	
2Cr	19/45	Calcareous Sand Stone (soft)										
3R	45+	Coal										

Soil Description

Soil Type Rizito - Brown File No.

Area No-Name Permit Area Date 2/26/98 Stop No. # 220

Classification Coarse loamy, typic torriorthent Bm

Location

N. veg. (or crop) Spcr Atcon Sagebrush Climate

Parent Material Colluvium

Physiography uplands Small trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Not sampled on this site

	pH	EC	SAR	S	C	K%	
4-18	7.2	.35	1	83	13	2.7	S
18-42	7.7	.57	6	85	13	1.9	S
42-60	7.8	.86	12	93	5	.66	S

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4		10yr 4-3	sl			vfr				es	suitable
Bw	4-11		10yr 4-2	sl			vfr				es	
C	11-18		10yr 4-2	ls			sfr				es	
Ck	18-42	10yr 3-3	10yr 3-4	vfsl		sh					ev/ste	
2C	42-60	10yr 6-8	10yr 5-3	fls		so					eo	

Soil Description

Soil Type Cloneta - eroded File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #221

Classification Fine Lithic Torriorthent (Sodic) CA

Location

N. veg. (or crop) Spai Climate

Parent Material Residuum

Physiography Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Adjacent to Rock Outcrops
50% cf at surface

inches

Pit Depth (50)

Bedrock (19)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-6		2.5Y 5/3	sc	cl		fr			cv		
Cky	6-19									cv		
Cr	19-45	Shale										
R	45-50	Shale										

Soil Description

Soil Type Slickrock variant - File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #222

Classification CA

Location

N. veg. (or crop) Hija, Spai, Atob Climate

Parent Material Alluvium

Physiography Low Trough - Deflational Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Similar to #211

inches

Pit Depth (57)

Bedrock (57+)

Topsoil (57+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AC	0-7			cl	mabk		fi				v s/e	
Bt	7-24			cl	pr	eh					v s/e	
Btkb	24-41			cl	pr	eh					s/e	
Ck	41-57			sl	m	eh					es	

Soil Description

Soil Type Monierco · loamy Sand File No.

Area No-Name Permit Area Date 01/26/19 Stop No. #222

Classification · loamy, mixed Mesic Ultic Haploxeroll

Location

N. veg. (or crop) Aroe Sa Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

pit	EC	SAR	S	C	K%
3-9	8	1.6	15	80	15	2.2	5

inches

Pit Depth (9)

Bedrock (9)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/3			ls	Wk f/m		Vfr			eo	Sl k	
Bt.	3/9			sl 18	M cabk		f:			s/e		
2Cr	9+	Calcareous		Sand Stone								

Soil Description

Soil Type Hueibarra File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #224

Classification Fine-Loamy Typic Natrargid CA/BM

Location

N. veg. (or crop) Atob, Spai Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 50% cf on surface #225 located within Archeological Site Buffalo Cave

inches

Pit Depth (55)

Bedrock (34)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Btn	0-4			cl	mcl	h				sle		
Bkm	4-17			cl	wsbk/m	h				eu	10% K	
Cky	17-34			cl/c	m	h				sle		
Cr	34+	S.S./Shales										

Soil Description

Soil Type Monnieo File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #226

Classification loamy lithic Haploxeroll

Location

N. veg. (or crop) Atob, Spai, Hija Climate

Parent Material Residuum

Physiography Edge of small knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 15% cf on surface

Depth to Cr varies from 6-15"

0-6 7.4 .44 2 65 25 8.4 S

pH EC SAR S C K%

inches

Pit Depth (30)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	ESS Boundary		
A	0-2			sl/scl	wgr	lo				es		
Bt	2-6			scl	wsbk		sfi			ev		
Cr/R	6+	Sandstone										

Soil Description

Soil Type Shiprock Variant — File No.

Area No-Name Permit Area — Date 2/23/17 — Stop No. 227

Classification Fine loamy, mixed mesic Typic Haplargid — i.a. 1 c 67

Location

N. veg. (or crop) [illegible] — Climate

Parent Material Alluvium

Physiography [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: [illegible]

samples (depth inches) Non continuous thin horizons of [illegible]
3-5" thick

	pH	EC	SAR	S	C	K%	
0-7	7.41	.84	4	65	20	3.3	5
7-18	7	2.67	2	58	25	4.3	5
18-40	7.1	1.26	2	73	18	3.5	5
40-60	6.9	1.51	1	78	18	2.1	5

inches
Pit Depth (60)
Bedrock (60+)
Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7	10YR 4/4	10YR 4/2	scl	M gr		sfi			cs		
Bt1	7/18	10YR 4/3	10YR 4/2	scl 30-5	st sbk	vh				cle		
Bt2	18/40	10YR 4/2	10YR 4/2	scl 25	"	vh				cle		
Bt3b	40/60	10YR 4/3	10YR 4/3	sl 22	stable	vh/fr				vis cle		

Soil Description

Soil Type Bocabec | File No.

Area No-Name Permit Area | Date 3/17/98 | Stop No. A228

Classification Fine loamy, mixed, frigid Calciaquoll | Co. Ref.

Location

N. veg. (or crop) Scrub / Alder | Climate

Parent Material Glacial outwash

Physiography Uplands

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 3-4% | Moisture

Aspect E | Root distrib.

Erosion

Permeability

Additional notes: Slightly drained area

samples (depth inches)

inches

Pit Depth (33)

Bedrock (33)

Topsoil (33)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			SL	wsr		Vfr			CW		
Bt	3/8			SCL	wsbk		Fr			SW		
Btk	8/13			gSCL	wsbk		Fr			CS	20% SSC Lenses	
2Bk	13/24			CL	MSBk	h				CW	Cemented below 15"	20% t
2Ck	24/33			SCL	M	Sh				CW	)	
2Cr	33/44	Calcareous Sand Stone										

Soil Description

Soil Type Shimmick variant — File No.

Area No-Name Permit Area — Date 3/2/98 — Stop No. #229

Classification — BM/CA

Location

N. veg. (or crop) Soai, Hija, Gusa, Atob — Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(75)
Bedrock	(72)
Topsoil	(59)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5		10yr 5/3	ls	wgr		vfr			es		
Bw	5-13		10yr 5/3	ls/sl	wsbk/m		vfr			vsle		
Bt	13-20		10yr 5/4	scl	msbk		sfi			es		
2Ck1	20-39	10yr 4/4	10yr 4/2	sl	m	h				es/sle		
2Ck2	39-59	10yr 4/4	10yr 4/2	sl	m					es		
3Ck	59-72	10yr 7/3		cl	m					ev	30% K	
3Cr	72+	Calcareous Sandstone										

Soil Description

Soil Type Persayo | File No.

Area No-Name Permit Area | Date 3/2/98 | Stop No ~~TF~~ 230

Classification Loamy Lithic Torriorthents | BMCR

Location

N. veg. (or crop) Spa., Hija, Atob | Climate

Parent Material Residuum

Physiography Toe of Hill

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 30% | Moisture

Aspect E | Root distrib.

Erosion severe

Permeability

Additional notes:

samples (depth inches) Deflational Area

	pH	EC	SAR	S	C	K%
0-8	7.3	.65	5	.73	15	2.1 S

inches

Pit Depth (17)

Bedrock (17)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (EFF)		
A	0-3			sl	wgr/wpl		fr			vs/e		
BC	3-8			scl	wsbk/m		sfr			s/e/es		
2C	8-17			cl		h				vs/e	Unsuitable Clay content ?	
2Cr/R	17+	Coal									Sodium associated	

Soil Description

Soil Type Monerico — File No.

Area No-Name Permit Area — Date 3/2/98 — Stop No. #231

Classification Fine-Loamy, Lithic Haplargid — BM/CA

Location

N. veg. (or crop) Spar, Orhy, Hija, Atob — Climate

Parent Material Residuum

Physiography Hill Top

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2-3%	Moisture	
Aspect	N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (10)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-2			sl	wgr	lo				co		
Bt	2-7			scl	wsbk		sfr			sle		
Bk	7-10			vgscl						cs/ev	35-40% channels	
R	10+	Calcareous Sandstone										

Soil Description

Soil Type Razito - Clayey substratum - Moderately Deep File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #232

Classification Coarse Loamy, Typic Torriorthent BM/CA

Location

N. veg. (or crop) Atob Spar. Ornly Climate

Parent Material Eolian / Alluvium

Physiography Large Broad Basin

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Northern edge of Dune

	pH	EC	SAR	S	C	K%
0-22	7.4	.9	4.4	76	15	2.1

inches

Pit Depth (61)

Bedrock (61)

Topsoil (22)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4		10yr 4/3	ls	wpl		fr			eo		
C	4-22		10yr 4/3	sl	m		fr			sle		
2Ck	22-32			scl	m	h				sle		
2C	32-61			sicl		h				vsle		
2Cr	61+	Mudstone										

eroded

Soil Description

Soil Type Persayo (Cod)(C) File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #233

Classification fine loamy, mixic frigid Typic Torriorthents + Sl. = Solid Bank

Location

N. veg. (or crop) Atrip / Grasses Climate

Parent Material Residuum Shale

Physiography Dissected fans

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes: Severely eroded area low perennial veg cover

samples (depth inches)

	inches
Pit Depth	(6)
Bedrock	(6)
Topsoil	(Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C_y	0/6			Cl	4AA							
C1	6+	Shale										

Soil Description

Soil Type Persay-O' - overwashed | File No.

Area No-Name Permit Area | Date 2/26/98 | Stop No. #234

Classification Fine / Loamy / Mixed Thermic (Sodic) | Bm/CA

Location

N. veg. (or crop) Atos sac | Climate

Parent Material Residuum

Physiography Overwashed Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (16)

Bedrock (16)

Topsoil (7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
CA	0/7			SiL	Lgr/M		VFr/Fi			Usle	Likely Saline	
2Cy	7/16			C/c		h				Sle		
2Cr	16+	Mudstone (Grey) Silt										

Soil Description

Soil Type Persayo - eroded File No.

Area No-Name Permit Area Date 3/2/97 Stop No. A235

Classification

Location

N. veg. (or crop) bitr sage Atrex Climate

Parent Material Dessicum

Physiography valleys / mesa top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Moderately rounded

samples (depth inches) 40-50 cm from surface

	inches
Pit Depth	(6)
Bedrock	(3)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/3			sd	M/mod				es			
R	3+	Sand Stone										

Soil Description

Soil Type Fluvents File No.

Area No-Name Permit Area Date 3/2/98 Stop No. 236

Classification Rel/Cat

Location

N. veg. (or crop) Atcb Sage Artem Climate

Parent Material Residuum

Physiography Mtn. Loess /

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Silt Seq. [illegible] Laminated by roots

No Sa. Ca. [illegible] Calcine Parent mat. /

inches

Pit Depth (27)

Bedrock (27)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Bw2	0/8			SL	wsbk	sh				clear vsic		
Cz	8/27			SL	M.	sh				co		
R	27+	Sand Stone										

Soil Description

Soil Type Hurlbono - eroded File No.

Area No-Name Permit Area Date 3/2/98 Stop No. P258

Classification [illegible] Natural

Location

N. veg. (or crop) Pine Climate

Parent Material [illegible]

Physiography [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes: Gently eroded 30-40% CF in subsoil

samples (depth inches)

inches

Pit Depth (13)

Bedrock (13)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/13			C	Cl		Fi					
Cr	13+	Co	Sm	aceous	Shale							

Soil Description

Soil Type Patel File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #239

Classification Fine Typic Haplargid Inclusion

Location

N. veg. (or crop) Artb Sage / Aftan Climate

Parent Material Residuum derived from Sltst

Physiography Undulating area on Ridge - 15 mean

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect F	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (28)

Bedrock (18)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			C	MC1		Fi			slc		
Byca	5/18			C	MSbk		VFi			slc	Salt crystals throughout	
Cca	18/28			Cl	M	Sh				slc	Carbonate	
R	28+	Sandstone										

Soil Description

Soil Type Patel - eroded File No.

Area No-Name Permit Area Date 7/26/18 Stop No. A240

Classification Fine mixed mesic typic Haplargid Loam

Location

N. veg. (or crop) Hwy 6 Area Climate

Parent Material ~~Alluvium~~ Res. Iuum

Physiography Mountain / ~~Flood~~ Hills

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Highly salt affected

inches

Pit Depth (40)

Bedrock (29)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btky	6/6			C	wcl		VFI					
Cky	6/29			C	M	lo	FI				Crystalline gyp Gulite & Mn soy	
Cr	29/40			C	~~M~~							
R	40+			Sil Stone								

Soil Description

Soil Type Bealby File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #241

Classification Fine Loamy, Natrargid BM/CA

Location

N. veg. (or crop) Spa., Atcon Climate

Parent Material Alluvium

Physiography Trough / 0.1000 ft - Gim

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	Se (Tot)		
0-11	7.1	2.25	0	50	30	1.6	1.2	u	7.3% Soil

inches

Pit Depth (52)

Bedrock (40)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			l	wpl	sh				sle		
Byn	3-11			l/sil			sfi			vsle		
Cy	11-22			sicl						eo	Soft Powdery gy masses	
2Cy	22-40			cl		vh/eh				eo	Crystals	
BCyr	40-52	Shale/Siltstone										

Soil Description

Soil Type Fruitland - deep File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #242

Classification Coarse-Loamy Typic Torriorthent BM/CA

Location

N. veg. (or crop) Atob, Spai, Spcr Climate

Parent Material Alluvium / Eolian

Physiography Alluvial valley

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
15-42	7.5	.91	4	83	10	2.2	S

inches

Pit Depth (60)

Bedrock (42)

Topsoil (42)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF ~~Boundary~~		
A	0-4	10yr 5/4	10yr 4/3	lvfs	wp1/vgr	so/po				eo		
C1	4-15	10yr 5/4	10yr 4/4	lfs			vfr			vsle	3-5% pebbles	
C2	15-42	10yr 5/4	10yr 4/3	lvfs/vfsl		sh				sle	10% channers	
2Cr	42+	Mudstone										

Soil Description

Soil Type Manico File No.

Area No-Name Permit Area Date 2/26/98 Stop No. #243

Classification Fine Loamy, ... BMICA

Location

N. veg. (or crop) Spai, Hijs, Spcr, Atob Climate

Parent Material Residuum

Physiography mid-slope small Hill

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect S	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (45)

Bedrock (13)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Eff)		
A	0-3			scl	wgr	sh				cv		
Bk	3-13			scl/cl	wsbk/m	h				cv	15-18%	K
C/Cr	13-32	Soft weathered Shale										
Cr	32-45	Sil Hstone										

Soil Description

Soil Type Rezito - Sandy clay loam Sub Stratum File No.

Area No-Name Permit Area Date 2/26/18 Stop No. 244

Classification fixed dune cycle succession Blvd

Location

N. veg. (or crop) Spar Spa! Atris Gusa Climate

Parent Material eolian over alluvium

Physiography Foothills dune colluvium to alluvial

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-5%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/19			LS	M/Lar		Vfr			co		
2Btkyn	19/35			scl	w sbk	sh				es	Unsuitable Salts	
3Cy	35/60			c/cl	M	h				sle	Unsuitable Clays Salts Carbonates	

Soil Description

Soil Type Fruitland – 1' Clayey substratum File No.

Area No-Name Permit Area Date 2/28/98 Stop No. 9 245

Classification Coarse loamy, mixed [illegible] Typic Ochrept 12" PCA

Location

N. veg. (or crop) Sparse pinon Greasewood Atrip Climate

Parent Material Alluvium

Physiography [illegible]

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%		
0-19	7.6	.73	4	75	13	2.4	S	
19-38	7.5	2.09	16	80	13	4.6	S	

inches

Pit Depth (60)

Bedrock (Ext)

Topsoil (38)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	clear Boundary		
C_1	0/19			SL	M	SH	SFI			CS/USL		
C_2	19/38			SL	M	SH				USL	10-15% rocks	
$2C_y$	38/60			C/C	M	EH				USL	Unsuitable Clays	

Soil Description

Soil Type Gricta - Moderately Deep File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #246

Classification CA

Location

N. veg. (or crop) Spa., Hija, Atcon Climate

Parent Material Eolia-

Physiography Small Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

0-17 is same mantle material observered in NW part of Area

Suitability

	pH	EC	SAR	S	C	K%
17-26	7.76	.57	4	65	18	17 5

	inches
Pit Depth	(60)
Bedrock	(26)
Topsoil	(26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			sl			Fr				vsle	
Bt	4-17			sl			Fr				sle	
2BK	17-26			scl		sh					ev	5-10% K
2Cr	26-46	sandstone										
3Cr	46-60	shale										

Soil Description

Soil Type Shiprock - Brown File No.

Area No-Name Permit Area Date 3/2/98 Stop No. H 247

Classification Course loamy, typic Haplocalcid 12B1

Location

N. veg. (or crop) Sage Only Sparse Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Small dune extends approx 250' to the west from pit

samples (depth inches) ~~Extends~~ small area to the south and developed area to the North.

	pH	EC	SAR	S	C	K%			
0-6	7.4	.78	5	83	10	2.1	S		
6-15	7.3	.57	3	78	13	3.8	S		inches
15-40	7.1	4.23	6	81	13	4.7	S	Pit Depth	(72)
40-50	7.4	13.2	23	68	15	4.5	4	Bedrock	(72+)
50-72	7.5	10.41	18	78	10	2.7	S	Topsoil	(40)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6		10YR 4/2	SL S.	W 1		VFr			es		
Bt	6/15		10YR 5/3	SL 15-18	W SBK		Fr			es		
Bk	15/30	10YR 6/3	10YR 4/3	SL 10-12	M SBK	h				ev		
Ck	30/40		"	LS	M	Sh				ev		
Btkyb	40/50		10YR 3/2	SL	W CS/M	h				es/ev		
Ck	50/72		10YR 4/3	SL 10	M	Sh				es		

Soil Description

Soil Type Rezito File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #248

Classification Mixed Mesic Typic Torripsamment BM

Location

N. veg. (or crop) Oryzopsis hymenoides Sporobolus cryptandrus Climate

Parent Material Eolian

Physiography Dune / Backslope of dune

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	10-15%	Moisture	
Aspect	N	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches) 1055.16 Drill Stk

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (64+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	wsg		vfr			CO		
C	5/18			fls	m		vfr			s/c		
Btkb	18/34			scl	wssbk	lr				C·S	K stains 3-5%	
Ck	34/64			ls	m	lr/sh				sk/cs	Stains and nodules	

Soil Description

Soil Type Monico | File No.

Area No-Name Permit Area | Date 3/2/98 | Stop No. KT249

Classification

Location

N. veg. (or crop) | Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 12" to Bedrock

Pines Stacks approx 40' to East

inches

Pit Depth ( )

Bedrock (12)

Topsoil (12)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Fruitland ~~~ File No.

Area No-Name Permit Area Date 3/2/9X Stop No. HC 5

Classification Coarse loamy, Typic torric Haplo 13pm

Location

N. veg. (or crop) Spot Spot Mtn Climate

Parent Material Eolian / alluvium

Physiography Concave / toe slope Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes: Moderately eroded

samples (depth inches)

	pH	EC	SAR	S	C	K%		
47-62	7.2	7.63	11	51	26	3.7	SCL	SL

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (62+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 5/4	LS	W-M	SO				CO		See
C	3/16		10YR 5/4	SL	M		VFR			CO		21Z
2Bwb	16/26	10YR 6/4	7.5YR 5/4	SL	MSBK					SC		
C'	26/47		10YR 5/3	SL	M					SC		
2C	47/62	2.5Y 7/2	10YR 5/3	SCL	M					SC/CS	10% rocks	

Soil Description

Soil Type Poisayo - eroded File No.

Area No-Name Permit Area Date 3/7/97 Stop No. #251

Classification Lithic torriorthent

Location

N. veg. (or crop) Semi Arid Climate

Parent Material Residuum

Physiography Terrace Smooth Mountain Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

60% of surface - Area surrounded by Rock Outcrops

inches

Pit Depth (10)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/5			gsl	wpl/wel	lo			es		15% gravels 10YR 5/3 dry	
R	5+	Sandstone										

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area Date 3/2/98 Stop No. H 252

Classification Fine loamy, Typic Haplargid

Location

N. veg. (or crop) Atob Spal Alcon Climate

Parent Material Alluvium

Physiography Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes: Severely eroded

samples (depth inches) 70% Cleanes and Grass on Surface

inches

Pit Depth (52)

Bedrock (52)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
EA	0/3			scl	m/gr	sh				cs		
Btn	3/12			scl	stcl	h				cs		
Btkn	12/24			scl	mcl	vh				cs		
Cky	24/52			scl	m	sh				cs		
2 Cr	52+	baked Shale										

Soil Description

Soil Type Persayo - Fruitycl loam ~~ File No.

Area No-Name Permit Area Date 3/2/98 Stop No. 4253

Classification BM

Location

N. veg. (or crop) Climate

Parent Material intermingled alluvium & residual materials

Physiography Mancos Shale terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-20	7.4	3.21	5	63	18	4.9	S

inches

Pit Depth (20)

Bedrock (20)

Topsoil (20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
C1	0/7			scl	m		fr				es	
C2	7/20			scl	m	h					es	
2C1	20+	C.1 Sandstone			Shale							

Soil Description

Soil Type Fruitland - fine loamy, calcareous | File No.

Area No-Name Permit Area | Date 3/2/98 | Stop No. #254

Classification Coarse loamy, Typic Torriorthent | CA

Location

N. veg. (or crop) Atob, sper, spai, orhy | Climate

Parent Material Alluvium

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0 – 15	7.4	.67	2	76	11	3.1	5
15 – 51	7.3	3.33	4	73	18	3.2	5

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (51)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			ls	wgr/m		fr			vsle		
Bw	4-15			sl	wsbk		fi			vsle		
C	15-51			sl	m					sle		
2C	51-63			scl	m					es	Unsuitable Carbonaceous Alluvium/ many Coal Chips	

Soil Description

Soil Type Razito File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #255

Classification CA

Location

N. veg. (or crop) Bnsa, orhy, Atob, sper, spai Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-13	7.5	.37	1	86	10	1.3	S
13-26	7.5	.43	2	86	10	2.1	S
26-43	7.9	.80	5	66	20	6.4	S

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(43)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			LS	wg	Lo					vsle	
Bw	3-13			LS	wsbk m		SFi				sle	
BK/CK	13-26			LS	wsBK		SFi				ev	
2BtK	26-43			scl	sabk	vh					ev	10%g 5-8%K
CK	43-60	unsuitable CF & carbonate		scl	m	vh					ev	50%g

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 3/21/98 Stop No. 256

Classification Coarse loamy Turbic Haplocryolls

Location

N. veg. (or crop) Spec. Spec. Aspen Climate

Parent Material Alluvium

Physiography Uplands / Saddle

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K0/0	
13-45	7.6	1.4	8	81	15	2.4	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			SCl	wgr		sfr			cs		
Bw	5/13			sl	wsbk/m		sfr			sle		
Ck	13/45			gsl	m	sh/m				usle	Interbedded layers of Coarse & Fine Material	
C	45/60			sl	m	sl				usle	Suitable Clean Sands	10-15% Channers

Soil Description

Soil Type Razito File No.

Area No-Name Permit Area Date 3/2/9X Stop No. # 257

Classification Coarse loamy, hyperthermic Rx

Location

N. veg. (or crop) Sand Sage, Aleman Grass Climate

Parent Material colluvium

Physiography Dune / Sand Sheet

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes: Site located between 2 Pinedale terrace Tables Rim is ~15 cm

samples (depth inches)

Similar to #248

#259 located on Mesa Top 3" to Sandstone Bedrock

	pH	EC	SAR	S	C	K%	
0-16	7.4	.41	1	83	10	2.4	S
16-29	7.2	2.72	2	81	10	3.6	S
29-48	7.5	5.54	12	86	11	.41	S
48-62	7.8	8.72	23	75	15	.11	U

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (48)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 5/3	SL 15	WGR		SFI			Sle		
C	5/16		10YR 5/3	SL 10	M/WBK		Fr			Sle		
Bkb	16/29		10YR 4/2	SL 15	WSBK	Sh				CS	F Stains 4-5%	
Cy1	29/48		10YR 4/3	LS	M	Sh				CO	Soft masses of Gyp	
Cy2	48/62		10YR 4/3	SL 4	M					CO	" Gypsic.	5-10% Fine Gyp Crystals

Soil Description

Soil Type Penally — File No.

Area No-Name Permit Area — Date 3/2/98 — Stop No. #258

Classification Fine-Loamy Typic Natrigypsid — CA

Location

N. veg. (or crop) Spai, Atob — Climate

Parent Material Residuum

Physiography Mesa Top Near Edge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 60% cf on surface

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Eff)		
Btkyn	0-5			cl	wcl		fi			cr		
Byn	5-14			cl	wsbk	sh				es		
Cy	14-25			cl	m	sh				es		
2Cy	25-60			cl/c	m	h				sle		

Soil Description

Soil Type Monier co - Overwashed File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #260

Classification BM/CM

Location

N. veg. (or crop) Spai, Hija, Greasewood, Sper, Atab Climate

Parent Material Alluvium

Physiography Stream Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0 Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (23)

Bedrock (23)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			ls	wgr		vfr			eo		
C	4-13			ls	m		vfr			eo		
Btkb	13-23			scl 25	mpr	h				sle/es		
R	23+	Sandstone										

Soil Description

Soil Type Pe1 SayD File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #261

Classification Fine-Loamy Lithic Torriorthent CA/Bn

Location

N. veg. (or crop) Climate

Parent Material Residuum

Physiography Toe-slope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) Deflational 75% cf at surface

inches

Pit Depth (34)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0\4			scl	wgr							
R	4+	Sandstone										

Soil Description

Soil Type Tocito | File No.

Area No-Name Permit Area | Date 3/2/98 | Stop No. #262

Classification Fine loamy mixed Mesic Typic Torriorthents BM/CA

Location

N. veg. (or crop) Atob, Spai, Atpo, Greasewood | Climate

Parent Material Alluvium

Physiography Drainage Terrace - 10' from channel

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%		
0-9	7.6	1.59	4	41	30	5.6	cl	S
9-33	7.1	4.3	2	56	20	5.0	scl	S
33-50	7.1	2.56	2	71	20	3.9	scl	S
50-60	7.2	1.55	2	48	28	4.5	scl	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
CA	0-9		10yr 4/2	sic			fi			es		
BC1	9-18	10yr 5/4	10yr 4/3	scl 22	msbk	h				es		
BC2	18-33	10yr 5/4	10yr 5/2	scl 30	mpr	h				es		
C	33-50		10yr 5/2	gscl	m	h				s/e	35%g	
Btkb	50-60		10yr 4/2	cl	msbk	vh				es		

Soil Description

Soil Type Averbow File No.

Area No-Name Permit Area Date 3/2/98 Stop No. #263

Classification Coarse Loamy Natrargid BM/CA

Location

N. veg. (or crop) Spec, Atob Climate

Parent Material Alluvium

Physiography Toe-slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) 35% cf on surface

inches

Pit Depth (40)

Bedrock (30)

Topsoil (7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			scl	wgr		fr			es		
Btn	3-7			sl	wabk		sf.			sle		
Cky	7-30			egsl	m					es/sle	75-80% cf Unsuitable	
Cr	30+	Sandstone										

Soil Description

Soil Type Hurlbano — File No.

Area No-Name Permit Area — Date 3/2/98 — Stop No. #264-

Classification Fine typic Haplargid — Mollic

Location

N. veg. (or crop) Spec: Atcon — Climate

Parent Material Residuum

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 20-30% Ch on Surface

#264A Sandy Soil

There is no #249A

CA 4/28/98

inches

Pit Depth (23)

Bedrock (23)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			Cl	wgr		SH			CW		
Btn	4/9			C	MSBK		VH			CS		
Btkn	9/16			Cl	MSBK	h				CW		
Ck	16/23			Cl	M	h				CW		
R	23+	Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #266

Classification Fine loamy, Typic Haplocalcid BM/CA

Location

N. veg. (or crop) Atob, spa; H. j a Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) Pit was dug 100' West of surveyed site.

	pH	EC	SAR	S	C	K%	
5-19	7.3	.43	2.3	70	24	5.7	S

inches

Pit Depth (28)

Bedrock (28)

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			scl	wgr		fr			eo	Suitable	
Bt	5-15			scl	wsbk					slc		
Btk	15-19			scl	msbk					es		
Bk	19-28			scl	wsbk					ev	15-20% g 10-12% k	
R	28+											

Soil Description

Soil Type Renolly — File No.

Area No-Name Permit Area — Date 3/3/98 — Stop No. #267

Classification Fine-Loamy, Typic Natrargid — CA

Location

N. veg. (or crop) Atob, Spa — Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect E	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 80% cf on surface

inches

Pit Depth (40)

Bedrock (40)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-8			cl	mcl	h				sle		
Bkn	8-18			cl/c	wsbk	h				es		
Cky	18-40			cl	m	h				sle		
Cr	40-42	Shale										

Soil Description

Soil Type Forb — File No.

Area No-Name Permit Area — Date 3/3/98 — Stop No. #269

Classification Coarse Loamy, Lithic Haplosc — BM/CA

Location

N. veg. (or crop) — Climate

Parent Material Residuum

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(50)
Bedrock	(11)
Topsoil	(11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			ls	wgr		vfr			vsle		
Bt	4-11			sl	wsbk	sh				es		
Cr	11+	Calcareous Sandstone										

Soil Description

Soil Type Pedroyo - Coastal File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #270

Classification Loamy Lithic Torriorthent BM-CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Hill-Top Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 95% cf on surface

	inches
Pit Depth	(24)
Bedrock	(2)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-2			scl	m		fr					
R	2+	Sandstone										

Soil Description

Soil Type Jocity - Moderately Shallow File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #271

Classification Loamy Skeletal Mixed Mesic Typic Haplocambids BM/CA

Location

N. veg. (or crop) Spai, Atob, H.ja Climate

Parent Material Alluvium

Physiography Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) 200' SW of main channel

	pH	EC	SAR	S	C	K%	
0-13	7.5	.37	2.1	55	19	5.7	S

3

21

inches

Pit Depth (25)

Bedrock (25)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			scl	wgr		fr			vsle		
C1	4-13			scl			sfi			sle	5%g	
C2	13-25			cgscl	m	sh				sle	65-70%g	
2R	25+	Sandstone										

Soil Description

Soil Type Monierco — File No.

Area No-Name Permit Area — Date 3/3/97 — Stop No. # 272

Classification fine loamy, mixed (thermic) — BM/CA

Location

N. veg. (or crop) Sand Hills Mixed — Climate

Parent Material Alluvium

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (20)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			LS	Wgr		Fi			CO		
Bt	4/9			CL	Wblk		Fi			Sl/es		
2Bk	9/20			SiC	Mpl					CV	Unsuitable Clays	
2Cr	20/36		Shale			Sh						
2R	36+	Stone										

Soil Description

Soil Type Shirrock Variant - File No.

Area No-Name Permit Area Date 3/3/98 Stop No. H 273

Classification Fine loamy, mixed, superactive, mesic Typic Haplocalcids BA/C1

Location

N. veg. (or crop) Hilaria jamesii, Atriplex Climate

Parent Material Alluvium

Physiography Terrace / Alluvial fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K°/o	
36-49	7.3	.86	1.9	68	24	3.1	S

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (~~49~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7		10YR 4/3	SCl	Lgr		SFI			Usle		
Bt	7/18		10YR 4/4	SCl	Msbk		VFI			Sle		
Btk1	18/30	10YR 4/3	10YR 4/3	SCl	Stpr	Vh/dh				Sle		
Btk2	30/36	10YR 4/4	4/3	SCl	Stabk	Vh				CS		
Btk3	36/49	10YR 4/4	4/2 / 4/3	SCl	Stpr/stabk	eh				CS		
2Ck	49/63	10YR 6/1		Cl	M	ba				ev		

Soil Description

Soil Type Patel - Moderately Deep File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #274

Classification Fine Loamy, Typic Torriorthent (Sodic) BM/CA

Location

N. veg. (or crop) Atob, Hija Climate

Parent Material Residuum Carbonaceous

Physiography Plain - Badlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (31)

Bedrock (31)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			scl			vfr			es		
Bkyn	3-17			cl	wsbk/m		fi			es	not diagnostic	
Cky	17-31			scl						vsle		
Cr	31+	Coal										

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #275

Classification Coarse Loamy, Typic Torriorthent BM/CA

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Plain - Adjacent to badlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Nodular Carbonates - Stage II

0-3 Mantle of blown carbonaceous material

0-9	6.6	1.07	.4	68	23	5.3		S
9-26	7.2	2.72	3.2	78	16	5.3	-	S
26-48	6.8	4.4	6.1	88	10	.81		S
48-63	5.3	5.32	7.2	89	15	.31		4 ph
	pH	EC	SAR	S	C	K%		

inches

Pit Depth (63)

Bedrock (63)

Topsoil (48)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-3		10yr 3/1	scl	cng/m		fr			eo		
2Bw	3-9		10yr 5/3	sl/18	wsbk		sfi			ev		
2Ck	9-26	10yr 5/4	10yr 5/4	scl	wsbk	h				ev		
2C1	26-48	10yr 4/6	10yr 4/4	fls	m	sh				eo		
2C2	48-63	10yr 4/6	10yr 3/4	sl	m	h/50				eo		
3Cr	63+	Coal										

Soil Description

Soil Type Ptel-eroded File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #276

Classification Fine Lithic Natrargid BM/CA

Location

N. veg. (or crop) Atpo, Atob Climate

Parent Material Residuum

Physiography Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect E Root distrib.

Erosion severe

Permeability

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth (28)

Bedrock (6)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF Boundary		
Btkn	0-6			cl/c	mcl		fi			es/ev		
Cr	6-28	Carbonaceous Shale										

Soil Description

Soil Type Benally - Clay loam File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #277

Classification Fine-loamy, mixed, mesic typic Aridargid BLM/CA

Location

N. veg. (or crop) Atos Hfca Spai Climate

Parent Material Residuum / Cretaceous

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded / Gravel from Mesozoic Cover

samples (depth inches) 30 to 6 from Surface

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 4/2	cl	wpl		fi			cs		
Btkyn	5/10		2.5Y 5/3	cl	wsbk		vfi			cs	k nodules 5-8%	
Btyn	10/22	10YR 4/4	"	c	wsbk		vfi			s/c	fine Gyp Crystals w/ filaments	3-5% Sm.
Cy	22/32	2.5Y 5/2		c/c	m	sh				vsle		
Cy2	32/42	2.5Y 5/3	2.5Y 5/3	cl	m	sh				vsle		
C	42/60	"	"	c	m	sh				cs		

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area Date 5/3/98 Stop No. #278

Classification Fine-type Ustifluvents / Ustic Camborthids

Location

N. veg. (or crop) Atos Climate

Parent Material Alluvium

Physiography Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect NE Root distrib.

Erosion

Permeability Sandy loam/loamy sand/sandy clay loam

Additional notes:

samples (depth inches) 20% rock fragments on surface

inches

Pit Depth (53)

Bedrock (53+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			CL	CL		VFI			SW		
Btkn	5/12			C	MSBK	h	FI			SW/ES		
Btyn	12/23			C	MSBK	h				SW		
2Cy	23/41			C	M	h				VSW		
2C	41/53			C	M	SH				CO		

Soil Description

Soil Type Huerbono File No.

Area No-Name Permit Area Date 5/31/13 Stop No. #279

Classification IBMCN

Location

N. veg. (or crop) Spec. Atr. Climate

Parent Material Residuum

Physiography plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (40)

Bedrock (17)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6			Cl	wcl		fi			s/c		
Btkyn	6/14			Cl	wsbk	h				s/c	Gyp and lt moulds and filaments T.	
Cr	14/40	Shale										

Soil Description

Soil Type Huerfano -eroded File No.

Area No-Name Permit Area Date 3/3/98 Stop No. P280

Classification Fine loamy mixed mesic Shallow Ustorthid

Location

N. veg. (or crop) Atrip Spp. Climate

Parent Material Residuum

Physiography Plain

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes: Severely eroded 70% Cat on Surface

samples (depth inches)

inches

Pit Depth (7)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7			Cl	wCl					cs		
Cr	7+	Siltstone / Shale										

Soil Description

Soil Type Patel cradel File No.

Area No-Name Permit Area Date 3/3/98 Stop No. 281

Classification BM/CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 75% cf on surface

	inches
Pit Depth	(43)
Bedrock	(29)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Bkyn	0-7			c	mcl		fi			es		
2Cy	7-29	gyp crystals		c	m					eo		
2Cr	29-43	Carbonaceous Shale										

Soil Description

Soil Type Rutel eroded — File No.

Area No-Name Permit Area — Date 3/3/98 — Stop No. #282

Classification Fine Lithic Torriorthent (Sodic Saline) — Bm/CA

Location

N. veg. (or crop) Atob — Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 70% cf on surface

inches

Pit Depth (30)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Cky	0-7			C	m		vfi			es		
C	7-15			cl/c	m		vfi			eo		
Cr	15-30	Carbonaceous Shale										

Soil Description

Soil Type Patel-eroded File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #283

Classification BM/CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect S Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 40% of on surface

	pH	EC	SAR	S	C	K%	
0-15	7.9	8.62	32	35	43	2.41	U

inches

Pit Depth (42)

Bedrock (25)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btkn	0-4		2.5Y 5/4	c	mcl		vfi			es		
Btyn	4-15		2.5Y 5/4	cl/c	sbk/pl		fi			vsle		
2C.	15-25									co		
2Cr	25-42	Shale										

Soil Description

Soil Type Petal cloth File No.

Area No-Name Permit Area Date 3/3/78 Stop No. #284

Classification Fine - Lithic Xerorthent 12"/cm

Location

N. veg. (or crop) Herbs Climate

Parent Material Residuum

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect NE Root distrib.

Erosion Sheet

Permeability

Additional notes:

samples (depth inches) 50% CF consolidated See 283

inches

Pit Depth (20)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			C/cl	MC1		fi			CS		
Btkn	5/10			C/cl	Mab		VFi			CS		
Cky	10/20			C	M	h				CS		
R	20+	Carbonaceous Shale										

Soil Description

Soil Type Hoskay - deep File No.

Area No-Name Permit Area Date 3/3/98 Stop No. # 285

Classification fine type Mollisol

Location

N. veg. (or crop) Atos spp. Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 20-30 [illegible]

inches

Pit Depth (45)

Bedrock (45)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			C	wcl		Fi			cs		
Btkyn	5/13			C	Mabk		VFi			cs	SGVF Nomen	
Byn	13/22			C	Mabk	h				Sle		
Cky	22/45			C	M	Sh				Sle		
Cr	45+	Sha Ce										

Soil Description

Soil Type Patel cracked — File No.

Area No-Name Permit Area — Date 3/3/98 — Stop No. #286

Classification — Bm/CA

Location

N. veg. (or crop) Atob, Atpo — Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (34)

Bedrock (16)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btkn	0-8			c	mcl		vfi			es/sle		
Byn	8-16			c	wabk	vh				vsle		
Cr	16-34	Carbonaceous Shale										

Soil Description

Soil Type Patel - Overwash File No.

Area No-Name Permit Area Date 3/3/98 Stop No. #287

Classification Fine Loamy Mixed Calc GM/CA

Location

N. veg. (or crop) Spa., Hija, Atob, Greasewood Climate

Parent Material Alluvium

Physiography Small Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-10	7.4	.81	7.7	55	28	41.9	S
10-19	7.2	1.54	2.2	40	38	6.2	L

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C1	0-3		10yr 4/2	scl	m	sh				es		
C2	3-10		10yr 4/2	cl	m	h				es		
Btn	10-19	10yr 4/2	10yr 4/2	cl	mabk	h				sle		
Btnb	19-32	10yr 4/3	10yr 4/2	cl	sabk	eh				sle/es		
C'	32-42	10yr 4/3	10yr 4/2	cl	sabk	eh				es		
Ck	42-55	10yr 4/2	10yr 4/2	cl	m	eh				es		

Soil Description

Soil Type Miscellaneous Area - Badlands File No.

Area No-Name Permit Area Date 3/31/95 Stop No. #288

Classification B.L/CA

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability located in Burren Ranch / No Available

Additional notes: Topsoil

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		

Soil Description

Soil Type Rictal eroded — File No.

Area No-Name Permit Area — Date 3/4/98 — Stop No. A 289

Classification Fine Lithic Xeric — B/m

Location

N. veg. (or crop) Atob — Climate

Parent Material Residuum

Physiography uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes: Several eroded / Area is composed of Shallow Argixeroll and Rock outcrop

samples (depth inches)

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkm	0/12			C/cl	w cl/m		VFI			cs	k and filaments	
Cr	12+	Silt	stone									

Soil Description

Soil Type Rutlo crowd File No.

Area No-Name Permit Area Date 3/4/98 Stop No. A290

Classification Fine Mixed Mesic Typic Natrargids

Location

N. veg. (or crop) Alfalfa Climate

Parent Material Residuum

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0/8			C/cl	wssbk		Fi			cs		
Cy	8/12				m	sh				co		
Cr	12+	Carbonate coats			Shale							

Soil Description

Soil Type Rotel eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #271

Classification Fine loamy, mixic, frigid Typic Torriorthent (Sedimentary/Source) Cr.

Location

N. veg. (or crop) Atrip Atca Climate

Parent Material Residuum

Physiography Upland / Blanket

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded / Soil on surface

samples (depth inches)

	inches
Pit Depth	(48)
Bedrock	(3)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C2	0/3			Cl	M							
Cr	3/40	Silt shale + Shale										

Soil Description

Soil Type Patel eroded File No.

Area No-Name Permit Area Date 3/4/08 Stop No. #292

Classification Fine Loamy Natrargid Mineral

Location

N. veg. (or crop) Atrip Atrip Climate

Parent Material Residuum

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Sparsely crowded

samples (depth inches)

inches

Pit Depth (15)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4			C/C	wcl		fi					
Cky	4/15			C	M		Fi				Soft masses Gyp Crystals	
Cr	15+											

Soil Description

Soil Type Chipeta - crusted File No.

Area No-Name Permit Area Date 3/4/17 Stop No. #293

Classification [illegible] BLM/CA

Location

N. veg. (or crop) Atsc Climate

Parent Material Residuum

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 30 % CF on surface [illegible]

Perennial vegetation

inches

Pit Depth (40)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C_1	0/5			C	M							
C_y	5/12			C	M							
Cr	12/40	Consolidated Shale										

Soil Description

Soil Type Patel eroded File No.

Area No-Name Permit Area Date 7/11/89 Stop No. [illegible]

Classification [illegible] Location [illegible]

N. veg. (or crop) [illegible] Climate

Parent Material Residuum

Physiography [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 30%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 50 - 60 % C fragments - [illegible]

inches

Pit Depth (50)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/3			C/Cl	mcl		vfi			CS		
Cky	3/12			C	M	h				CS		
Cr	12/[illegible]	Co	rse sandstone		Shale							

Soil Description

Soil Type Patel - Overwash File No.

Area No-Name Permit Area Date 5/11/18 Stop No. 2-25

Classification Fine-type hydrologic Soil Group Soils

Location

N. veg. (or crop) Atco Soil Mesic Mix Climate

Parent Material Alluvium over Geodesium

Physiography Colluvial

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Textural soil changes

	pH	EC	SAR	S	C	K%		
0-8	7.8	1.46	15	78	15	5.8	SL	S

inches

Pit Depth (41)

Bedrock (41+)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/8			VGSL	M		Fi			S/e	35% gravels	gravels
2C1	8/20			C	M	h	VFi			V S/e		
2C	20/41			C	M	h				e0		

Soil Description

Soil Type Shiprock Variant File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #276

Classification Fine loamy, mixed, mesic Typic Haplargid SM/CP

Location

N. veg. (or crop) Mixed Desert Shrub Climate

Parent Material Colluvium

Physiography Uplands / Ridge

Relief	Drainage	Salt or Alkali	
Elevation	Gr. Water	Stoniness	
Slope 3%	Moisture		
Aspect N	Root distrib.		
Erosion			
Permeability			

Additional notes:

samples (depth inches) Possible Ovis ellic

	pH	EC	SAR	S	C	K%			
0-5	7.7	.85	5.9	80	13	2.3	SL	S	
5-15	7.9	.73	7.6	75	15	2.0	SL	S	
15-36	7.4	7.79	14	53	33	8.3	SCL	S	inches
36-45	7.3	5.62	8.4	85	10	1.4	LS	S	Pit Depth (60)
45-60	7.4	5.41	9.8	68	19	11	SL	S	Bedrock (Go')
									Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 5/3	LS	Wgr		SFI			CS/c		
Bt	5/15	~~7.5YR~~ 5/6	10YR 5/4	LS/SL	Stabk/mabk	Sh	Fr			es		
Btk	15/36	7.5YR 4/4	10YR 5/4	SCL	Stabk	Vh				ev	10% k nodules	
C	36/45	7.5YR 5/6	10YR 5/4	LS	M	SL				eo		
2Ck	45/60	10YR 5/4	10YR 5/1	SCL	M	h				ev		

Soil Description

Soil Type Bradley File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #297

Classification Fine Loamy, mixed, mesic, Ustic Haplic Natrargid BM/CA

Location

N. veg. (or crop) Atob Climate

Parent Material Eolian / Residuum

Physiography Plain - Deflational Area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0 Moisture

Aspect Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) Eroded version of #296

Vertic Properties

10% cf on surface

inches

Pit Depth (52)

Bedrock (52+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-4			scl	mcl	h				sle		
Btkn	4-8			scl	mabk	h				es		
Bssk	8-26			sc	msbk	vh/eh				es		
Cssk	26-52			sc	m					eo/es		

Soil Description

Soil Type Shiprock - Brown File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #300

Classification BM/CA

Location

N. veg. (or crop) Atob, spai, H.j°, Yucca, Gusa, Orhi, Climate

Parent Material Eolian

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

Sim. lor to 296 with weaker Bk

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10yr 5/4	ls	wpl		vfr				Suitable	
Bt	4-18		10yr 5/4	sl	wsbk		fr				Suitable	
Btkb	18-29		10yr 5/4	sl	wsbk		sfi/fi				Suit.	
Ck	29-48	10yr 5/4	10yr 4/4	ls	m	sh					Suit	
2Ck	48-65	2.5y 5/4	2.5y 5/4	scl		h					See #296	

Soil Description

Soil Type Patel - Overwash File No.

Area No-Name Permit Area Date 2/4/98 Stop No. # 301

Classification Fine typic Natrigid Overwash? Bank

Location

N. veg. (or crop) Sparse Herb Climate

Parent Material Alluvium over lacustrine

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SE SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Horizon A has small charcoal - Similar to #285

inches

Pit Depth (29)

Bedrock (29)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (CBG)		
A	0/5			S/S	WSBK	W/h				VSC	15.2 cm to gravel	
2Btn	5/11			C	Mabk		VFi			CS		
2Byr	11/22			C	MASK	Sh				CS		
2Cy	22/29			C	M	h				CO		
2R	29+	Shale										

Soil Description

Soil Type Petal Clayey clayloam - eroded File No.

Area No-Name Permit Area Date 5/6/98 Stop No. H 302

Classification [illegible] BA / Cr

Location

N. veg. (or crop) Aspen / Herbs Climate

Parent Material Alluvium / Residuum

Physiography [illegible]

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect SW Root distrib.

Erosion

Permeability

Additional notes: Severely eroded - Adjacent to south 2 track road

samples (depth inches) 80% Lacustrine rocks on surface

H 303 located in Burned hills on Rockpile Ridge.

	inches
Pit Depth	(36)
Bedrock	(16)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6			Cl	wcl		fi		es			
Btyn	6/16			C	mpr				es			
2Cr	16/36		Calcareous Shale									

Soil Description

Soil Type Hurlburd - eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #304

Classification Fine Lithic Natrargid Bm/CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect E Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 35% cf on surface

#305 - Same as 304
#306 18" to cr
#307 16" to cr
#308 6" to cr Salt scars on surface
#309 24" to cr Boulders, grass on surface

inches

Pit Depth (40)
Bedrock (7)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btyn	0-7			cl/c	wcl		vfi			sle		
Cr	7+	Mudstone										

Soil Description

Soil Type Bernally - Eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. # 310

Classification Fan

Location

N. veg. (or crop) Atos Grass-weed Climate

Parent Material Colluvium

Physiography Dune / Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes: Severly eroded Area See #61 Auger
samples (depth inches) parent material is homogenic is unsuitable - bedrock

inches

Pit Depth (50)

Bedrock (50+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
B_y	0/9		10YR 4/1	CL	WPL Lrge					CO		
C_y	9/50		2.5Y 4/1	CL	M					CO		

Soil Description

Soil Type Hurdland - eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. H 311

Classification Fine loamy, siliceous, Mesic Aquic Hapludult

Location

N. veg. (or crop) Atok Area Climate

Parent Material Colluvium / Residuum

Physiography Toe slope Backlands / Mountain Summit

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (15)

Bedrock (15)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0/4			Cl	wcl		fi			es		
C	4/15				m							
Cr	15+	Siltstone										

Soil Description

Soil Type Badlands File No.

Area No-Name Permit Area Date 3/4/98 Stop No. # 312

Classification Badlands

Location

N. veg. (or crop) Greasewood Climate

Parent Material Colluvium / Residuum over Sandstone

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded area - 5' channel

samples (depth inches) See #61 & 61 - Parent material is interbedded

	inches
Pit Depth	(53)
Bedrock	(53+)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/12	10YR 3/1	10YR 2/1	Cl	M		SH			cs		
2C	12/22	10YR 4/4	10YR 3/1	Cl	M	sh				Wave		
3Ck	22/53	10YR 3/1	10YR 2/1	Cl	M	SH/sh				cs		

Soil Description

Soil Type M.C. Area – Badlands File No.

Area No-Name Permit Area Date Stop No. # 313

Classification BA

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) located on side slope of badlands - Surface Gypsum Crystals

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Pintel - File No.

Area No-Name Permit Area Date 3/4/98 Stop No. # 314

Classification Fine typic Natrargid Pit #6A

Location

N. veg. (or crop) Atco Atpo Atca Climate

Parent Material Residuum

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Salt scars at surface - 10% removed VEG cover

samples (depth inches) highly saline parent material

inches

Pit Depth (32)

Bedrock (32)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0/5			C1	wcl/pcl		VFi			CS		
Btzyn	5/17			C1/C	MSBk	h				CS/SIC	highly calcareous Gine gyp crystals	
Czy	17/32			C1/C	M	Sh				SIC/CO	2 and Na salts	
CR	32+	Shale										

Soil Description

Soil Type Huerfano - eroded File No.

Area No-Name Permit Area Date 3/5/98 Stop No. # 315

Classification Fluvaquentic Haplaquoll, loamy, mixed NRCS

Location

N. veg. (or crop) Atol Hfc Spec Climate

Parent Material Alluvium

Physiography Uplands Plains

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes: # 216 17" to Cr

samples (depth inches)

inches

Pit Depth (36)

Bedrock (10)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4			cl	wcl		vfi			cd		
Cy	4/10			cl	m	sh				vsl		
Cr	10/36	Color	Sandstone		Shale	c						

Soil Description

Soil Type Chinook - eroded File No.

Area No-Name Permit Area Date 3/5/98 Stop No. 317

Classification Fine loamy, mixed frigid Aridic Haplustoll (Selbu Series) BM/CA

Location

N. veg. (or crop) Atlas Area Climate

Parent Material Residuum

Physiography Uplands Main

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes: Severely eroded 90% CF on surface

samples (depth inches)

fine
318 Lithic Haplustoll
Pedal 0"TS

inches

Pit Depth (20)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/4			Cl	M					cs		
Cr	4/20	Mod Stone										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 3/5/98 Stop No. A 319

Classification Fine loamy, Lithic Argixeroll Bar CA

Location

N. veg. (or crop) Spcl Abs Atca Climate

Parent Material Alluvium over residuum

Physiography Uplands / Thin Breaks

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: located in small drainage between rock outcrops

samples (depth inches)

inches

Pit Depth (6)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/6			gscl	M		fi			CO	15-20% gravels Surface	see 280s
2Cr	6+	Shale										

Soil Description

Soil Type Rotal File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #320

Classification Fine [illegible] Mixed Mesic

Location

N. veg. (or crop) Atos Hisp Climate

Parent Material Residuum

Physiography uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely eroded #321 Same soil type

samples (depth inches)

inches

Pit Depth (17)

Bedrock (17)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7			C/C	MCI					S/C		
Cy	7/17			C	M					S/C		
Cr	17+		Shale									

Soil Description

Soil Type Razito c File No.

Area No-Name Permit Area Date 3/5/98 Stop No. # 323

Classification Coarse Loamy Typic Torripsamment BM/CD

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Eolian / Alluvium

Physiography Edge of Mesa Top / Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NW Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Possible Drill Site

	pH	EC	SAR	S	C	K%	
0-22	7.3	.5	2.6	83	13	1.8	s
22-44	7.7	.82	6.1	75	15	3.9	s
44-60	7.7	2.78	21	83	10	4.9	u

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (44)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-8	10yr 6/4	10yr 5/4	ls	wgr		fr			vsle		
C	8-22		10yr 5/4	ls	m		fr			vsle		
2Bt	22-32	10yr 6/6	10yr 5/4	sl	msbk	h				sle		
2Btk	32-44	10yr 6/4	10yr 5/4	sl	mabk	vh				sle/es		Shipr
2Ck	44-60	10yr 6/4	10yr 5/4	sl/ls	m					sle	5%g	

Soil Description

Soil Type Miscellaneous Area - Badlands File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #324

Classification Ok/ut

Location

N. veg. (or crop) Climate

Parent Material

Physiography Valleys (Flat Uplands)

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Site located on Rock outcrop

inches

Pit Depth ( )

Bedrock ( )

Topsoil ( )

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Rock/ crock | File No.

Area No-Name Permit Area | Date 3/5/98 | Stop No. #325

Classification Fine Silty Alkali | Bench

Location

N. veg. (or crop) | Climate

Parent Material Residium

Physiography Top with hummocks

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) #326 Same Soil type

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/7			C			VFi					
By	7/12			C								
Cr	12+	Colors mixed			Shale							

Soil Description

Soil Type Haverland - eroded | File No.

Area No-Name Permit Area | Date 3/5/98 | Stop No. #327

Classification Fine Lithic Natrargid

Location

N. veg. (or crop) Atob | Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 60% of on surface

	inches
Pit Depth	(30)
Bedrock	(8)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF ~~Boundary~~		
Btn	0-8			cl/c	wcl		fi			sle		
Cr	8+	Carbonaceous Shale										

Soil Description

Soil Type Hueneme - overwash | File No.

Area No-Name Permit Area | Date 3/5/98 | Stop No. #328

Classification Fine Mix Nonacid | BA/CP

Location

N. veg. (or crop) Grass Forbs Small Arch | Climate

Parent Material Alluvium-over Residuum

Physiography Lowlands Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: Located in slight drainage - more perennial veg than surrounding areas to the east and west

samples (depth inches)

inches

Pit Depth (16)

Bedrock (16)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4		10YR 3/2	cl/c	M/mgr		fi			CSL/c	Slightly	
Btn	4/9		2.5Y 4/2	C1	M/sbk		VFI			CSL/c	10 YR 5	
Byn	9/16	10YR 7/2	"	C1/C	W sbk/fpl	Vh				CSL/c	Salt masses 0% Fair	
2Cr	16/31	Carbonaceous Shale										
		Crushed										

Boundary: ~~clear~~

Soil Description

Soil Type Tsaxi Creek File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #329

Classification ~~Entic~~ - Lithic Xerochrept Sandy Soil BM/CA

Location Skeleton

N. veg. (or crop) A to b, H.j.a Climate

Parent Material Residuum

Physiography Low Trough ~~Stream~~ Stable Remnant

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 80% ct on surface

inches

Pit Depth (7)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ ESI		
C	0-7			vgscl	m		sfi			vsle	40% g	
R	7+	Sandstone										

Soil Description

Soil Type Toxicity - deep File No.

Area No-Name Permit Area Date 3/5/98 Stop No. H330

Classification Fine loamy Torriorthent Chromic BM/CA

Location

N. veg. (or crop) Atdo Scrub Climate

Parent Material Alluvium

Physiography Foothills Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%
0-18	7.5	3.41	5.3	50	30	6.8

inches

Pit Depth (44)

Bedrock (44)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff. Boundary		
C1	0/7			scl	M		fi/fi			VSc	10%s	
C2	7/18			Cl	M	sh				VSlc	10%g	
C3	18/44			VSCl	M	Vh				Slc	40%g Consists 60%	
2R	44+	Sandstone										
	8	2.6										
	22	29 31.6% CA										

Soil Description

Soil Type Pc.fel - cracked File No.

Area No-Name Permit Area Date 3/5/98 Stop No. 331

Classification Fine Typic Natrargid BM/CA

Location

N. veg. (or crop) Atob, Atca Climate

Parent Material Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) 40% cf on surface

inches

Pit Depth (35)

Bedrock (27)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-3			cl	wcl		sfi			sle		
Btyn	3-7			cl	wpr		sfi			es	Soft masses of gyp,	
Byz	7-16			c/cl	wsbk		vfi			sle	fine gyp crystals	
Cy	16-27			scl	m	sh				sle	10%09	
2R	27-35	Sandstone										

Soil Description

Soil Type Potel - eroded File No.

Area No-Name Permit Area Date 3/5/97 Stop No. #332

Classification Fine Eroded Natrargid BM ICA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Bkyn	0-11			c/cl	mcl		fi			es		
Cy	11-20			cl	m					sle		
Cr	20-30	Carbonaceous shale										

Soil Description

Soil Type Persayo- - File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #333

Classification Fine loamy, mixed, [illegible] Typic Torriorthent [illegible] Soil Survey

Location

N. veg. (or crop) Atsy Atnol Ptca Climate

Parent Material Alluvium

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: #334 location on Rock Features Boundary

samples (depth inches) See #380

inches

Pit Depth (9)

Bedrock (9)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/5			Cl	wgr/m		fr			Sle		
C	5/9			Cl	M		Sfr			Sle		
2R	9+	Coal										

Miscellaneous Area

Soil Description

Soil Type 1 Badlands File No.

Area No-Name Permit Area Date 3/4/98 Stop No. # 335

Classification Badlands

Location

N. veg. (or crop) Climate

Parent Material Residuum

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Site located in Badlands Area

inches

Pit Depth ( )

Bedrock (⊗)

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Bernalillo - File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #336

Classification Bm/cA

Location

N. veg. (or crop) Spai, Hija, Atob Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-12	7.4	.62	2.7	50	34	3.2	scl S

inches

Pit Depth (50)

Bedrock (45)

Topsoil (12)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	E-S Boundary		
AC	0-5			scl	wgr		fr			s/e		
Bt	5-12			cl	wsbk	vh				e/s		
Btca	12-23			cl	mabk	vh				s/e		
Cy	23-45			cl	m	vh				s/e		
2Cr	45-50	Coal										

Soil Description

Soil Type Hurtsboro Variant | File No.

Area No-Name Permit Area | Date 3/4/19 | Stop No. 11337

Classification

Location

N. veg. (or crop) Afor | Climate

Parent Material

Physiography

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope | Moisture

Aspect | Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (41)

Bedrock (27)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/4			Cl	M		SFI			CO		
Bts	4/10			Cl	Cl	Sh				Sic/cs		
Cky	10/27			Cl/c	M	Sh				- s/co		
2Cr	27/41	Coal										
3Cr	41+	Broken Shale										

Soil Description

Soil Type Patel - eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #338

Classification BM/CA

Location

N. veg. (or crop) Hisa, Atob Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) #339 - Same Soil Type Cy,2S below 60"

inches

Pit Depth (42)

Bedrock (33)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-5			C	wpl/wcl		sfi			eo		
C	13			C	m		vfi			vsle		
Cy	22			cl/c	m	vh				vsle		
2Cky	33			cl	m	vh				sle		
3Cr	33-42	Coal										

Soil Description

Soil Type Rocked eroded File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #340

Classification Fine textured Lithosol ISC/CA

Location

N. veg. (or crop) Aspen / Alder Climate

Parent Material Alluvium

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0 Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes: Area lacks climax mature vegetation

samples (depth inches)

#341 Standard Soil Type 20" Hole

#342 Same Soil Type

	pH	EC	SAR	S	C	K%	
0-6	7.7	257	16	23	48	5.3	CL
6-23	7.4	12.4	26	30	45	5.0	CL

inches

Pit Depth (55)

Bedrock (47)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/6	10YR 2/1	2.5Y 3/2	C	MPl		Fi			Usc		
Btyn	6/23	10YR 3/2	2.5Y 3/2	C	MSBK	h				Sc	Some Gravel 3%	
Ky	23/30	10YR 3/3	2.5Y 4/2	C	M	h				Sc	Consistence	
Cy	30/47	2.5Y 5/2	2.5Y 4/1 / 3/1 Crushed	C	M					Sc	?	
2Cr	47/55	Rock	Red Shale									

Soil Description

Soil Type Actel - eroded File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #343

Classification Fine Typic Natrargid BM/CA

Location

N. veg. (or crop) Atpo Atab Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Gyp. Filaments #344 - Fine Typic Natrargid

inches

Pit Depth (48)

Bedrock (29)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Btn	0-11			c	wpl/wsbk		fi			sle		
Bkyn	11-17			cl	wsbk	h				es		
Cy	17-29			cl/c	m	h				sle		
2Cr	29-48	Carbonaceous Shale										

Soil Description

Soil Type Tocito — File No.

Area No-Name Permit Area — Date 3/5/98 — Stop No. # 346

Classification Fine loamy, Typic Torrifluvent

Location

N. veg. (or crop) Greasewood / Alkali Sacaton — Climate

Parent Material colluvium over alluvium

Physiography lowlands / stream terrace (overbank - Cutbank phase)

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2 %	Moisture	
Aspect F	Root distrib.	

Erosion

Permeability

Additional notes: Moderately eroded

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-16	7.9	1.91	6.3	38	35	5.1	S
16-45	7.4	5.33	7.8	43	33	4.7	S

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (cpx)		
AC1	0/16		2.5Y 4/2	CL	M	Sh	SFi		SlE			
C2	16/24	2.5Y 5/3	2.5Y 4/2	CL	M	Lo/Sh			SlE			
C3	24/36	2.5Y 5/3	2.5Y 4/2	CL	M	So/Po			SlE			
C4	36/45	2.5Y 4/4	2.5Y 4/2	C	M	Sh			SlC			
2C	45/63	2.5Y 6/4	2.5Y 5/4	LS	M	Sh			EO		sec 348	R 21 W

Soil Description

Soil Type Benally — File No.

Area No-Name Permit Area — Date 3/5/98 — Stop No. A 347

Classification Fine mixed mesic typic Natrargid — Limit CA

Location

N. veg. (or crop) Atos Atpo — Climate

Parent Material Alluvium

Physiography Bottoms Alluvial Plain

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect N — Root distrib.

Erosion

Permeability

Benally #345 - Same soil type

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (Cut)

Topsoil ( )

Horizon	Depth in	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary clb		
AB	0/5			C/Cl	vfpl		sf.			vsc		
Btn	5/13			C	m sbk	vh				sc		
Btkn	13/25			C	st sbk	vh				sc		
Cd	25/41			C	m	vh				sc		
2C	41/49			C/Cl	m	h				cs		
2Clk	49/60			Cl	m	vh				cs	5-10% cg	

Soil Description

Soil Type Patel - eroded File No.

Area No-Name Permit Area Date 3/5/98 Stop No. #349

Classification Eroded Fine Natrargid BM/CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Residuum

Physiography Knoll Top Adjacent to Pinebete Wash

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1 %	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) 60% cf on surface

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btkn	0-3			cl/c	mcl	h				ev		
By	3-12			cl/c		sh				eo		
Cr	12+	Shale										

Soil Description

Soil Type Renally — File No.

Area No-Name Permit Area — Date 3/5/98 — Stop No. #350

Classification — BM/CA

Location

N. veg. (or crop) — Climate

Parent Material Alluvium

Physiography Low Trough

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope — Moisture

Aspect — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) See #336 for suitability

	pH	EC	SAR	% S	% C	K%		
23-47	7.8	1.29	17	68	21	3.3	u	scl

inches

Pit Depth (52)

Bedrock (47)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-5		10yr 3/2	scl	mgr/wpl		sfi			es		
Bt1	5-15		10yr 4/2	scl/sc	wsbk		fi			es/ev		
Bt2	15-23		10yr 4/2	scl/sc	wsbk		vfi			es/ev		
C	23-47		10yr 4/2	scl	m		vfi			es		
2Cr	47-52	Sandstone										

Soil Description

Soil Type Persayo | File No.

Area No-Name Permit Area | Date 3/5/98 | Stop No. #351

Classification BM/CA

Location

N. veg. (or crop) Hila, Spa: | Climate

Parent Material Eolian

Physiography Knoll slope

Relief	Drainage	Salt or Alkali
Elevation N	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AC	0-6			scl	m/wgr					es		
2Cr	6+	Calcareous Sandstone										

Soil Description

Soil Type Bonally — File No.

Area No-Name Permit Area — Date 3/5/98 — Stop No. #352

Classification Fine Loamy Typic Natrarg. d — BM/CA

Location

N. veg. (or crop) Atob — Climate

Parent Material Alluvium / Res. dunm

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 60% cf on surface — #354-0-2C vgscl 2+ Cr Sandstone/S. Itstone

inches

Pit Depth (48)

Bedrock (48)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Eff)		
Btkn	0-6			scl	mcl	h/vh				cu		
Cy	6-48			cl/c	m					co/sb		
Cr	48+	Siltstone										

Soil Description

Soil Type Loamy Overwashed — File No.

Area No-Name Permit Area — Date 3/5/97 — Stop No. 352-A

Classification Fine Loamy, Typic Natrargid — 16A-1CA

Location

N. veg. (or crop) Spaiithia Atos — Climate

Parent Material Alluvium

Physiography Small Drainage Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) located 200' East of 352 - Significant increase in perennial veg. cover over adjacent area

	pH	EC	SAR	S	C	K%
0-8"	7.4	.71	5.4	5.3	28	2.8

inches

Pit Depth (70)

Bedrock (42)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/8			scl	mgr		fr			vsle		
Btn1	8/16			cl	msbk	h				sle/cs	see	3503
Btn2	16/23			cl	mpr	h				sle		5
C1	23/30			cl	m	h				slc		2
C2	30/63			scl	m	sh				co	unsuitable	5
2Cr	63/66	Coarse										

Soil Description

Soil Type Jocity - Clayey Substratum File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #353

Classification Fine Typic Torrifluvent (Sodic, Saline) CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Alluvium Carbonaceous

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) Located between two small drainages. - Material is Sodium affected

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C_1	0-11			cl/c	m		fi			eo		
C_2	11-25			cl	m	h				eo		
C_3	25-39			c	m	vh				eo		
C_4	39-52			cl	m	sh				eo	10% G	
Cy	52-60			c	m	so				eo		

Soil Description

Soil Type Hueribono File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #355

Classification Fine, Typic Natrargid CA

Location

N. veg. (or crop) Spai, Atob, Hija, Atpo Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth (41)

Bedrock (40)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-5			cl	wcl	sh				vsle		
Byn	5-14			cl	m	h				vsle		
C	14-22			C	m	sh				eo		
Cr	22-40	Carbonaceous shale										
R	40+	11										

Soil Description

Soil Type Potel - eroded File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #356

Classification Fine Typic Natrargid CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 40% cf on surface

#357 - 0-8 Btn
8+ R Mudstone
Fine Lithic Natrargid

inches
Pit Depth (40)
Bedrock (24)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-5			c	mcl	h				eo		
Byn	5-12			c	msbn	sh				eo		
C	12-24			c	m	sh				eo		
Cr	24-40	Carbonaceous shale										

Soil Description

Soil Type Benally -eroded File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #358

Classification Fine Loamy Typic Natrargid CA

Location

N. veg. (or crop) Atob, Atoo Climate

Parent Material Alluvium / Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Effervescence Boundary		
Btn	0-8		10yr 5-3	cl	wcl		fi			sle		
Btn(n)	8-19		10yr 5-8	sl	wsbk	sh				sle		
2Cy	19-35			c	m					sle		
2C	35-60			c	m					eo		

Moderately Deep

Soil Description

Soil Type Razito - Sodic File No.

Area No-Name Permit Area Date 3/11/98 Stop No. # 359

Classification - Mixed Mes. C Typic Torripsamment CA

Location

N. veg. (or crop) Hija, Sper, Gusa, Atcon Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-13	7.9	1.01	9	88	9	1.9	S
13-27	8	3.23	44	88	8	1.6	u
27-39	7.9	10.1	30	83	10	2.6	u

inches

Pit Depth (60)

Bedrock (60)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	pCf	
A	0-4		10yr 4-3	ls			sfi				eo	
Bw	4-13		10yr 5-4	ls			Fr				eo/vsle	
Bk	13-27		10yr 5-6	ls		h					vsle	
Ck	27-39		10yr 5-4	ls		h					vsle	
2C	39-60		2.5y 6-3	cl		sh						
2R	60-+	shale										

Soil Description

Soil Type Rc2:to - Clayey Substratum File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #360

Classification Coarse Loamy Typic Torripsamment

Location Adjacent to main Road

N. veg. (or crop) Hija, Atcon Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: Nodular Carbonate

samples (depth inches)

	pH	EC.	SAR	S	C	K%	
0-21	7.5	.4	3.	85	10	3.5	S
21-30	8.2	.92	11	90	8	1.6	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AC	0-7		10yr 4-4	ls	vgr		VFr				ev	
BW	7-21		10yr 4-6	ls	wgr/m		Fr				ev/sle	
C	21-30		10yr 5-4	ls	m	h					eo	
2B+K	30-41	unsuitable High clay%	10yr 5-8	cl	ABK mBK	vh					ev	
2CK	41+60		10yr 3-3	cl	m	h					sle	

Soil Description

Soil Type Tocity - deep File No.

Area No-Name Permit Area Date 3/11/98 Stop No #361

Classification Fine Loamy Typic Torrifluvent CA

Location

N. veg. (or crop) Hija, Spa., Atob Climate

Parent Material Alluvium

Physiography Small Drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Shallow version of #362, see 362 for suitability

inches

Pit Depth (40)

Bedrock (40)

~~Topsoil~~ (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	~~eff~~	
A	0-5			cl	wpl		fi				es	
C	5-17			cl	m		fi				es	
2CK	17-40	unsuitable		c	m	h					vsle	
2R	40+	Coal										

Soil Description

Soil Type Patel -eroded | File No.

Area No-Name Permit Area | Date 3/12/98 | Stop No. #379

Classification Fine Typic Torriorthent (Sodic Saline) CA

Location

N. veg. (or crop) Atob, Atpo | Climate

Parent Material Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(60)
Bedrock	(39)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
BCy	0-13			cl	wsbk/m		fi			vs le/eo		
Cy	13-39			cl/c	m	sh				eo		
Cr	39-60	Siltstone										

Soil Description

Soil Type Patel - cracked | File No.

Area No-Name Permit Area | Date 3/12/98 | Stop No. #380

Classification Fine Typic Natrargid | BM/CA

Location

N. veg. (or crop) Atb, Atp | Climate

Parent Material Residuum

Physiography Plain

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1% | Moisture

Aspect N | Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 30% cf on surface

inches

Pit Depth (24)

Bedrock (24)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btkyn	0-6			cl	wpl/wcl	h				es		
Byn	6-24			cl/c	wpl	h				sle		
Cr	24+	Shale										

Soil Description

Soil Type Patel - crowded File No.

Area No-Name Permit Area Date 3/12/98 Stop No. 381

Classification BAKA

Location

N. veg. (or crop) Atos Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Same as # 333 12" to Cr

Adjacent to Badlands

#382 - located in Badlands Area.

#383 "

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		

Soil Description

Soil Type Fruitland - deep File No.

Area No-Name Permit Area Date 3/12/98 Stop No. #384

Classification Torriorthent

Location

N. veg. (or crop) Atob, spai Climate

Parent Material Alluvium

Physiography Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 50% cf on surface

	pH	EC	SAR	S	C	K%	
0-12	7.7	.58	9	75	13	8.4	S
12-28	7.8	.61	9	75	15	10	S
28-43	7.5	5.67	14	70	18	8.9	S

inches

Pit Depth (58)

Bedrock (43)

Topsoil (43)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C1	0-12		10yr 5/4	sl	m		sfi			vsle	10-15% g	
C2	12-28	10yr 4/6	2.5y 5/4	sl	m	eh				vsle	25-30% g	
C3	28-43	2.5y 5/4	2.5y 5/4	scl	m	eh				vsle		
2Cr	43-58	Coal										

Soil Description

Soil Type Jocity — File No.

Area No-Name Permit Area — Date 3/12/98 — Stop No. #385

Classification Fine loamy Torriorthent - Sodic — BM/CA

Location

N. veg. (or crop) Spai, Htija, Sper — Climate

Parent Material Alluvium

Physiography Low Trough / Drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-16	7.7	6.25	15	63	18	7.7	s
16-40	7.5	6.64	19	48	25	8.6	u
40-60	8.3	1.26	23	88	6	6	u

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5	2.5y 5/4	2.5y 5/4	scl	mpl	h				sle		
BC	5-16		2.5y 5/4	scl	msbk		fi			sle	Not Argillic	
C	16-29	2.5y 5/6	2.5y 5/4	cl	m	eh				sle		
Cy	29-40	2.5y 5/6	2.5y 5/4	cl	m	vh/h				sle		
C	40-60	2.5y 6/4	2.5y 5/4	s	m	h				vsle		

Soil Description

Soil Type Jocity - File No.

Area No-Name Permit Area Date 3/12/98 Stop No. H 386

Classification BM/CP

Location

N. veg. (or crop) Hisc / Sal / Akon Climate

Parent Material Alluvium

Physiography Trough / Drainage

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	N	Root distrib.	
Erosion			
Permeability			

Additional notes: Located between Redlum 15 Creek

samples (depth inches) See H 385 for Suitability

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			scl	wpl/m		sfi			usk		
Bt	5/13			sl/scl	mod/w sbk		fi			slc	moderate	
C1	13/23			s/ls	M		sfi			usk	25%	
C2	23/49			sl	M	eh				slc		
C3	49/65			ls	m	wh/eh				vslc/eo	15-20%	

Soil Description

Soil Type Fruitland yellow — File No.

Area No-Name Permit Area — Date 3/12/98 — Stop No. H 387

Classification Typic torriorthent — BM/CO

Location

N. veg. (or crop) Atrip. spp. — Climate

Parent Material Alluvium

Physiography head of Drainages

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N/E	Root distrib.	
Erosion		
Permeability		

Additional notes: Severely cracked — See 3854

samples (depth inches)

inches

Pit Depth (35)

Bedrock (35)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C1	0/11		2.5Y 5/3	SL to	M		SFI		ES/SLe			
C2	11/35		2.5Y 5/4	VAR S	AR	h			SLC		35-40% GI Unsuitable CF%	
2C1	35+	Silt Stone (Grey)										

Soil Description

Soil Type Jocity — File No.

Area No-Name Permit Area — Date 3/12/98 — Stop No. A388

Classification Rocica

Location

N. veg. (or crop) Hilar / Sporo / Cactus / Grass — Climate

Parent Material Alluvium

Physiography Terrace / Movement Colluvium Foothills

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-15	7.7	.58	8	68	18	5.2	S
15-41	7.7	4.96	31	80	13	6	u

inches

Pit Depth (72)

Bedrock (72+)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6		2.5Y 5/4	CL	wpl		FI			usle		
C1	6/15		2.5Y 5/4	SL	M		FI			e.d		
C2	15/41	2.5Y 5/6	2.5Y 5/4	SL	M	lh				usle	10% gs	
C3	41/72	2.5Y 6/6	"	VGSL	M	vh				usle	45 50% gs Consistence of %	

Soil Description

Soil Type Tsaya - deep File No.

Area No-Name Permit Area Date 3/12/98 Stop No. #389

Classification Coarse Loamy Typic Torriorthent (Sodic Saline) BM/CA

Location

N. veg. (or crop) Atob Climate

Parent Material Alluvium

Physiography Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (41)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C	0-34			vgsl	m	vh				sle	50%g	
2Cy	34-41			cl	m	vh/h				eo		
2Cr	41+	Mudstone										

Soil Description

Soil Type Bccob: - File No.

Area No-Name Permit Area Date 3/12/98 Stop No. #390

Classification Bm/CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Eolian/Residuum

Physiography Base of small Hill

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect SE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	Se(Tot)	
15-28	7.7	.83	10	53	35	8.1	SC .90	U

inches

Pit Depth (39)

Bedrock (39)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4		10yr 4/3	sl	wgr		vfr			vsle	} Suitable	
Bt1	4-10		10yr 4/3	sl	wsbk		fr			sle		
Bt2	10-15		10yr 4/2	scl	wsbk		fr			sle/es		
2Btk	15-28	10yr 4/4	10yr 3/1	scl (SC)	spr	vh				es		
2C	28-39	10yr 3/2	10yr 2/1	l	m	sh				ev		
2Cr	39+	Lignite										

Soil Description

Soil Type Shiprock Variant. File No.

Area No-Name Permit Area Date 3/12/98 Stop No. #391

Classification Fine Loamy Typic Calciargid BM/CA

Location

N. veg. (or crop) Spai, Hija Orhy, Atcon Climate

Parent Material Eolian / Alluvium

Physiography Knoll Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect S Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

Nodular Carbonates

Suitable from 0 - 49

inches

Pit Depth (65)

Bedrock (~~65~~+)

Topsoil (49)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Effervescence / Boundary		
A	0-4			sl	wpl		fr			es		
Bt	4-9			scl	wsbk		sfr			ev		
Btk	9-16			scl	wsbk		fi			ev		
Bk	16-34			sl	wsbk/m	h				ev/es	Calcic	?
Ck	34-49			sl	m	sh				sle		
2Ck	49-65	Unsuitable		scl/sc	m	h				sle	Interbedded coarse & fine	
											Carbonates present	

Soil Description

Soil Type Tocity - Strongly Saline Sodic File No.

Area No-Name Permit Area Date 3/24/98 Stop No. 394

Classification Coarse loamy, mixed, mesic Typic Torrifluvent BM/CA

Location

N. veg. (or crop) Gusa, Spai, Hija, Atcon Climate

Parent Material Alluvium

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-16	7.9	11.2	9..	86	10	1.3	5
16-36	8.5	20.3	64	71	18	2.1	4
36-65	8.4	15.8	51	89	8	1.5	4

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			ls	m		vfr			eo		
C	5-16			ls/sl	m		v			eo		
C_{y1}	16-26			sl 15	m	h				vsle		
C_{y2}	26-36			scl 20-25	m	sh				vsle		
C_1	36-43			scl 25	m	sh				eo		
C_2	43-54			sl	m		vfr			eo		
C_3	54-65			cs	m		fr					

Soil Description

Soil Type Shiprock Variant - Overblown File No.

Area No-Name Permit Area Date 3/24/98 Stop No. 395

Classification BM-CA

Location

N. veg. (or crop) Gusa, Orhy, hija, Spec., Alcon, Atca Climate

Parent Material Eolian

Physiography M. d slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
15-29	7.7	1.01	5	74	20	7.3	5

	inches
Pit Depth	(65)
Bedrock	(65)
Topsoil	(46)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF Boundary		
A	0-4		10yr 5/4	ls	wgr/m		vfr			eo		
Bw1	4-11		10yr 5/4	ls	m		fr			eo	Suitable	
Bw2	11-15		10yr 4/3	sl	wsbk		sfr			eo		
2Btk	15-29	10yr 4/2	10yr 3/1	scl 20	msbk	h				ev	13-15% K dark material	
2Ck	29-46	10yr 4/4	10yr 4/2	sl 12-15	m	h				es	Suitable	
3Cky	46-65	10yr 4/2		cl/c	m	h				es	Unsuitable clay & salts	
4Cr	bst	Sandstone										

Soil Description

Soil Type Shipnuck Variant — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/15/98 — Stop No. 531

Classification Fine loamy, mixed Aridic Typic Haplocalcid — CA

Location

N. veg. (or crop) Gwood, Atob, Hija, Spai — Climate

Parent Material Alluvium

Physiography Alluvial Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture 15	
Aspect N	Root distrib. 35	
Erosion		
Permeability		

Additional notes:

samples (depth inches) RIVEC SOILCLIM, 42-60 – Material from main drainage channel, see #529 32-50" for suitability

0-5 S 7.6 1 3 19 5.9 SL

5-21 S 7.4 3.1 C 26 5.6 SCL

21-42 S 7.8 7.2 7 30 3.7 CL

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Effervescence	Boundary		
A	0-5	10yr 5-3	10yr 4-1	scl	wpl	sh			sle			
Bt	5-21		10yr 3-2	scl	wsbk		fi		sle			
BKy	21-42	10yr 4-4	10yr 4-2	scl	wsbk	h			vsle			
2C1	42-53	2.5 5-6	2.5y 4-4	fsl	m	sd			eo			
2C2	53-60	2.5y 6-4	2.5 5-4	s/ls	m	lo			eo			

Soil Description

Soil Type Sodic Ty | File No.

Area No-Name Permit Area | Date 6/3/98 | Stop No. 600

Classification Fine loamy, typic fluvent | BLM/LAB

Location near drainage cuts

N. veg. (or crop) Atol (Greasewood) Few shrub | Climate

Parent Material Alluvium

Physiography Flood Plain / Alluvial Fan downcut by deep drain

Relief | Drainage well | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1-2% | Moisture

Aspect N | Root distrib.

Erosion severe

Permeability

Additional notes:

samples (depth inches)

Btn surface Sodium affected (granular)
surface covered with gravel size rock fragments - Evidence of deflated surface
samples *
3Cy - unsolidated Silts & Carbonaceous alluvium

	pH	EC	SAR	Clay	text	K
0-5	5	7.9	1.4	16	34	Cl	9.
5-15	4	7.8	10.1	25	22	scl	9.5
15-35	4	7.9	9.4	21	30	scl	9.4

inches
Pit Depth (60")
Bedrock (45")
Topsoil (Ø)

	Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
	Btn	0-5	2.5Y 6/3	2.5Y 5/3	scl/l	weak columnar	friable						
*	C	5-15	2.5 6/4	2.5Y 5/3	scl/l fine sand	massive weak sbk	hard						
*	2C4	15-35	2.5Y 6/4	2.5Y 5/4	scl/sl coarse sand	massive	very hard						
	3C4	35-45	2.5Y 5/3-5/4	2.5 4/2	scl	mass	very hard						
	4Cu	45-60						dark purple/reddish shale - coal					

Soil Description

Soil Type Jocity | File No.

Area No-Name Permit Area | Date 6/3/98 | Stop No. AG01

Classification Fine loamy, mixed, Shallow | BM/KAR

Location

N. veg. (or crop) Atob, Soci: Grease wood | Climate

Parent Material Alluvium

Physiography Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: A horizon has been eroded

samples (depth inches)

		pH	EC	SAR	Clay	text	K
0-13	S	8.1	1.1	15	12	SL	1.4
13-28	S	7.6	6.6	16	29	CL	7.4
28-64	L	7.6	5.9	17	26	L	7

	inches
Pit Depth	(72)
Bedrock	(72+)
Topsoil	(28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C_1	0/8	2.5Y 6/4	2.5Y 5/4	S (GRS)	M	VH				CS/C		
C_2	8/13	2.5Y 6/3	10YR 4/4	LS	M	LO/VH	many distinct mottles			CS/C		
C_3	13/28	2.5Y 4/4	5/3	SCL/CL	M	VH				CS/C		
C_4	28/48	2.5Y 5/4	4/3	CL	M	VH/EH				CS		
C_5	48/64	2.5Y 6/4	4/4	SiCL	M	VH				CS		
C_6	64/72	2.5Y 6/4	4/4	SL	M	H				CS		

Soil Description

Soil Type Shipvock (Brown) - Deep File No.

Area No-Name Permit Area Date 6/3/98 Stop No. #602

Classification HAPLARGID CM/RM13

Location

N. veg. (or crop) SPAI Hilg Atri Climate

Parent Material Eolian / Alluvium

Physiography Back Slope

Relief Drainage Well Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2-3% Moisture

Aspect N Root distrib.

Erosion Moderate - 5-10% rock on Surface

Permeability

Additional notes:

samples (depth inches) Typ Pedon

Suitable topsoil to 51" on Bedrock

		pH	EC	SAR	Clay text k%	
0-5	S	7.5	1.6	1	15	51
5-17	S	7.5	1.6	5	18	51
17-31	S	8	1.4	11	14	51
31-51	S	7.7	3.5	12	9	15

inches

Pit Depth (60)

Bedrock (51)

Topsoil (51)

Horizon	Depth (INCH)	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5	10YR 5/3	10YR 4/4	SL/LS	W GR	SL Hard			CO			
Bt	5-17	10YR 4/2	10YR 3/2	SL (13)	M. SBK W Pr	HARD			S/C			
Btk	17-31	10YR 5/4	10YR 4/2	SL (15)	M SBK	HARD			CS			
BCk	31-41	10YR 5/4	10YR 4/4	LS	MASS	S H			CS			
C	41-51	10YR 6/4	10YR 4/4	LS	MASS	S H			VS/E			
CR/R	51-60						Calcareous Sandstone White					

Soil Description

Soil Type Persayo | File No.

Area No-Name Permit Area | Date 6/4/98 | Stop No. H603

Classification BM/RAB

Location

N. veg. (or crop) Hila Mixed | Climate

Parent Material Residuum

Physiography

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture

Aspect N | Root distrib.

Erosion Sheet

Permeability

Additional notes:

samples (depth inches) 60% SS Channers on Surface

30%-40% of C horizon has original rock structure

Sodium affected No evidence topsoil

	inches
Pit Depth	(24)
Bedrock	(10)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4			Cl	MCl							
C	4/10			Cl	M							
Cr	10/24											

Soil Description

Soil Type Persayo — File No.

Area No-Name Permit Area — Date 6/4/98 — Stop No. 604

Classification — DA/2017

Location

N. veg. (or crop) Atol — Climate

Parent Material

Physiography

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope — Moisture

Aspect — Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) Depleted landscape

60% Cl on Surface

No available Topsoil

	inches
Pit Depth	(4)
Bedrock	(4)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4			Cl								
Cr	4+	Siltstone										

Soil Description

Soil Type Hurlburt - eroded File No.

Area No-Name Permit Area Date 6/4/98 Stop No. A605

Classification RM/CA

Location

N. veg. (or crop) Atrip / Chalogeton Climate

Parent Material

Physiography Main / Mesa Slope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Deflated area Sodium affected - No available topsoil 50% Channers on Surface

inches

Pit Depth (30)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4			C/	MCl							
Bky	4/15			C/C	wSBk							
Cr	15/30	Color	Uncoated	Chalk								

Soil Description

Soil Type Parsons - Sure File No.

Area No-Name Permit Area Date 6/4/98 Stop No. 606

Classification

Location

N. veg. (or crop) Spec. / Aspen Climate

Parent Material

Physiography Toe of Small Ridge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect NW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) No Available Topsoil
60-70% CF on Surface

inches

Pit Depth ( )

Bedrock (24)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			Scl								
2C	3/9			Scl/cl								
2Cr	9+"	Silt Stone										

Soil Description

Soil Type Prisayo - Ourimesh File No.

Area No-Name Permit Area Date 6/4/98 Stop No. #607

Classification

Location

N. veg. (or crop) Atch Spa: Climate

Parent Material Alluvium

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2-3% Moisture

Aspect E Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (12)

Bedrock (9)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/9			SCl								
2C1	9+	Continuous Shale										

Soil Description

Soil Type Bacchi File No.

Area No-Name Permit Area Date 6/4/98 Stop No. #608

Classification Haplargid CM/CHR

Location 200' west of Road

N. veg. (or crop) Atri Spec! Atrex Climate

Parent Material sand Eolian/alluvium over Residium of calcareous Sandstone

Physiography Uplands knoll/Ridge

Relief Drainage Well Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) pH EC SAR Clay Text K

sample 0-12" 7.7 1.0 8 SCl 22 3

sample 12-28" 7.4 9.2 14 L-CLS 1.9

topsoil either 12" or 28"

inches

Pit Depth (36")

Bedrock (28")

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5			SL	wk gr.	loose						
Bt	5-12	2.5Y 5/3		SCL	Mod SBK	hard						
2 Bk	12-28	2.5Y 5/3		SCL/CL	wk SBK	hard				12-15%	$CaCO_3$	
2 R	28+	2.5Y 7/2-4/2	2.5Y 6/3			calcareous		Sandstone				

Soil Description

Soil Type Fc16 File No.

Area No-Name Permit Area Date 7/8/98 Stop No. #609

Classification Dan 1314

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

Fcr5 begins 100' East of 610

#610 Sh. Rock Variant

0-3 A

3-9 Bt

9-20 2Bt

Soil suitable

approx 40" to bedrock

Tree Smallness

inches

Pit Depth ( )

Bedrock (6)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			SI								
C	3/6			VgSI								
Cr	6+		Sandstone									

Soil Description

Soil Type Huerbano File No.

Area No-Name Permit Area Date Stop No. C11

Classification

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (10)

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Beebe Variant File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #52

Classification Sandy mixed mesic typic torrifluvent BM/JH

Location

N. veg. (or crop) rabbit brush, ortho, sunflower, TAMARISK Climate

Parent Material

Physiography LOWLANDS FLOODPLAIN SOIL FROM CHANNEL

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1% Moisture

Aspect NNW Root distrib.

Erosion

Permeability

Additional notes: WATER TABLE / STANDING WATER

samples (depth inches)

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (55+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C1	0-6			fS	m	sh			eo			
C2	6-20			ms	m	sh			eo			
C3	20-45			cS	m	s			eo			
C4	45-55			cS	m	.	efr	ns np	eo			

Soil Description

Soil Type Beebe Variant — File No.

Area No-Name Permit Area — Date 2/11/98 — Stop No. #54

Classification FINE, SMMY MIXED MESIC TYPIC TORRIFLUVENT — BM/JH

Location

N. veg. (or crop) hija, spai, greasewood, atcon Climate

Parent Material Alluvium

Physiography Floodplain/stream terrace

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1-2%	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	Se (~~boil~~)		
0-4	7.5	.61	2	69	17	2.4		S	Verified 6/18/98
4-9	7.6	.65	12	71	16	1.9	1.3'	u	
9-19	7.5	1.69	8	76	12	1.2		S	2
19-33	7.5	5.74	16	54	24	1.6		S	inches
33-60	7.6	1.84	12	91	6	1.1		S	Pit Depth (60)
									Bedrock (60+)
									Topsoil (0?)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		0
A	0-4	2.5Y 5/4	2.5Y 5/3	scl		sh				eo		
Bw	4-9	2.5Y 5/4	2.5Y 4/3	vfsl/scl		sh/h				eo		
C1	9-19	2.5Y 6.4	2.5Y 5/3	sl		sh				eo		
C2	19-33	2.5Y 4/4	2.5Y 5/4	cl		h				eo	ALT LAYERS OF COURSE & FINE MATERIAL	
C3	33-60	2.5Y 6/4	2.5Y 5/3	s		s				eo		

Soil Description

Soil Type Beebe Variant File No. #53

Area No-Name Permit Area Date 2/11/98 Stop No. BM LJH

Classification Coarse loamy, mixed, mesic Typic Torrifluvent

Location

N. veg. (or crop) China, Sagebrush Climate

Parent Material Alluvium

Physiography Floodplain - Low Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

200' S. of main channel

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-5	2.5Y 6/6	2.5Y 6/4	vfsl	wgr	sh				eo		
C_1	5-14	2.5Y 6/4	2.5Y 5/4	s	m	s/sh				eo		
C_2	14-29		2.5Y 5/3	lfs	m	s/sh				eo		
C_3	29-50		2.5Y 5/4	ls	m	s/sh				eo		
C_4	50-60		2.5Y 6/4	ls	m			ns/np		eo	Saturated Water table	

Soil Description

Soil Type Gilco File No.

Area No-Name Permit Area - North Forest Date 3/3/98 Stop No. 200

Classification Coarse loamy, mixed, thermic Typic Haplocambid CA-1 CA

Location

N. veg. (or crop) Grassland / Chisum sani / Atos Climate

Parent Material Alluvium

Physiography Stream terrace / Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Site was Dug 150' East of original location

	pH	ec	SAR	S	C	V. %				
0-10	7.5	2.54	6.7	70	17	3	5			inches
10-29	7.5	.158	2.7	55	23	1.7	5	19	14.6	Pit Depth (60)
29-60	7.6	1.15	8.6	90	5	1.4	5	11	1.8	Bedrock (60+)
										Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7	10YR 5/3	10YR 3/4	ls	wgr		sfi			CD		
C1	7/10	2.5Y 5/4	2.5Y 4/4	ls	m		sfi			CD/c		
C2	10/29	5/4	4/4	sl	m	sh/h				CD	interbedded layers of coarse and fine	
C3	29/34	5/4	4/4	ls	m	sh				CD		
C4	34/60	5/4	5/4	ls/s	m	so				CD		

Soil Description

Soil Type Fruitland - Shallow File No.

Area No-Name Permit Area Date 3/2/98 Stop No. # 237

Classification Coarse loamy, Typic Torriorthent Aridic

Location

N. veg. (or crop) Shad Atrip, G.S. Grassland Climate

Parent Material Alluvium & Aeolian

Physiography Lowlands Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: sweep created

samples (depth inches)

inches

Pit Depth (32)

Bedrock (22)

Topsoil (22)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/8			SL	wsbk		SO			CS		
Bk	8/13			SCL	wsbk	SH				CS	5-8% lk	
Ck	13/22			SL	M	SH				CS	8-10% lk	
Ckr	22/32	Calcareous			Sandstone							

Soil Description

Soil Type Jacity File No.

Area No-Name Permit Area Date 3/5/98 Stop No. # 348

Classification Fine loamy mixed mesic Typic Torrifluvent Co. ICP

Location

N. veg. (or crop) Atol Greasewood Climate

Parent Material Alluvium - interbedded Coarse and Fine textured

Physiography Flood Plain - Grass Cover

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1%	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes: Moderately eroded Area adjacent to Pinabete Channel

samples (depth inches)

	pH	EC	SAR	S	C	K%		
0-12	7.9	10.3	7.5	53	26	5.22	1.7	S
12-21	7.9	1.24	8.9	80	10	1.49	3	S
21-39	7.6	6.38	20	58	21	2.59	13.3	U

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (21)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/7		2.5Y 4/2	scl	w pl/wk		sf			vsc		
C_1	7/12	2.5Y 5/3	10YR 3/2	scl	wk sbk	h				sc		
C_2	12/21	2.5Y 6/4	10YR 4/3	ls	m	sh				co		
C_3	21/29	10YR 4/3	2.5Y 5/3	sic	m	h				co		
C_4	29/39	2.5Y 6/4	2.5Y 5/4	scl	m	so/h				co		
C_5	39/52	10YR	2.5Y 4/2	sic	m	vh				vsc	unsuitable Clays	
C_6	52/60	10YR 3/3	2.5Y 5/3	scl	m					vsc		

Soil Description

Soil Type Bee 6e File No.

Area No-Name Permit Area Date 3/24/98 Stop No. 393

Classification Coarse loamy, typic fluvaquent Bar / CA

Location

N. veg. (or crop) Grasswood / Atos / spec Climate

Parent Material Alluvium

Physiography knoll / intermm terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect ~~Level~~ NW Root distrib.

Erosion Severly

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (69)

Bedrock (69+)

Topsoil (50)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	wk sbk/gr		fr			CO		
C1	5/12			LS	M		vfr			CO		
C2	12/24			LS	M	Sh				CO		
C3	24/32			LS	M	So				CO		
C4	32/40			SL	M	SL				USC		
C5	40/50			LS	M	So				CO		
2C	50/69			grSCL	M	Sh				CO	Cur Sandstone alluvium & cobbly sandy Shale Channels	
											Consistence for Topsoil	

Soil Description

Soil Type Beebe File No.

Area No-Name Permit Area Date 3/24/98 Stop No. 396

Classification Coarse Loamy Torrifluvent BM/CA

Location

N. veg. (or crop) Spai, Hija, Atca Climate

Parent Material Alluvium

Physiography Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
40-64	8.4	22.1	65.	79	15	1.7	U

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (40)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-6		10yr 4/3	ls	wgr/m		vfr			eo	Suit.	
C1	6-12		10yr 4/3	lfs	m		fr			eo	Suit.	
C2	12-24		10yr 4/2	sl	m		sfi			vsle	Suit.	
C3	24-40	10yr 5/4	10yr 5/3	sl	m	sh				eo	Suit.	
2CKy	40-64	10yr 4/3	10yr 3/2	sl	m	sh				sle		

Soil Description

Soil Type Patel — File No.

Area No-Name ~~Permit Area~~ NE — Date 3/26/98 — Stop No. 397

Classification Fine Typic Natrargid — BM/CA

Location

N. veg. (or crop) Spec: Alfalfa — Climate

Parent Material Colluvium / Residuum

Physiography Toe of [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(50)
Bedrock	(24)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Btn	0-3			cl	mcl	h						
Btyn	3-14			cl/c	wsbk	vh						
2C	14-24			cl/c	m	sh						
2Cr	24-50	Shale										

Soil Description

Soil Type Razito - Moderately deep File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 398

Classification Coarse Loamy Typic Torripsamment BM/CA

Location

N. veg. (or crop) Gusa, Atco^, Sper, Mormon Tea, Yucca Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (25)

Bedrock (24)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6			fls	wgr		vfr					
C1	6-13			fls	m		vfr					
C2	13-24			ls	m	so						
2R	24+	Sandstone										

Soil Description

Soil Type ~ Shiprock Variant - Overblown File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 399

Classification BM/CA

Location

N. veg. (or crop) Gusa, Yucca, MormonTea, Orhy, Spa. Sper Climate

Parent Material Eolian

Physiography Backslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4-5%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6	10yr 6/4	10yr 5/4	ls	wgr		fr/so					
Bw	6-20		10yr 5/4	ls/sl	wsbk/m		vfr					
Btkb	20-30	10yr 5/6	10yr 5/4	scl 23-25	wabk	h					3-4%k	
BC	30-37	10yr 5/6	10yr 5/4	sl 8	wabk	sh						
Btkb	37-46	10yr 5/6	10yr 5/4	sl 10	wabk	sh					2-3%k	
Ck	46-65	10yr 6/6	10yr 5/4	vfls	m	so/sh						

Soil Description

Soil Type Shiprock Overblown File No.

Area No-Name [redacted]ea NE Date 3/26/98 Stop No. 400

Classification BM/CA

Location

N. veg. (or crop) Gusa, Atcon, Spai, Hija, Orhy Climate

Parent Material Eolian / Alluvium

Physiography Toe slope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes: Similar to what Bruce classified as Natrargids overblown

samples (depth inches)

15-22 S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (22)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			ls	sgr		vfr				Suit.	
C	4-15			ls	m		fr				Suit.	
2Bt	15-22			ls	mcl	h					Interfingerings of sands from upper horizons	
2Byn	22-46			cl	wsbk/m	vh					Unsuit. 15%/by	
2Cy	46-60			scl							Interbedded sands and material	Unsuit carbonaceous

Soil Description

Soil Type Shipro - Dark brown File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 401

Classification

Location

N. veg. (or crop) Greasewood, Gusa, Htija, Spai, Spcr Climate

Parent Material Eolian

Physiography Toe slope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (50)

Bedrock (42)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5			fls	wp1/wgr		vfr					
C	5-17			fls	m		vfr					
Btb	17-30			sl	msbk	vh						
C/2Cy	30-42			scl	m	vh					Unsuitable Many Coal Chips	
2Cr	42-50	Coal										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 3/26/98 Stop No. 402

Classification Fine Loamy Lithic Torriorthent (Saline Sodic)

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Surrounded by rock outcrops

#403-0-5 C

5+ Cr Carbonaceous Shale

Same as 402

#404- 0-8 Btn C/cl Firm

8+ R Shale

Fine Lithic Natrargid - Patel

inches

Pit Depth (15)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-8			cl		h						
Cr	8-15	Carbonaceous Shale										

Soil Description

Soil Type Razito File No.

Area No-Name ~~Permit~~ Area NE Date 3/26/98 Stop No. 406

Classification Buffer

Location

N. veg. (or crop) Gusa 10Rity Thija Climate

Parent Material colian

Physiography Rock Slope Dune land

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			fls	wgr		fr					
Bw	5/16			fls	wgr/m		fr					
C	16/24			fls	m	so						
Btb	24/31			scl 23	mas							
C	31/39			ls	m	L						
2C	39/60			sl	m	vfr						

Soil Description

Soil Type Razito File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 407

Classification Typic torriorthents Basin

Location

N. veg. (or crop) Gusa oak/ny Spa: Climate

Parent Material eolian

Physiography Mesa

Relief Drainage excessive Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5% Moisture

Aspect N Root distrib.

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (73)

Bedrock (73+)

Topsoil (65)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/8			ls	wsr		vfr					
C1	8/28			ls	m		vfr					
C2	28/52			fls	m	so						
Ck	52/65			ls	m	sh/h					1-8%/c	
2Ck	65/73			C	m	h					Carbonaceous admixture unsuitable	

Soil Description

Soil Type Razito File No.

Area No-Name ~~Permit~~ Area NE Date 3/26/98 Stop No. H 408

Classification Typic Torriorthent Bm/CA

Location

N. veg. (or crop) Gusa 10RH4 Jojoba Tea Hatch Climate

Parent Material Colluvium

Physiography Dune / Toe Slope of Sand Hill

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib. 54"	
Erosion		
Permeability		

Additional notes: Adjacent to eroded Area.

samples (depth inches)

inches

Pit Depth (70)

Bedrock (70+)

Topsoil (70)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/9			LS	w sg/m		VFr					
C_1	9/21			LS	M		VFr					
C_2	21/30			LS	M	Sh						
Ck	30/42			LS	M	sh						
Bkb	42/47			Fls	wab	Sh						
Ck'	47/54			Fls	M	Sh						
C'	54/70			Fls	M	Sh						

Soil Description

Soil Type Razito File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 409

Classification Coarse Loamy Typic Torriorthent BM/CA

Location

N. veg. (or crop) Gausa, Spa. Hya, orhy, sper, Mormon Tea Climate At con

Parent Material Eolian / Residuum

Physiography Backslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (53)

Bedrock (38)

Topsoil (27)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4		10yr 4/2	ls	wgr/m		vfr					
C	4-17		10yr 4/2	fsl	m		fr				Suit.	
Bt&Kb	17-27	10yr 6/4	10yr 5/3	sl	wsbk	sh/h					Not Argillic	
2Ck	27-38	10yr 6/4		cl	m							
3Cr	38-53	Shale										

Soil Description

Soil Type Fruitland - Saline Sodic | File No.

Area No-Name ~~Permit~~ Area NE | Date 3/26/98 | Stop No. #410

Classification BRUCA

Location

N. veg. (or crop) Atos | Climate Semi-arid

Parent Material

Physiography Uplands / Dissected Area

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1% | Moisture

Aspect W | Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Text
0-5 S	8.2	.93	7	SL
5-29 4	8.3	5.64	39	S
29-34 4	8.4	7.11	45	S

	inches
Pit Depth	(48)
Bedrock	(48?)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5	10YR 5/4	10YR 4/4	CL	Mod CL	Sh	Fi					
2Bk	5/29	10YR 5/6	10YR 5/4/5/6	LS	MPL	vh					K stains on ped faces 8-10%	
2Ck/3Ck	29/34	10YR 3/4	10YR 5/4	SL 20	M pressure faces	Vh/eh					5-6%	
3Css	34/48	10YR 3/2		C	M pressure faces	eh					Oxidizable 2:1 clays Carbonaceous	

Soil Description

Soil Type Rogito File No.

Area No-Name ~~Permit Tea~~ NE Date 3/26/98 Stop No. 411

Classification Typic Torripsamment BM/CA

Location

N. veg. (or crop) Gusa, Spai, Mormon Tea, Atcon Climate

Parent Material Eolian

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	SAR	EC
46-68	51	16.7

inches

Pit Depth ( )

Bedrock (68+)

Topsoil (46)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6		10yr 5/4	ls	wgr		vfr					
C	6-20		10yr 5/4	ls	m		vfr					
BC	20-27	10yr 5/6	10yr 5/4	ls	wabk	sh					Albic	Materials superimposed in layers
Bwb1	27-35	10yr 5/6	10yr 5/4	sl	wpr	sh						
Bwb2	35-41	10yr 5/6	10yr 5/4	sl/ls	wsbk	sh						
2C	41-46		10yr 5/4	sl	m		sfi					
2Cy	46-68		10yr 5/4	cl	m		fi					

Soil Description

Soil Type - Rozito | File No.

Area No-Name ~~Permit Area~~ NE | Date 3/26/98 | Stop No. 412

Classification typic bill component | RM/CA

Location

N. veg. (or crop) Gusa / Hisa / ORHy / Atcon / Gutier wood / prickly pear / Spa: | Climate

Parent Material eolian over alluvium

Physiography Dune fields

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect NE	Root distrib. 31"	
Erosion slight		
Permeability		

Additional notes: Adjacent to small drainage

samples (depth inches)

inches

Pit Depth (59)

Bedrock (59+)

Topsoil (31)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6			ls	wpr		vfr					
Bw	6/20			ls	wfr/m		vfi				Mot calcareous	
C	20/31			ls	m	so						
2Ck	31/59			scl	m	vh					Interbedded sands & Calcareous clays	
											Unsaturated	

Soil Description

Soil Type Fruitland File No.

Area No-Name ~~Permit Area~~ NE Date 3/26/98 Stop No. 413

Classification BM/CA

Location

N. veg. (or crop) Spai, Gusa, MormonTea Climate

Parent Material Eolian

Physiography Toe slope / Backslope Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

		PH	EC	SAR	Clay	K
0-8	S	7.5	.41	1	3	1.3
8-26	S	7.5	.29	12	15	1.3
26-50	S	8.4	1	10	10	2.9
50-65	C	8.2	2.65	31	20	6.9

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (50)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-8	10yr 6/4	10yr 5/4	ls	wgr		vfr					
C	8-26		10yr 5/4	ls	m		vfr					
BtKb	26-50	10yr 5/6	10yr 5/4	ls/sl	mpr	h						
2Btkb	50-65	10yr 6/4	7.5y 5/4	scl	spr	vh						

Soil Description

Soil Type Chireta File No.

Area No-Name ~~Permit~~ Area NE Date 3/26/98 Stop No. 415

Classification Fine Lithic Xerorthents UM/CA

Location

N. veg. (or crop) Spa: Atob Climate

Parent Material Alluvium and residuum

Physiography Jebilated area between dunes

Relief	Drainage Poorly	Salt or Alkali	
Elevation	Gr. Water	Stoniness	
Slope 2%	Moisture 8"		
Aspect W	Root distrib. 8"		

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (48)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btr.	0/4		10YR5/4	scl	wcl		SFI					
2Btr2	4/8		2.5Y5/3	C	WM		VFI					
2Cy	8/20	2.5Y 4/4		C	M	L						
2Cr	20/48	Coll	uvium	s	Shale & mudstone							

Soil Description

Soil Type Chinook Sandy loam 2 File No.

Area No-Name Permit Area NE Date 3/31/98 Stop No. H 416

Classification fine loamy, Ustic Torriorthent Entic

Location

N. veg. (or crop) Agri 1/3 Tm 1/3 Ar 1/3 Con Climate

Parent Material Alluvium / Residuum

Physiography Toe of badlands - Drainage between badlands and Missouri

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture 8"	
Aspect W	Root distrib. 10"	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches) Chose not to do #417

	inches
Pit Depth	(32)
Bedrock	(20)
Topsoil	(8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/8	2.5Y 6/4	2.5Y 5/3	SL	M	Sh				CB/CO		
2C	8/20	2.5Y 5/3		CL/C	M					USIC		
2Cr	20/32	Carbonaceous Shale										

Soil Description

Soil Type Huerhuero File No.

Area No-Name ~~Permit~~ Area NE Date 3/31/98 Stop No. 418

Classification Fine loam, light brownish RANCH

Location

N. veg. (or crop) Climate

Parent Material Residuum

Physiography uplands, Hardwood cover

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: Area surrounded by rock outcrops of sandstone

samples (depth inches) 90% of on Subsoil

inches

Pit Depth (22)

Bedrock (16)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			cl	m cl	sh				v stc		
By	5/16			c/c	m	sh				v s/c		
Cr	16/22	Carbonaceous Shale										
2R	22+	Shale										

Soil Description

Soil Type Ranito File No.

Area No-Name Permit Area I/E Date 3/31/98 Stop No. 419

Classification Mixed Mesic Typic Torriorthent/Haplargid

Location

N. veg. (or crop) Hilaria / Oryzopsis / Gutierrezia / Yucca / Opuntia Climate

Parent Material eolian

Physiography Nonevalley

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3%	Moisture	31"
Aspect	SW	Root distrib.	43"
Erosion	moderate		
Permeability			

Additional notes: Eastern edge of Dune # 417 Ranito

samples (depth inches)

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (61+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			ls	wgr	so				co		
C_1	5/43			ls	m	sh	fr			co		
C_2	43/51			ls	m	h				co		
C_3	51/61			ls	m	h				co		

Soil Description

Soil Type Patel' - very deep File No.

Area No-Name Permit Area Date 3/31/98 Stop No. 420

Classification fine, mixed, non-acid, thermic Typic Haplocalcid ✓ BM/CA

Location

N. veg. (or crop) Atob, Atpd Climate

Parent Material Alluvium

Physiography Playa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture 10"	
Aspect	Root distrib. 20"	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 30% cf on Surface

	pH	EC	SAR	Clay	Text	x̄ Clay
0-10 cl	8.2	3.7	35	33	scl	9.7
10-20 cl	7.9	13	34	40	c	11.8
20-34 cl	7.9	11.8	32	43	c	17.7
34-58 cl	8.1	4.37	34	23	l	=39.2

inches

Pit Depth (58)

Bedrock (58+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn1	0-5	10yr 6/4	10yr 5/4	cl	mcl	h				sle		
Btn2	5-10	10yr 6/6	10yr 5/4	sic	wpl	sh				sle		
Btyn	10-20	10yr 6/6	10yr 5/4	sic	wpl/wsbk	vh				sle/es		
Cy	20-34	10yr 5/6	10yr 5/4	si/c	m	vh				sle		
Btnb	34-58		10yr 5/4	cl	mcl/mabk	eh				es		

Soil Description

Soil Type Rcazito File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 421

Classification Typic Torripsamment CA

Location

N. veg. (or crop) Gusa, Spai, Hija, MTea, Greasewood Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture 30	
Aspect N	Root distrib. 37	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF ~~Boundary~~		
A	0-7			ls	wg					cd		
C	7-37			ls	m					cd		
Bkb	37-60			sl	wsbk					es		

Soil Description

Soil Type Hueco Bond — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/6/98 — Stop No. 422

Classification Typic Natrargid — CA

Location

N. veg. (or crop) Atob, Atpo — Climate

Parent Material Residuum

Physiography Playa

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 0% — Moisture 10

Aspect — Root distrib. 15

Erosion

Permeability

Additional notes:

samples (depth inches) 85% cf on surface

inches

Pit Depth (54)

Bedrock (34)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-5			cl	wcl	sh				vsle		
Btkn	5-10			cl	wsbk	sh				vsle		
Cky	10-22			cl/c	m	h				sle/vsle		
Cr	22-34	Shale										
R	34+	Shale										

Soil Description

Soil Type Shipsock - Clayey Substratum — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/6/98 — Stop No. 423

Classification Coarse loamy Typic Haplocalcid — CA

Location

N. veg. (or crop) Chna, Spar, Hija — Climate

Parent Material Eolian over Alluvium

Physiography Dune Edge

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3% — Moisture bottom/19"

Aspect N — Root distrib. 19"

Erosion

Permeability

Additional notes: Many Prominent K nodules

samples (depth inches)

	pH	EC	SAR	Clay tex
0-13 S	7.3	.32	1	S
13-19 S	8.0	1.85	8	11 LS

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-3			ls	wgr		so		eo			
Bw	3-13			ls	m		fr		eo		-	
Btk	13-19			sl	msbk				eo/ec		10-12%k	
Ckss	19-31			cl	m	h			es		25-30%k Unsu. table	Clays + salts
Ck	31-60			cl	m	vh			vs/e		Interbedded shales/sands	

Soil Description

Soil Type Rozito File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 425

Classification CA/FP

Location

N. veg. (or crop) Chss, mTea, Spai Climate

Parent Material Eolian over Alluvium

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 20	
Aspect N	Root distrib. 34	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (09)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-8		10yr 4-4	ls	wgr		Fr				eo	
C	8-29		10yr 4-4	ls	m		Fr				eo	
2Btk	29-39	7.5yr 5-4	7.5yr 4-6	sl	msbk	vh					sle	
3Ck	39-63	10yr 6-4	10yr 5-4	ls	m	h					sle	

Soil Description

Soil Type Rositas run Granite File No.

Area No-Name ~~Permit~~ Area NF Date 3/31/98 Stop No. #426

Classification typic torriorthent RM/CH

Location

N. veg. (or crop) Chrysothamnus / Sporobolus / Oryzopsis / Artemisia / Yucca Climate

Parent Material colluvium

Physiography Dune hills

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture 40"	
Aspect NW	Root distrib. 49"	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (61+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A1	0/6			ls	wgr		vfr			cbb co		
C	6/25			ls	m		vfr			cbb gsl/c		
Ck	25/49			ls	m	sl				cbb sl/c		
Btkb	49/61			sl 12-15%	wsbk/m	h				cbb sl/c/g		

Soil Description

Soil Type Ironrock Variation / Razo.10 File No.

Area No-Name ~~Permit~~ Area NE Date 7/21/98 Stop No. H427

Classification type for improvement BM/CA

Location

N. veg. (or crop) Oaky / Mtea / Rosa / woodland / grass Climate

Parent Material Oolite

Physiography Mowry Area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture 26"

Aspect Root distrib. 45

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7			lfs	vgr/m		vfr			cw		
C	7/33			lfs	m	so	fr			cw/usc		
Btkb	33/47			sl 15%	msbk/m	h				sle/cs		
Ck_1	47/53			lfs	m	so				sle		
Ck_2	53/63			lfs	m	sh				cs		

Soil Description

Soil Type Bacon: ~~Permit~~ Area NE File No.

Area No-Name ~~Permit~~ Area NE Date 3/31/98 Stop No. 428

Classification Bm/CA

Location

N. veg. (or crop) Spru Scr h:sc Climate

Parent Material

Physiography Uplands Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture 21

Aspect N Root distrib. 24

Erosion modrate

Permeability

Additional notes: adjacent to Bloom out to the South east

samples (depth inches)

	pH	EC	SAR	Clay	k
12-21 S	8.1	.76	6	20 sicl	3.7

inches

Pit Depth (41)

Bedrock (28)

Topsoil (21)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ CBG		
A	0/5	10YR 6/4	10YR 5/4	~~FS~~ LFS	Lpl/wgr		~~fr~~			CO	2 Soft&L	
C	5/12		10YR 5/4	LFS	M		fi			CO	1 Roots	
2Bkb	12/21		10YR 5/4	scl	Stpr		VFI			Sle		
3Ck	21/28	10YR 7/6 cc	2.5Y 6/6	cl	M	dh				Sle	unsatisfied	
3Cr	28/41		Scmd Stone									
3R	41+			r								

Soil Description

Soil Type Rock land File No.

Area No-Name ~~Permit Area~~ NE Date 3/31/98 Stop No. #429

Classification typic Torriorthent

Location

N. veg. (or crop) Gusa, Spai MTea, Hija, Chna Climate

Parent Material Eolian over Alluvium

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 30"

Aspect NE Root distrib. 33"

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (42)

Bedrock (41)

Topsoil (41)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-5			ls	wpl/wgr		vfr			eo		
C	5-19			ls	m		vfr			s/e		
2Ck1	19-33			vfsl	m	sh	sfi			es/eu		
2Ck2	33-41			lms	m	sh				eo		
3R	41+	Calcareous Sandstone										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 3/31/98 Stop No. #430

Classification Fine Loamy, Lithic Torriorthent

Location

N. veg. (or crop) Climate

Parent Material Residuum

Physiography Edge of Playa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 40% cf on surface

inches

Pit Depth (40)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0-6			scl								
Cr	6-40	Shale										

Soil Description

Soil Type Rozito - Clayey Substratum File No.

Area No-Name Permit Area Date 3/31/98 Stop No. 431

Classification BM/CA

Location

N. veg. (or crop) MTea, Spai, Gusa Chna Climate

Parent Material Eolian / Residuum

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 19	
Aspect N	Root distrib. 26	

Erosion

Permeability

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	text	k%
0-19	S	7.4	.32	1	5	S	.64
19-26	S	8.1	.75	6	18	SL	6.9
26-36	CL	7.6	7.31	19	30	SCL	11

inches

Pit Depth (54)

Bedrock (44)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4	10yr 5/6	10yr 4/4	ls	wgr	so				co		
C	4-14		10yr 4/4	ls	m		vfr			vsle		
Bwb	14-19		10yr 5/4	sl/ls	wsbk		sfi			vsle		
2Btk	19-26	7.5yr 4/6	7.5yr 5/4	sl 18-20	mpr	h				ev	12-15%k	
3Bky	26-36	10yr 7/6	10yr 6/6	sicl	wpr	h				es/ev		
3Ckv	36-44	2.5y 5/4		sic	m	h				es/ev	Unsuitable clays & salts	
3Cr	44-54	Carbonaceous Shale										

Soil Description

Soil Type Bacobi - overblown | File No.

Area No-Name ~~Permit Area~~ NE | Date 3/31/98 | Stop No. 432

Classification BM/CA

Location

N. veg. (or crop) Spar, Hilaria jamesii, Mixed Grass, Chrna | Climate

Parent Material Eolian / Residuum

Physiography Dune

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture 19

Aspect S | Root distrib. 25

Erosion

Permeability

Additional notes:

samples (depth inches)

See. #s 431 for Suitability

	inches
Pit Depth	(55)
Bedrock	(39)
Topsoil	(19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AC	0 - 11			ls	wgr/m		vfr			es	Suitable	
2Btk	11 - 19			scl 22	msbk		fi			es	similar to	434 0-9
3Btky	19 - 29			sicl	wsbk	vh				es/er		
3Cky	29 - 39			sicl	m	h/vh				es	Unsuitable 10-15% y clay & salts 3-5K	
3Cr	39 - 55	Shale										

Soil Description

Soil Type Shallow over clay | File No.

Area No-Name Permit Area | Date 3/31/98 | Stop No. 433

Classification | BLM RA

Location | SPCP

N. veg. (or crop) Mixed Sage/Rabbitbrush/Cheatgrass | Climate

Parent Material colluvium

Physiography toe on bench

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 3% | Moisture 16

Aspect W | Root distrib. 31

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (52)

Topsoil (52)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5	10YR 5/4	10YR 4/4	LS	wsg		VFr			CLS clr		
C	5/16		10YR 4/4	LS	M		fr			CLS clr		
2 Bk	16/31	10YR 5/6	10YR 5/4	SL	SBK/msbk					CS	5-8% K	
3 Ck	31/52	2.5Y 6/4	2.5Y 5/4	SiL	M					CLS clr	3-5% K	
4 C1	52/60	Shale										

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area NE Date 3/31/98 Stop No. 434

Classification Fine loamy, typic Ustorthent Badlands

Location

N. veg. (or crop) Sparse Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3-5% Moisture

Aspect NW Root distrib.

Erosion Severe

Permeability

Additional notes: located at edge of Doney Area

samples (depth inches) 70% of surface

0-9

inches

Pit Depth (57)

Bedrock (29)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0/9			cl	stpr		fi			sle		
2Bkyn	9/19			cl	stpr	h/sh				es	interbedding of GG overburden material	
3Ck	19/29			cl	M	h				sle		
3Cr	29/57		Silt stone		vella							
3R	57+	Fine grained Sandstone / siltstone										

Soil Description

Soil Type Rezlla - Clayey Substratum File No.

Area No-Name Permit Area Date 3/31/98 Stop No. 435

Classification BM/CA

Location

N. veg. (or crop) Gusa, Mormon Tea, Spa, Hi, Yucca Climate

Parent Material Eolian

Physiography Dune Edge

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4% Moisture 22"

Aspect N Root distrib. 45"

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K%
29-39 S	8.1	1.1	8	10	1S 3.7

inches

Pit Depth (60)

Bedrock (51)

Topsoil (39)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			lfs	wgr	so				eo	} Suitable	
C	5-22			lfs	m		vfr			eo		
Bwb	22-29			ls	wabk	sh				eo		
Btkb	29-39			sl 8-10	msbk/mpr	h				es		
2Bt	39-45			cl	mpr	vh				vsle	Unsuitable	
2By	45-51			cl	wabk	h				vsle		
2Cr	51-60	Shale										

Soil Description

Soil Type Fallbrook - Sandy loam File No.

Area No-Name Permit Area Date 3/31/98 Stop No. 436

Classification Fine loamy, typic Haploxeralf QM/CP

Location

N. veg. (or crop) Avo6 Climate

Parent Material Alluvium over Mesozoic

Physiography Valley / Boulder

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1%	Moisture	
Aspect	NW	Root distrib.	
Erosion	Sheet		
Permeability			

Additional notes:

samples (depth inches)

	inches
Pit Depth	(48)
Bedrock	(36)
Topsoil	(9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3	10YR 6/4	2.5Y 5/3	SL	wpl	Sh				CS/C		
Bt1	3/7	1	10YR 4/4	CSL	MCL		VFI			CS/C		
Bt1ky/Bt2ky	7/15-Bt2ky 15/36	10YR 4/6	2.5Y 5/4	CL	M	Sh				SC	intergrowths of alluvial gravels	
2Cky	15/36	10YR 7/1	2.5Y 5/3	C		H/VH				SG/CS	Gravel and [illegible]	
2Cr	36/48	Coherent			Shale							

Soil Description

Soil Type Patel — File No.

Area No-Name Permit Area — Date 3/31/98 — Stop No. 437

Classification — BM/CA

Location

N. veg. (or crop) Spar, Atob — Climate

Parent Material Alluvium

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture 7"	
Aspect W	Root distrib. 17"	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 40% cf on surface

-See 420 for suitability

inches

Pit Depth (42)

Bedrock (24)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-7			c	mcl		vfi			sle		
Btyn	7-17			c	wsbk	sh				sle/es		
2Cryk	17-24			cl/c	m	h				es		
2Cr	24-42	Carbonaceous Shale										

Soil Description

Soil Type Patel - Crooked File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 438

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 50% cf on surface

inches

Pit Depth (40)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0\6			cl	wcl		fi					
Cy	6\12			cl	m	vh						
Cr	12\26	Shale										
R	26+	carbonaceous Shale										

Soil Description

Soil Type Ra2,12 File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 439

Classification Typic Torripsamment CA/FP

Location

N. veg. (or crop) mTea Spai. Gusa, Hija, Orhy Climate

Parent Material Eolian

Physiography Dune Edge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NW	Root distrib. 35	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-6			ls	wgr		vfr			eo		
C	6-22			ls	m		vfr			eo		
Btkb	22-30			sl	msbk	h/vh				sle		
Ck	30-40			ls	m	vh				vsle		
C	40-65			ls	m	vh				eo		

Soil Description

Soil Type Stumble | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/6/98 | Stop No. 440

Classification CA

Location

N. veg. (or crop) Gusa, Spa, MTea, Orny, Hija | Climate

Parent Material Eolian / Alluvium

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture 1B	
Aspect N	Root distrib. 26	

Erosion

Permeability

Additional notes:

samples (depth inches)

Similar to 447

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			ls	wgr		vfr			eo	}	
C	5-18			ls	m		vfr			eo	} suit.	
Btkb	18-26			sl	msbk	h.				sle	}	
2Ck	26-36			cls	m	vh				vsle		}
2C	36-60			vgcls	m	h				eo	35%g	} see 447 for suit.

Soil Description

Soil Type Ra 2 to 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 441

Classification CA

Location

N. veg. (or crop) Gousa, MTea, Spai, Orhy, Hija Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-7			ls	wgr		vfr		eo			
BW	7-18			sl	m		vfr		vs/e			
CK	18-42			ls	m	vh			s/e			
C	42-60			ls	m	h			eo			

Soil Description

Soil Type Huerhuero

File No.

Area No-Name ~~Permit Area~~ NE Date 4/7/98 Stop No. 442

Classification Fine-Loamy, Lithic Natrargid CA/Bm

Location

N. veg. (or crop) Spai, Atab Climate

Parent Material Residuum

Physiography small knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 30% cf on surface

	inches
Pit Depth	(36)
Bedrock	(19)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-6			cl	mcl	sh				sle		
By	6-19			c	wsbk	h				vsle		
Cr	19-36	Shale										

Soil Description

Soil Type Patel (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/17/98 Stop No. A 4/4/1

Classification

Location

N. veg. (or crop) Atoka Climate

Parent Material Residuum

Physiography uplands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4% Moisture

Aspect N Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 80% fine stone Brugs on Surface - Area Surrounded by Rock outcrops

pit	EC	SAR	Clay	text	k
0-8 u	7.8	5.1	19	38	cl	8.2
8-15 u	7.8	11.2	29	40	c	5.1
15-25 u	7.8	9.7	29	45	c	5.6

inches

Pit Depth (39)

Bedrock (25)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn1	0-4	2.5Y 5/6	2.5Y 5/4	scl 25	mcl	h				cv		
Btn2	4-8	2.5Y 5/6	2.5Y 5/4	cl	wabk	sh				es/sle		
2Bky	8-15	2.5Y 4/4	2.5Y 5/4	cl 30	wpl	sh/h				es	Interfingering of Sands from above	
2Cky	15-25	2.5Y 4/4		c	m	h				sle/es		
2Cr	25-39	Carbonaceous shale										

Soil Description

Soil Type Patel 1 File No.

Area No-Name ~~Permit~~ Area NE Date 4/7/98 Stop No. 445

Classification ARIDISOL

Location

N. veg. (or crop) Sage / Atrb Climate

Parent Material Colluvium / Alluvium and Residuum

Physiography Uplands / Small Drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

See 444 for Soil

inches

Pit Depth (24)

Bedrock (24)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			SL								
Btn	3/10			CL	w cl							
2C	10/24			C/G								
2Cr	24+											

Soil Description

Soil Type Benally File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 446

Classification

Location

N. veg. (or crop) Atpo Climate

Parent Material Alluvium

Physiography Playa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0 Moisture 3

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 35% cf on surface

inches

Pit Depth (68)

Bedrock (68+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
Btn	0-6			scl	sc1	eh			sle		unsuit→bk	
BKn	6-24			sl	sbl	vh			vsle	25%G		
CK	24-37			sl	m	eh			vsle	15%G		
C1	37-58			vgsl	m	vh			vsle	40%	vm	
C2	58-68			cl	m				vsle			

Soil Description

Soil Type Stumb/c File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 447

Classification CA/FP

Location

N. veg. (or crop) Chne, MTea, Sba Gus*, Orny Climate

Parent Material Eolian / Alluvium

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture 54	
Aspect N	Root distrib. 25	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K
20-40 S	7.2	3.5	4	8 S	2.0
40-54 S	8	.75	7	5 S	1.70

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(54)

	Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
	A	0-8		10yr 5-4	ls	wgr		vfr			vsle		
	Bt	8-20		10yr 5-3	sl	wSBK		sfi			sle	Suitable Not Argillic	
2	Cy	20-40		10yr 5-8	cs	m		so			eo	Iron stainings	
2	Ck	40-54		10yr 3-6	cs	m		so			eo		
3	C	54-60			vgrscl	m	h				eo	unsuitable rock content	

Soil Description

Soil Type Bonadelle File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 449

Classification CA

Location

N. veg. (or crop) Spar, Htija, mTea Climate

Parent Material Eolian / Alluvium

Physiography Edge Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture 14	
Aspect S	Root distrib. 40	
Erosion		
Permeability		

Additional notes:

samples (depth inches) large carbonate nodules

	pH	EC	SAR	Cl	text	~~Gravel~~	k
14-34 C	7.8	4.3	27	23	scl		.96
34-67 S	7.7	7.5	16	10	sl		2.6

inches

Pit Depth (67)

Bedrock (67+)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-7		10yr 4-4	sl	wpl		fr			vsle		suitable
BtK	7-14		10yr 5-4	sl	wsbk		fi			sle	suitable	argillic
2 BtKn	14-34	10yr 6-6	10yr 5-6	cl		vh				er	25% K calcic?	
2CK1	34-52	10yr 6-6	10yr 5-4	fsl		sh				sle		
2CK2	52-67	10yr 6-6	10yr 5-3	fsl		vh				sle		

Soil Description

Soil Type Haverbow — File No.

Area No-Name Permit Area — Date 4/7/98 — Stop No. 450

Classification Fine-Loamy, Lithic Natrargid — CA/BM

Location

N. veg. (or crop) Atob — Climate

Parent Material Residuum

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) 40% ch on surface

inches

Pit Depth ( )

Bedrock (16)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AC	0-1	10yr 7/2	10yr 5/3	gscl	wpl	sh				es	25%g	
2Btn	1-4	10yr 5/6	10yr 6/4	scl	sd	h				sle		
2Btkm1	4-10	10yr 5/6	10yr 5/6	cl	wpr	h.				es		
3Btkm2	10-16	10yr 4/4	2.5y 5/6	cl	spr	vh				es/sle		
3Cr	16-46	Siltstone										
4Cr	46-54	Carb. shale										

Soil Description

Soil Type Shiprock (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 451

Classification ? CA/FP

Location

N. veg. (or crop) Chna, MTea, Spai, Sper, Orhy Climate

Parent Material Alluvium

Physiography Backslope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 6% Moisture 26

Aspect N Root distrib. 45

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	Text	K%
0-26	S	7.4	2.3	1	8	LS	2.5
26-56	S	7.9	2.1	8	15	SL	3.7
56-68	S	7.7	1.8	15	18	SL	2.3

inches

Pit Depth (68)

Bedrock (68+)

Topsoil (68+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ ecc	Boundary		
A	0-8		10yr 4-4	LS	wgr		vFr		vsle			
Bw	8-26		10yr 5-3	SL	m		vFr		vsle			
Bwkb	26-36	10yr 5-6	10yr 5-4	LS	wSBK	h			sle			
Ck	36-56	10yr 5-6	10yr 5-4	scl	m	sh			sle			
2Ck	56-68	7.5yr 5-8	10yr 4-4	scl	m	h			sle			

Soil Description

Soil Type Fallada' File No.

Area No-Name Permit Area Date 4/6/98 Stop No. 452

Classification Fl Typic Natrargid CA

Location

N. veg. (or crop) Atob, spai, plpa Climate

Parent Material Residuum

Physiography Toe slope of large Hill

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 12

Aspect N Root distrib. 18

Erosion

Permeability

Additional notes:

samples (depth inches) 50% cf on surface

inches

Pit Depth (50)

Bedrock (40)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
Btn	0-12		2.5y 5/6	CL	MSBK		vFi		Slc			
Btkn	12-25		2.5y 5/6	CL	MSBK	vh	-		Slc			
Cr	25-40											
R	40-+											

Soil Description

Soil Type Rc21 Ho1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 453

Classification Typic Torripsamment CA/FP

Location

N. veg. (or crop) Chna, MTea, Spai, Gusa, Orhy Climate

Parent Material Eolian

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 27

Aspect W Root distrib. 50

Erosion

Permeability

Additional notes:

samples (depth inches) Same as 454

inches

Pit Depth (60)

Bedrock (56)

Topsoil (56)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-9			ls	wgr		vfr			eo	} Suitable	
C	9-31			ls	m		vfr			eo		
Btb	31-50			scl/cl	msbk	h				vsle	} see 454	
Ck	50-56			scl	m	vh				sle		
2R	56+	Sandstone										

Soil Description

Soil Type Rosito 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/6/98 Stop No. 454

Classification Typic Torripsamment

Location

N. veg. (or crop) mTea, Spgi, Spa, Hija, Chna Climate

Parent Material Eolian over Alluvium

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 40

Aspect N Root distrib. 60

Erosion

Permeability

Additional notes:

samples (depth inches) Similar to 453

	pH	EC	SAR	Clay	K	
S 35-45	7.5	.30	2	25	2.9	scl
S 45-60	7.7	.50	3	8	1.7	ls

inches

Pit Depth (~~71~~)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF ~~Boundary~~		
A	0-9			ls	wgr		vfr			eo	} Suitable	
C	9-35			ls	m		vfr			eo		
Btb	35-45			scl	msbk		fi			vsle		
C'	45-60			ls/sl	m	sh				vsle		
2Ck	60-71			scl	m	h				es	20-25% CK	

Soil Description

Soil Type Ranito over Shimmock variant — File No.

Area No-Name ~~Permit~~ Area NE — Date 4/7/98 — Stop No. #455

Classification Typic torripsamment — BM / CA

Location

N. veg. (or crop) Spei/SARHy/Gusa/Mlea — Climate

Parent Material Colian

Physiography Dune landscape

Relief — Drainage Excess — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3-5% — Moisture 25

Aspect NW — Root distrib. 40"

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(66)
Bedrock	(66+)
Topsoil	(66+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7			ls	vfgr		vfr			co		
C	7/25			ls	M		vfr			csle		
Btkb	25/34			scl	msbk	sh				sbk		
Ck1	34/49			sl	M	sh				slc/cs		
Ck2	49/66			ls	M	sh				sc		

Soil Description

Soil Type Brown Shinarump 1 File No.

Area No-Name Permit Area – North East Date 4/17/98 Stop No. #456

Classification RM/EA

Location

N. veg. (or crop) Sage, Oak, Mtn Mah, Yucca Climate

Parent Material colluv

Physiography Benchlands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 20

Aspect NW Root distrib. 50

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K	
0-17	S 7.8	.52	5	5	.60	S
17-24	S 8.5	.81	4	10	2.6	ls
24-66	M 8.6	2.46	19	13	3.4	sl ← verify SAR

inches

Pit Depth ( )

Bedrock (GGF)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6		10YR 5/3	ls	w gr		vfr			cs		
Bw	6/17		10YR 5/4	ls	M/w sbk		fr			cs		
Btk	17/24	10YR 6/6	10YR 6/3 / 5/3	sl	M sbk	h				usle		
Bk	24/42	10YR 5/4	10YR 6/3	sl	M sbk	h				sle		
Ck	42/66	10YR 6/6	10YR 5/3	ls	M	h				wsle		

Soil Description

Soil Type Rozito - Clayey Substratum File No.

Area No-Name Permit Area Date 9/17/98 Stop No. 4457

Classification BM/CI

Location

N. veg. (or crop) Mtn Mahog./Serv./Ponderosa/Mtn Climate

Parent Material Colluvium

Physiography Mtn Foothills

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 30%	Moisture 34"	
Aspect N	Root distrib. 34-40	
Erosion		
Permeability		

Additional notes: Located on North fork of Dunes

samples (depth inches)

inches

Pit Depth (60)

Bedrock (Sh)

Topsoil (40)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/7			ls	gr		vfr			cs		
C1	7/26			ls	m		vfr			cs		
C2	26/34			ls	m		fr			cs		
Ck	34/40			ls/sl	ws&k		vfr			sk		
2Csk	40/60	Black		C	m	h				vs/e	Unsuitable Clay	

Soil Description

Soil Type Huerhuero

File No.

Area No-Name ~~Permit Area~~ NE Date 4/7/98 Stop No. 458

Classification Fine-Loamy Typic Natrargid BM/CA

Location

N. veg. (or crop) Atob Climate

Parent Material Alluvium

Physiography Trough between dunes

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 3

Aspect W Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Similar to 450

Lacks perennial veg

inches

Pit Depth (60)

Bedrock (27)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn1	0-3			cl	mcl		fi			sle		
Btn2	3-11			scl	mabk	h				sle		
Btkynb	11-18			scl	wsbk	vh				es		
2Bky	18-27			cl/c	wsbk	vh				sle/es		
2Cr/R	27+	Siltstone										

Soil Description

Soil Type Shirock Overwashed 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/7/98 Stop No. 459

Classification BM/CA

Location

N. veg. (or crop) Hija, Spai, MTea, Chna, Guso Climate

Parent Material Alluvium

Physiography Toe slope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 40% Moisture 75

Aspect N Root distrib. 32

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (62)

Bedrock (52)

Topsoil (41)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-7		10yr 5/3	lfs	wgr		vfr			eo		
Bw	7-13		10yr 5/4	lfs	wsbk		vfr			eo/vsle		
Bt	13-18		10yr 5/4	sl	wabk		sfi			sle	Discontinuous clays 10%g	
2Bt	18-32	10yr 5/6	10yr 5/4	sl	mpr	vh				sle		
2Bk	32-41	10yr 5/8	10yr 5/4	lfs	wabk	vh				vsle		
3Cky	41-52	10yr 6/3	10yr 5/3	C	m					es		
3C/Cr	52-62										Unsuit Clay Content No Aborted	

Soil Description

Soil Type Almerico File No.

Area No-Name Permit Area Date 4/7/98 Stop No. 460

Classification Fine-loamy, Lithic Haplargid BM/CA

Location

N. veg. (or crop) Spai, Atcon, Hija Climate

Parent Material Alluvium

Physiography Midslope of large Hill

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 7-8% Moisture 4

Aspect N Root distrib. 4

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (20)

Bedrock (14)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			fsl	wpl		fr			s/e	3-5%g	
Btk	5-9			scl	wsbk	h				ev	3-5%k	Sm. t.
2Bk	9-14			cl	wsbk	h				ev	5-7%k	
2Cr	14+	Siltstone										

Soil Description

Soil Type Ranito - Clayey substratum File No.

Area No-Name Permit Area Date 4/17/98 Stop No. #461

Classification Typic Torrifluvent BM/CA

Location

N. veg. (or crop) Gusa / Spcr Climate

Parent Material colluvium

Physiography Fan

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect W Root distrib.

Erosion Similar to 45-7

Permeability

Additional notes: located at toe of hill

samples (depth inches)

inches

Pit Depth ( )

Bedrock (41)

Topsoil (25)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			ls	wgr		Fr			cw		
C	4/18			ls	m		vfr			cw		
Ck	18/25			ls	wsbk	l				vsle		
2Cky	25/41			C	m	sh	Cemented			vsle		
2Cr	41/53	Shale										

Soil Description

Soil Type Bonally 1 File No.

Area No-Name Permit Area NE Date 4/7/98 Stop No.# 462

Classification fine loamy, typic Argixeroll BSM/CA

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Nearly Level Area / Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-2 % Moisture F

Aspect N. Root distrib. —

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 30-40% CF on Surface - Screened for smaller islands of colluvial material - Coarse fragments generally <2cm

Sm Jar to # 444

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn1	0/3			SCl	w 61		VFI			clb vsle	5%gr	
Btn2	3/7			Cl	w cl		fi			vsle		
Bkyn	7/14			scl	w pl	sh				sle		
Btn6	14/24			scl	st sbk	vh				vsle	5%gr	
2Btyn	24/38			Cl	m pr	vh				sle		
3Cky	38/56			ls	m	vh				vsle		
4Cy	56/61			cl/c	m	vh				vsle		

Soil Description

Soil Type Benelly | File No.

Area No-Name ~~Permit~~ Area NF | Date 4/17/98 | Stop No. #463

Classification Low loamy type, Natrargid | BMCA

Location

N. veg. (or crop) Sage, Atri, Halogeton | Climate

Parent Material Alluvium

Physiography Dissected Area

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture

Aspect W | Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 50% CF for surface

inches

Pit Depth (40)

Bedrock (40+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4			SCl	wcl		fi			vsle		
Bkyn	4/16			SCl	vfsbk	so				vsle	Y - Stains + Alm 5-20%	
By	16/29			Sl	MPr	h				vsle		
2Cy	29/40			C	M	sh				co		

Soil Description

Soil Type Bocobi File No.

Area No-Name ~~Permit Area~~ NE Date 4/7/98 Stop No. 464

Classification Coarse loamy, mixed Thermic Typic Haplargid CA/BM

Location

N. veg. (or crop) Climate

Parent Material Eolian / Residuum

Physiography Small Dune in Alluvial Flats - Surrounded by Natrargids

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) pH EC SAR Clay K text

11-20 S 8.3 1.6 14 13 2.6 SI

inches

Pit Depth (36)

Bedrock (28)

Topsoil (20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-2			ls	wpl	so/sh				co	} Suitable	
CB	2-11			ls	wsbk	so				co		
Bt	11-20			sl	msbk	h				vsle		
2Cy	20-28			cl/c	m	h				sle		
2Cr	28-36	Carbonaceous Shale										

Soil Description

Soil Type Benally File No.

Area No-Name ~~Permit Area~~ NE Date 4/7/98 Stop No. 465

Classification Fine-Loamy Typic Torriorthent (Saline & Sodic) BM/CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Alluvium

Physiography Midslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 35% gravels on surface

inches

Pit Depth (58)

Bedrock (58+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
AB	0-3			scl	wcl	h				sle		
Bkyn	3-15			scl	wpl/wsbk	vh				es	Interbedded coarse/fine sl-cl	
Cy	15-23			c	m	vh				vsle	sle/eo	
Cky	23-58			scl	m	vh						

Soil Description

Soil Type Bernalda

File No.

Area No-Name Permit Area Date 4/7/98 Stop No. 466

Classification Fine loamy, mixed mesic Typic Natrargid BM/CA

Location

N. veg. (or crop) Spai, Atob Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 20% gravel on surface

	pH	EC	SAR	Clay	text	k%
0-8	4	8	3.9	22	23	scl	2.9
8-14	4	7.9	8.9	25	18	sl	2.1
14-22	4	7.9	8.9	30	28	cl	3
22-61	4	8.4	2.8	28	13	sc	4.9

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn1	0-3	10yr 4/4	10yr 4/4	scl	mcl	h	fi			sle		
Btn2	3-8	10yr 4/4	10yr 5/4	cl	msbk	h	f			sle		
By	8-14	10yr 5/6	10yr 5/4	scl	wpl	vh				vsle/eo		
2Cy	14-22	7.5yr 5/8	10yr 5/8	cl	m	vh				vsle	many distinct mottles 5% y x/s	
3C1	22-48	10yr 5/6	10yr 5/4	scl	m	vh				sle/vsle	5-10% s	
3C2	48-61	2.5y 7/2	2.5y 5/4	sl	m	h				vsle		

Soil Description

Soil Type Shirrock variant (1) File No.

Area No-Name Permit Area NE Date 4/17/98 Stop No. # 467

Classification 2a/c/t

Location

N. veg. (or crop) Sage Grass Climate

Parent Material colluvium over alluvium

Physiography Foot Slope & Somewhat Drainage / former Stream terrace

Relief Drainage Somewhat well Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3-4% Moisture 20"

Aspect N Root distrib. 30"

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(27)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	wgr		Vfr			CO	Shirrock variant	
Bw	5/18			LS	M		fr			CO		
Bt	18/27			SL 20	Mas	Vh				Sic		
2Ck	27/30			CL	Mpl	Sh				CS	Unsuitable Clays & salts	
2Cky	30/40			CL	M	h				Tc	3-5% Crystals See YGG	
3Cky	40/47			SL	M	h/vh				CO		
4Cky1	47/55+			fSCL	M	Sh				Sic	- 30-35% OSA	
4Cky2	55/60			SL	M	h				USIC	interbedded Sands & Carbonaceous Clays	

Soil Description

Soil Type Bendelly File No.

Area No-Name ~~Permit~~ Area NE Date 4/17/98 Stop No. D468

Classification Fine loamy, Typic Haplocalcid BMICA

Location

N. veg. (or crop) Atob / Spa Climate

Parent Material Alluvium

Physiography Edge of Dissected area / Former stream terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 40 - 50% rounded gravels on surface

	inches
Pit Depth	(65)
Bedrock	(65+)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn1	0/3			SCL/SC	MCL		FI			SC		
Btkn2	3/7			C/	MPL		FI			VSC		
2Ckn1	7/12			C	M Prismatic breaks Blocky	VH				VSC		
3Ckn1	12/26			SL	M	VH				VSC		
3C1	26/50			SL	M	VH				CO	likely	suitable
3C2	50+/65			LCS	M					CO		

Soil Description

Soil Type Rozito / Shinarump Gravelly Loam File No.

Area No-Name Permit Area NE Date 4/7/98 Stop No. #469

Classification Rm-ICP

Location

N. veg. (or crop) ONLY Grass Small Area Climate

Parent Material Colluv

Physiography Dune Ridge

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate / Sheet		
Permeability		

Additional notes:

samples (depth inches)

#470 Same Soil type Shinarump Gravelly Loam

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	wg		Vfr		ef			
C	5/21			LS	M		Vfr		ef			
Btkb	21/31			SL	wsbk		Fr		slc			
Btkb	31/39			fsl	wsbk	Sh			slc			
C	39/45			SL	M	Sh			slc			
2Ck	45/63			LS	M	Sh			slc/ef		k stains 3%	

Soil Description

Soil Type Rexilo Now Deep File No.

Area No-Name Permit Area NL Date 4/9/98 Stop No. 471

Classification Pinamont Rm

Location

N. veg. (or crop) Sparse ann Helianthus Cusa Climate

Parent Material Colluvium over Alluvium

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2 %	Moisture 19"	
Aspect W	Root distrib. 31"	
Erosion modest		
Permeability		

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	text	K%
0-5	S	7.5	.44	1	7	LS	1.3
5-19	S	7.8	.68	11	7	S	1
19-31	U	8.0	2.99	38	19	SL	5.4
31-60	U	7.7	9.9	26	14	SL	1.4

inches

Pit Depth (60)

Bedrock (Got)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			ls	wgr		vfr			CO	Rexilo	
C	5/13			ls	M		vfr			eO		
BC	13/19	10YR 6/6	10YR 5/4	sl	w sbk		fr			eO		
2Btn	19/31	10YR 5/6	10YR 5/4 6/4	scl 23	m pr	vh				sle		
2Cky	31/60	10YR 5/8	10YR 5/6	sl 14	M	vh				sle/CO	1C+y 5% calcs a Filaments	

Soil Description

Soil Type Rosita Mod deep File No.

Area No-Name ~~Permit~~ Area NE Date 4/9/97 Stop No. A472

Classification Bn

Location

N. veg. (or crop) Climate

Parent Material

Physiography Spa. Arcon Gnlly

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2-3% Moisture 18

Aspect W Root distrib. 31

Erosion moderate

Permeability

Additional notes: Surrounded by severely eroded areas

samples (depth inches)

	pH	EC	SAR	Clay		K
18-31	7.7	11.6	31	32	SCl	4.1

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			ls	wgr		vfr			co		
C	4/12			ls	M		vfr			co		
Btn	12/18			scl	wsbk		fi			sle	more y fines sac471 c471	
Btkyn	18/31		2.5y 5/4	cl	wsbk	h				sle	↓	
Bky	31/40			vfsl	wsbk					sle	3-5%	
Ck	40/60			lvfs	M					vsk/co		

Soil Description

Soil Type Bergelly

File No.

Area No-Name Permit Area NF Date 4/9/98 Stop No. 4473

Classification Fine loamy typic Natrargid

Location

N. veg. (or crop) Climate

Parent Material Colluvium

Physiography Depression surrounded by overbank areas

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	

Erosion severe

Permeability

Additional notes:

samples (depth inches) 80% Channery on surface

	pH	EC	SAR	Cly%	Text	K%
0-8	8.0	1.9	33	27	scl	5.4
8-20	7.7	10.4	32	39	Cl	2.4
20-60+	7.8	5.3	34	49	C	4.7

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-8	10yr 4-6	10yr 5-8	scl	mcl	vh						
BtKyn	8-20	10yr 5-4	2.5y 5-4	c/c	msBK	vh					Some c.f. 4?? CaKy	
cdy	20-60	10yr 4-4	2.5y 5-4	C	m	eh						

Soil Description

Soil Type Shorack variant overblown — File No.

Area No-Name Permit Area NE — Date 4/7/98 — Stop No. 474

Classification fine loamy typic haplocambid

Location

N. veg. (or crop) Shad Sps. mtn Brsh — Climate

Parent Material eolian

Physiography Dune

Relief — Drainage excessive — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 2% — Moisture

Aspect W — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(38)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0 5		10yr 4-6	ls	wgr		vFr				Roots	
C	5-14		10yr 5-4	ls	m		vFr					
2Btk	14-29	10yr 5-6	10yr 6-4	sl 20	mab	h					carbs	-
C	29-38	2.5y 6-6	2.5y 5-4	sl	m	sh						5-10%g
3Btk	38-47	10yr 6-6	2.5y 5-4	lvfs	wgr	h					SL prox to Brown	
3Ck	47-60	10yr 5 6	10yr 5-4	ls	m	sh						

Soil Description

Soil Type Fa Ia da — File No.

Area No-Name Permit Area NE — Date 9/9/98 — Stop No. #475

Classification 13M1F1

Location

N. veg. (or crop) Atos — Climate

Parent Material alluvium

Physiography Blowout / Deflated area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion sheet		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (38)

Bedrock (28)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Byn	0-10			scl	wcl	h						
CKy	10-28			scl	m	h						
2C/cr	28-38	Carbonate shale		c	m	h						

Soil Description

Soil Type Slightly Sodic eroded File No.

Area No-Name Permit Area NE Date 4/9/98 Stop No. 476

Classification Coarse loamy, mixed

Location

N. veg. (or crop) Atoc spp. Climate

Parent Material Alluvium

Physiography Deflated area, intermittent drainage

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect NW Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (GB)

Bedrock (GO+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-11			sl	mcl/mab	h						
CK1	11-29			ls	m	vh						
CK2	29-44			sl	m	vh						
2CK	44-60			c	m	eh						

Soil Description

Soil Type Razito --Sodic File No.

Area No-Name Permit Area NE Date 4/9/98 Stop No. 477

Classification Non IP

Location

N. veg. (or crop) Spri Mtn ORHy Grss Climate

Parent Material Colluvium

Physiography Uplands None

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect NW Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	text	k
37-46 U	8.4	5.6	58	12	15	3.50
46-65 U	8.1	10.4	32	11	15	3.3

	inches
Pit Depth	(65+)
Bedrock	(65+)
Topsoil	(5)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6	}		ls	wgr		vfr					
C	6-24	}	Suitable	ls	m		vfr					
BKb	24-31	}		sl	wsBK	h						
2B+Kn	31-46			sl	mab	h/vh						
2BCK	46-65			sl	m							

Soil Description

Soil Type Shirrock over bloom Solic — File No.

Area No-Name Permit Area NE — Date 4/9/98 — Stop No. A478

Classification RM FP

Location

N. veg. (or crop) Sage/Grass/Juniper/Forbs Climate

Parent Material eolian over colluvium

Physiography Uplands Ridge @ Toe on 11:11

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) 15% SS Channels on soil bread

	pH	EC	SAR	Clay	text	f%
16-26 S	8.1	.78	12	14	SL	13
26-60 S	7.9	32	25	7	S	2.2

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5	10YR 5-6	10YR 5-4	LS	wgr	SO						
C	5-16		10YR 5-4	LS	m		Fr					
2Btk1	16-26	2.5Y 6-4	10YR 6-8	SCL	msbk	h						15% Nodules
2Bk	26-37	10YR 5-6	2.5Y 5-4	SL	wsbk	h						
2Ck	37-60	10YR 5-8	2.5Y 5-4	SL	m	vh						

Soil Description

Soil Type Zwaneck Very Hard File No.

Area No-Name Permit Area NE Date 9/19/98 Stop No. 481

Classification Bm FP

Location

N. veg. (or crop) Sparse Alfa Climate

Parent Material SP

Physiography Trough at toe of Bunny Creek

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4-5% Moisture

Aspect W Root distrib.

Erosion Sevele

Permeability

Additional notes:

samples (depth inches) 70% CF on surface Same as 476

	pH	EC	SAR	Clay	text	k	
0-8	8.1	1.3	27	12	ls	1.17	u
8-44	7.7	9.0	26	7	ls	1.3	u
44-60	8.0	6.0	40	9	ls	33	u

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-8	10yr 5-6	10yr 4-4	sl	wcl	vh						
Bk	8 16	10yr 5-8	10yr 4-4	sl	wsbk	sh						8% clay
ck	16 44	10yr 5-6	10yr 4-4	ls	m	h						
2ck	4460	10yr 6-8	10yr 5-6	sl	m	vh						

Soil Description

Soil Type Shiprock very hard File No.

Area No-Name Permit Area NE Date 4/9/98 Stop No. H 482

Classification CAK FP

Location

N. veg. (or crop) Atrip Atto SPSi Climate

Parent Material

Physiography Small Knoll Between 2 Small drainages

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) pH EC SAR Clay

0-17 S 7.6 6.9 18 12 15

inches

Pit Depth (32)

Bedrock (32)

Topsoil (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
BKyn	0-6			SL (15)	wcl	h						
CKy	6-17			csl	m	h					10%g	
2CKy	17-32			C	m	h/vh						
2Cr	32-+	Carbonaceous shale										

Soil Description

Soil Type Shirrock Variant — File No.

Area No-Name ~~Permit~~ Area NE — Date 4/9/98 — Stop No. H 483

Classification Fine-loamy, mixed, mesic Typic Calciargid — RMFP

Location

N. veg. (or crop) Spaf, Jusa, Artem, Grass — Climate

Parent Material Alluvium

Physiography Shoulder of Ridge / Intermittent stream terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect S	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (68+)

Bedrock (68+)

Topsoil (68+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10yr 4-4	SL	wgr		Fr					
Bw	4-15		10yr 4-3	SL	wSBK		vFr					
Btk	15-23	10yr 5-6	10yr 3-4	scl	mpr	h						
2Bk	23-28	2.5y 7-4	2.5y 8-3	SCL	wSBK	h					10-15%g 15%K	
2C	28-68	2.5y 6-6	2.5y 5-4	CS	m	so/sh					10-15g	

Soil Description

Soil Type May Queen - Brown | File No.

Area No-Name Permit Area NE | Date 4/9/98 | Stop No. 484

Classification BWFP

Location

N. veg. (or crop) Spar / Gosa / Lotea / Orhy / | Climate

Parent Material

Physiography Uplands Dune / Inter

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1% | Moisture

Aspect E | Root distrib.

Erosion moderate / low

Permeability

Additional notes:

samples (depth inches)	PH	EC	SAR	Clay	text	k%
0-11	7.3	.39	0	7	LS	1.1
11-22	7.2	.33	1	9	LS	2.2
22-31	7.3	.32	1	12	LS	2.5
31-39	7.4	.80	2	7	S	.86
39-72	7.7	.74	10	4	S	2.8

inches

Pit Depth ( )

Bedrock (72+)

Topsoil (72+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ clg		
A_1	0-5	10yr 5-8	10yr 4-4	ls	wgr	so				eo		
A_2	5-11		10yr 4-4	ls	wgr/m		vfr			gsle		
Bw	11-22		10yr 4-4	sl	wSBK		fr			vsle		8% C
Bt	22 31	10yr 4-6	10yr 4-4	fsl	wSBK	h				sle		
C	31 39	10yr 5-6	10yr 4-3	lfs	m	sh				sle		
2CK	39 72	10yr 3-4		cs	m	so/po			same as	#483 sle		10-15% g

Soil Description

Soil Type May queen (1) File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. G44

Classification BM

Location

N. veg. (or crop) Spcr, orhy, Gusa, yucca, Atcan Climate

Parent Material colluv

Physiography Uplands Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1	Moisture	
Aspect W	Root distrib.	

Erosion Moderate / Slight

Permeability

Additional notes: located adjacent to Cinderella road

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	10yr 6-6	10yr 4-4	LS	wpl/wgr	sh					vsle	
BW	5-12	10yr 6-6	10yr 4-4	SL	wsbk	sh					sle	
Bt	12-33	10yr 5-6	10yr 4-4	SL	wsbk	h					sle	
2Ck	33-60	10yr 5-4	10yr 5-3	loCSS	m	sh					vsle	30%G 7.8%K

Soil Description

Soil Type Stumble (1) File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. 645 BM

Classification

Location

N. veg. (or crop) Spec, silky, Grass, forbs, spec!, Sage Climate

Parent Material eolian

Physiography depression in Piney Creek

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (G9/)

Topsoil (G9/)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr	sh					sle	
C1	5-16			ls	m	~~so~~/sh					sle	
C2	16-39			ls	m	sh					eo	
2C	39-69			lcoss	m	h					sle	

Soil Description

Soil Type Stumble (1) File No.

Area No-Name Permit Area - NE Date 5/14/98 Stop No. 646

Classification Typic torriorthent BK

Location

N. veg. (or crop) Spcr, oakg, Gosa, Matca, Chna Climate

Parent Material Eolian over Alluvium

Physiography Uplands - Small depression or Drainage Between Swells

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect W	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	Cl	K%
29-60 Subsoil	8.3	.9	10	13	6.1

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	ec	
A	0-7			ls	wgr	so					s/e	} See 647
C	7-29			ls	m	sh					s/e	}
2Ck	29-60	10yr 5-6	10yr 5.8	sl	m	h					es	10-15 89

Soil Description

Soil Type Rock Land | File No.

Area No-Name Permit Area - NE | Date 8/14/98 | Stop No. 647 BM

Classification Mixed Mesic typic torriorthent

Location

N. veg. (or crop) Atcon, Sacr, Chsa, Gusa, Grs | Climate

Parent Material Colluvium

Physiography Top of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	Sat	SAR	Cly	k%
0-4	7.4	.61	21	0	6	5 .15
4-15	7.4	.1	23	0	7	5 .18
15-42	7.5	.15	25	1	5	5 1.1
42-62	8.6	.05	27	1	5	5 .7

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (62+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	10yr 5-6	10yr 4-4	ls	wpl/wgr	lo/sh					eo	
C_1	4-15	10yr 5-6	10yr 4-6	ls	m	sh					vsk	
C_2	15-42	10yr 5-8	10yr 4-6	ls	m	sh					s/e	
C_3	42-62	10yr 5-8	10yr 5-4	ls	m	h					eo	

Soil Description

Soil Type Blancot s/ Shipwreck variant File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. 648

Classification Fine loamy typic Haplocryoll BM

Location

N. veg. (or crop) hisa/Spcr/Gusa/Mtn/Arca Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (61+)

Topsoil (61)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6			LS	wgr							
Bw	6/12			LS/SL	wsbk							
Bt	12/23			SCL 28-35	MPr							
BC	23/47			SL	wsbk / MA							
Ck	47/61			SL/LS	M							
	gravelly, Channer below 61"											

Soil Description

Soil Type Stumble (1) File No. 649

Area No-Name Permit Area - NE Date 8/14/98 Stop No.

Classification Bm

Location

N. veg. (or crop) Sag: /Orch., Mtea, Gsoc, Atca Climate

Parent Material colian

Physiography Swale in Dunescape

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

See previous site

inches

Pit Depth ( )

Bedrock (68+)

Topsoil (68+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	10yr 5-6	10yr 5-4	ls	wgr	LO/sh					es	
C	5-27	10yr 5-8	10yr 3-6	ls	m	sh					sle	
CK	27-51	10yr 4-6	10yr 4-6	ls	m	h					vsle	
2CK	51-68	10yr 6-6	10yr 4-4	lcos	m	LO/sh					sle	10%g

Suitable

Soil Description

Soil Type Shiprock Variant File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. 650 BM

Classification

Location

N. veg. (or crop) Sage, Grass, Forbs, Snow, Aspen Climate

Parent Material Eolian

Physiography Sand ridge between dissected areas

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion Moderate

Permeability

Additional notes: Similar to 644

samples (depth inches)

		SAN	Cly		EC
18-44	S	16	20	SCl	1.3
44-61	W	28	10	SL	3.2

inches

Pit Depth ( )

Bedrock (61+)

Topsoil (44)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	vgr	so					eo	7 Roots
C	5-18			ls	m	sh					eo	5
2Bt1	18-36	10yr 5-6	10yr 5-4	scl	mpr	vh					sle	
2Bt2	36-44	10yr 5-8	2.5Y 5-4	scl	mpr	h					sle	
2C	44-61	10yr 5-6	2.5Y 5-4	sl	m	h					sle/eo	

Soil Description

Soil Type May Queen (1) File No.

Area No-Name Permit Area – NF Date 8/14/98 Stop No. G51

Classification BM

Location

N. veg. (or crop) Oak, Aspen, Spur, Gusa Climate

Parent Material Colluvium

Physiography Small ridge between dolomitized areas

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (Got)

Topsoil (Got)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr	so					eo	
Bw	5-12			ls	~~m~~ WSBK	sh					s/e	
Bt	12-29			sl	wsbk	h					sle	
C	29-46			ls	m	h					sle	
2CK	46-60			sl	m	h					sle	3.5/8/9

Soil type 1/14

Soil Description

Soil Type Rc2:to File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. GS3

Classification Typic torriorthent

Location

N. veg. (or crop) mtn, SAG, SAR, ORN, yucca Climate

Parent Material Eolian

Physiography Top of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: AGS2 Same as GS3

samples (depth inches)

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			LS	Lgr	So			Eo			
C	5/60			LS	M	Sh/h			Slc			

Soil Description

Soil Type Hurlburt File No.

Area No-Name Permit Area NE Date 8/13/98 Stop No. 654

Classification Fine loamy, typic Argiaquoll 15M/1DR

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Deflated Area - Between Dunes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 70% Channers on Surface

inches

Pit Depth ( )

Bedrock ( )

Topsoil (~~0~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-8			scl	mcl	eh					sle	
BtKyn (Soil type)	8-16			scl	wsbk	vh					sle	
2CKy	16-26			cl/c	m	h					sle	
2Cr	26-38											

Soil Description

Soil Type Reeito over Shinarump eroded — File No.

Area No-Name Permit Area - NE — Date 8/13/98 — Stop No. 655

Classification — BM

Location

N. veg. (or crop) Mixed Oshy, Grss Forbs — Climate

Parent Material Colian over alluvium

Physiography Dune Lian

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 6%	Moisture	
Aspect S	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

See 656 for Soil Lab

inches

Pit Depth ( )

Bedrock (43)

Topsoil (43)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr	Lo					vsle	
C	5-15			ls	m/wSBK	Sh					sle	
2Ck1	15-30			sl	m	h					ev/eo	
2Ck2	30-43			sl	m	h					ev/eo	
3Cr	43-63	Shale										

Soil Description

Soil Type Razito File No.

Area No-Name Permit Area - NE Date 8/13/98 Stop No. 656

Classification Typic Torri Permanent

Location

N. veg. (or crop) Ephe, Sesa, Atca, Gusa, Oribay Climate

Parent Material eolian

Physiography Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 6%	Moisture	
Aspect SW	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	CE	SAR	Clay	K%
33-65 S	8.2	17	8	20	6%

inches

Pit Depth ( )

Bedrock (GS+)

Topsoil (GS)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6			lfs	wgr/m	LO/SO					eo	
C	6-27			lfs	m	sh					eo	
Btb	27-33			sl	wsBK	h					sle	
2Btkb	33-44			scl	msBK	h					ev/es	8-10%K
2Ckb	44-65			scl	m	h					es/ev	6-8%K
2Ck	65-+			c/cl								

Soil Description

Soil Type MAY QUEEN (1) File No.

Area No-Name Permit Area -NE Date 8/13/98 Stop No. G57 BM

Classification Coarse loamy, typic Cryorthod

Location

N. veg. (or crop) Wet Alkali Grass Sedge Climate

Parent Material Eolian

Physiography Toe of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) Site is located between Deflated Areas

inches

Pit Depth ( )

Bedrock (70+)

Topsoil (70)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6			LS	WGR	Soft			SLE			
AC	6-10			LS	WSBK/M	SH			ES			
Bcb	10-27			SL	MSBK	H			ES			
BC	27-39			FLS	M	H			VSLE			
C	39-70			VFLS	M	SH			VSLE/SLE			

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area - NE Date 8/13/98 Stop No. 658

Classification Fine loamy, mixed, Aridic Typic Haplocalcid BM / DR

Location

N. veg. (or crop) Sparse Atob / Sporobolus

Climate

Parent Material Alluvium

Physiography Deflated Area between Dunes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

		pH	EC	SAR	Cly	Text	K°
0-17	U	8.1	2	30	24	scl	9.7
17-28	U	7.7	13.3	33	22	scl	4.3
28-50	U	8.0	8.3	24	8	s	1.5
50-62	U	8.4	5.3	44	10	ls	

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn1	0-4	10yr 6-4	10yr 5-8	cl	mcpr	vh					es	
Btn2	4-17	10yr 6-6	10yr 5-6	scl	mpl/mABK	vh					es	
Btk(n)	17-28	10yr 4-6	10yr 5-5	scl	msBK	vh					sle	
2C	28-50	10yr 6-6	10yr 4-6	ls	m	h/sh					es	
2CK	50-62	10yr 6-6	10yr 5-8	ls	m	h					es/sle	

Soil Description

Soil Type Shirrock eroded, overblown — File No.

Area No-Name Permit Area - NE — Date 5/9 — Stop No. 659

Classification — BM Lessk. Lit

Location

N. veg. (or crop) Sage, chng, EPtr, Hay, Area — Climate

Parent Material Colluv

Physiography head of draw

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

PH CE SAR text K%

32-51 U 86 40.42 15 4.2

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6			LS	WGr	SH			V/SLE			
C	6-17			LS	M	SH			FZO			
ZBk1	17-32			SL	MABK	VH			ES			
ZBk2	32-51			SL	WABK	VH			ES		8%K	
ZCk	51-62+			LS	M	H			V/SLE		3-4%	k

Soil Description

Soil Type Renzido

File No.

Area No-Name Permit Area - NF Date 8/18/98 Stop No. 659-A

Classification Typic Torriorthent

Location

N. veg. (or crop) Spec, Larrea, Bursa, Atri Climate

Parent Material Eolian

Physiography Toe of Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) Site Not Surveyed
located 300' East of 659

x See 659 for Suitability & 2 material

inches

Pit Depth ( )

Bedrock (72+)

Topsoil (29)?

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6			VFLS	WGR	Soft			ES0			
C	6-29			FLS	M	Soft/SH			ES0			
2Bt	29-46			SL	WABK	H			ES			
2Btk	46-69			SL	WABK	H			ES			Shiprock
2C	69-75			LS	M	SH			ES			

Soil Description

Soil Type Sh. Rock Over blown File No.

Area No-Name Permit Area Date 8/13/98 Stop No. 660

Classification Fine loamy, Typic Haplargid BM - DRoney

Location

N. veg. (or crop) Sage, Cheat Grass, Forby Climate

Parent Material Colluv over Colluvium

Physiography Toe slope / Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

		pH	CE	SAR	Text	Cly	K
12-27	S	7.4	1.5	9	SL	18%	3.6
27-60	S	7.8	7	13	SL	8	3.4

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			LS	WGR	SH			ES	} Suitable		
C	4-12			LS	M	SH			ES	}		
2Btk	12-27			SCL/SL	M SBK	VH			ES			
2Bk	27-39			SL	W SBK	VH			ES	5%K		
2Ck	39-60			SL	M	VH			ES/SLE			

Soil Description

Soil Type Shiprock (1) File No.

Area No-Name Permit Area - NE Date 8/12/98 Stop No. GG1

Classification Bmc55k.1.5

Location

N. veg. (or crop) Spcr, Gusa, Atcan, Chna, Orhy Climate

Parent Material

Physiography Mesa / terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NW Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

See GG2 for Suitability

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A1	0-5	10yr 5-6	10yr 3-6	ls	wgr	so/sh					es	
A2	5-9	10yr 5-8	10yr 3-6	sl 8%	wgr	sh					es	
Bt	9-20	10yr 5-8	10yr 4-6	sl 16%	wSBK	h					ev	
BKb	20-28	10yr 6-4	10yr 6-4	sl 8%	wSBK/m	h					ev	6-8%K
CK	28-42	10yr 4-6	10yr 5-6	sl	m	h					es	
zC	42-62	10yr 4-4	10yr 3-4	grcos	m	h					es/sle	20-25% Gravel Nonabl Topsoil

Soil Description

Soil Type Shirock (1) File No.

Area No-Name Permit Area - NE Date 8/12/98 Stop No. GG2

Classification

Location

N. veg. (or crop) Spcr, Gusc, Atcan, Wsm, Arly Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect W Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

GG1 is a similar but more eroded

		pH	ec	SAR	k%	
0-12	S	7.5	.34	0	1S	2.6
12-29	S	7.8	.50	5	5l	5.6
29-61	W	8.2	2.6	29	1S	3.3

inches

Pit Depth (G1)

Bedrock (G1+)

Topsoil (29)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			1S	wgr	sh					vsle	
Bw	5-12			Sl 8%	wSBK	sh					sle	
BtK	12-29			Sl 16%	mSBK	h/vh					es	
Bk	29-41			Sl	wSBK/m	h					ev	8%K
CK	41-61			Sl	m	h					sle	

Soil Description

Soil Type Fruitland — File No.

Area No-Name Permit Area NE — Date 8/12/98 — Stop No. 663

Classification Course loamy, typic haplocalcid — Bnd

Location

N. veg. (or crop) Sarc, Larr, Atrex, Gusa, other — Climate

Parent Material Alluvium

Physiography Alcove - midslope

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3% NE — Moisture

Aspect — Root distrib.

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

		EC	SAR	Clay	KS
3-18	S	.50	5	10	33
18-37	U	5.8	19	18	6.1
37-60	U	5.4	19	5	3.2

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			sl g	WPl/wgr	sh			ac			
Bw	3/9			sl/l 10/11	wsbk	sh			cs		Not common	
Bk	9/18			sl	wsbk	vh			cv		10-15% g	
Ck	18/37			grscl	m	h			ev		Primary lk layer deposition of alluvial ca	
C	37/60			coss	m	sh			ev/co		5% g	

Soil Description

Soil Type Eroded shinarock (1) File No.

Area No-Name Permit Area - NE Date 8/12/98 Stop No. RC 4

Classification

Location

N. veg. (or crop) Atcon Cusa spp. Climate

Parent Material Alluvium

Physiography mesa - dissected area N. side of Fine - Top

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 3% | Moisture

Aspect N | Root distrib. 12"

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 15% rounded gravels in surface

Alternating layers of sands and gravels - material is extremely cemented & Sodium affected - similar to S. Vegas North

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-1	10yr 6-3	10yr 4-4	sl/15%	wgr	lo					ev	
Btn	1-12	10yr 4-6	10yr 5-6	sl	wcl	vh					ev	
Ck	12-57	10yr 5-8	10yr 3-6	grcos	m	vh					eo/ev	10% g
C	57-66	10yr 5-8	10yr 3-6	grcos	m	sh					eo	

GB3

Soil Description

Soil Type May Queen — File No.

Area No-Name Permit Area -NE — Date 8/18/98 — Stop No. GG5 BM

Classification

Location

N. veg. (or crop) Aspen, Grass, Oak, Snow — Climate

Parent Material eolian

Physiography Trough, Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect SW	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

* 3CK is unsuitable due to Contrasting coarse frags

inches

Pit Depth ( )

Bedrock (64+)

Topsoil (38)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0 5			ls	wgr	sh					sle	
Bw	5 11			sl	wsBK	sh					sle	
Bt_1	11 26			sl	wsBK	sh					es	
Bt_2	26 38			s	wSBK	sh					sle	
2BCK	38 55	See 622. for suitability		sl	wsBK/m	h					es/ev	
3CK	55 64			vgls	m	h					ev	50%g

Probable →

Soil Description

Soil Type Stumbk File No.

Area No-Name Permit Area - NE Date 8/18/98 Stop No. GGG

Classification Types fossil pavement BM

Location

N. veg. (or crop) Spcr, Susa, Atca, Orhy Climate

Parent Material Colian over alluvium

Physiography Upl. ridge - Mtn, canyon - Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion Sl, slt		
Permeability		

Additional notes:

samples (depth inches)

		PH	EC	SAR	Cly	text	K
0-14	S	7.4	.45	.5	10	15	2
14-30	S	7.5	.38	1.4	10	15	.22
30-60	S	8.2	1.08	13	10	15	1.4

inches

Pit Depth ( )

Bedrock (Gol)

Topsoil (Gol)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5	2.5Y 5-4	2.5Y 4-4	LS	wgr	so					eo	
BW	5-14	10YR 5-8	10YR 4-6	LS/SL	wSBK/m	sh					vsle	
zCK	14 30	10YR 6-6	10YR 5-8	LS	m	sh					es	5% K
zC	30 60	2.5Y 6-6	2.5Y 5-4	LS	m	h					eo	

Soil Description

Soil Type Moyoqueen

File No.

Area No-Name Permit Area — Date 8/18/98 Stop No. 667

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) No pit Dug

inches

Pit Depth ( )

Bedrock (Gol)

Topsoil (Gol)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Razito | File No.

Area No-Name Permit Area - NE | Date 8/18/98 | Stop No. 668

Classification BM

Location

N. veg. (or crop) Sage, Chamo, Atri, Grass, Spec, other | Climate

Parent Material Colluv

Physiography Uplands - Dune - Swell

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion slight		
Permeability		

Additional notes: Level slope on Dune

samples (depth inches)
0-5
5-65

inches
Pit Depth ( )
Bedrock (65+)
Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr	so/sh					eo	
C	5-65			ls	m	so/sh					eo	

Soil Description

Soil Type Fruitland (1) File No.

Area No-Name Permit Area NE Date 8/18/98 Stop No. 669

Classification BM

Location

N. veg. (or crop) Climate

Parent Material eolian over alluvium

Physiography Trough - Backslope of terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: Transitional. Between uplands dune and lowlands (flood) Plain

samples (depth inches) 20% rounded gravels on surface

		pH	EC	SAR	Cly	IC
4-19	S	8.1	.85	14	12 SI	3
19-60	u	8.2	3.3	30	9 SI	1.3

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	aff	
A	0-4	2.5Y 6-4	2.5Y 5-4	scl	wpl/wgr	sh					ev	
BK	4-19	2.5Y 5-6	2.5Y 5-4	sl	wpl/wsbk	vh					es	
CK	19-60	2.5Y 6-6	2.5Y 5-4	ls	m	h					eo/sle	

Soil Description

Soil Type Brenally File No.

Area No-Name Permit Area - NE Date 8/18/98 Stop No. 670

Classification Fine loamy typic Ustorthent RU

Location

N. veg. (or crop) Atob, Spci Climate

Parent Material Alluvium - Cretaceous

Physiography Stream terrace - knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect W	Root distrib. 23"	

Erosion Severe

Permeability

Additional notes: 50% rounded gravels on surface

samples (depth inches) Area consists of gravelly knolls and Breaks - knolls are poorly vegetated, breaks have colian sand accumulations with vegetation consisting mainly of alkali sacaton and Atob

inches

Pit Depth ( )

Bedrock (61)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0/10			scl	mcl	vh						
Cky	10/23			scl	wpl/m	vh						
Cdky	23/61			cl	m	ch						
2C	61+	Carbonaceous			Shale							

Soil Description

Soil Type Chipeta File No.

Area No-Name Permit Area NE Date 8/18/98 Stop No. 671

Classification Fine Lithic Typic Torriorthent Bm

Location

N. veg. (or crop) Sparse Atrip Climate

Parent Material Residuum

Physiography Terrace / Breaks

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Small accumulation of Collen sand over carbonaceous Parent Material

inches

Pit Depth ( )

Bedrock (14)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			LS	M	SO						
2Cy	3/14	10YR 2/2	10YR 3/2	SiC	M	H						
2Cr	14+	Carbonaceous Shale										

Soil Description

Soil Type Rock Outcrop File No.

Area No-Name Permit Area -NE Date 8/18/98 Stop No. G72

Classification Bm

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Knoll / Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: Adjacent to Pinebelt Flood Plain

samples (depth inches) - 95% Channers on Surface

inches

Pit Depth ( )

Bedrock (0)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	Calcareous		Shale									

Soil Description

Soil Type Shiprock (1) File No.

Area No-Name Permit Area - NE Date 8/18/96 Stop No. H 673

Classification Mollisol/Aridisol

Location

N. veg. (or crop) Atca, spsp, Hisa, Mhq, Gusc Climate

Parent Material eolian over alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NW	Root distrib.	
Erosion Sheet		
Permeability		

Additional notes:

samples (depth inches)

37-60" S SAR 4 Scl

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	2.5Y 6-4		ls	wgr	LO					eo	} Soil Unit
C	4-17	2.5Y 5-4		sl	m	Sh					eo	
Btb	17-22	2.5Y 4-6	10YR 4-3	sl	wSBK	Sh					vsle	
2Bt1	22-33	10YR 3-3	10YR 3-3	cl	mpr	vh					sle	} Soil Unit 627
2Bt2	33-37	10YR 4-6	10YR 4-4	scl	mSBK	h					sle	
2Btb	37-60	10YR 4-6	10YR 4-3	scl	mSBK	vh					sle	

encot

Soil Description

Soil Type Raz'ito File No.

Area No-Name Permit Area - NE Date 8/18/98 Stop No. G74

Classification BM

Location

N. veg. (or crop) Chna, Spg, Atca, Oilx Climate

Parent Material Eolian Sediments Bloomington Pinebelt

Physiography Flood Plain - Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect SW	Root distrib.	

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (GOF)

Topsoil (GOF)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	10yr 5-4	10yr 4-4	ls	wgr	so					eo	
C_1	4-16	10yr 5-6	10yr 4-3	ls	m	so					eo	
C_2	16 37	10yr 4-6	10yr 3-6	lvfs	m		fr				eo	
C_3	3760	10yr 4-6	10yr 3-6	ls	m	sh					eo	

Soil Description

Soil Type Beebe' File No.

Area No-Name Permit Area -NE Date 8/18/98 Stop No. G75 BM

Classification

Location

N. veg. (or crop) Chaq, Lisa, Tamarisk, Sparc. Climate

Parent Material Alluvium

Physiography Flood Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NW Root distrib.

Erosion Moderate

Permeability

Additional notes: * water table at 60"

samples (depth inches) PK ec SAR Cl Severe Flood Hazard

0-5 S 7.5 .44 1.6 9 15

5-20 S 7.5 1.33 5.6 12 51

20-60 S 7.7 3.3 12 6 5

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5	2.5Y 6-6	2.5Y 4-4	S/S	wpl/sgr	so					eo	
C1	5-20	2.5Y 5-4	2.5Y 4-4	scl	m	sh				All Layers is fine & coarse mixed	eo	
C2	20-60	2.5Y 5-6	2.5Y 5-6	cos	m		vfr				eo	
C	60+		water	+ gravel	Scattered		H2O					

Soil Description

Soil Type Beebe' File No.

Area No-Name Permit Area – NE Date 8/18/98 Stop No. G76 BM

Classification

Location

N. veg. (or crop) Tamarisk, China, Gusa, Sage, Sna. Climate

Parent Material Alluvium

Physiography Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1	Moisture	
Aspect NW	Root distrib.	
Erosion Slight/moderate		
Permeability		

Additional notes: G77 - Beebe

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (Got)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-7			LS	wpl	SO					eo	
C_1	7-23			LS	m	SO					eo	
C_2	23-60			LS	m	SO					eo	

Soil Description

Soil Type Monserco (1) File No.

Area No-Name Permit Area -NE Date 8/19/98 Stop No. 679

Classification

Location

N. veg. (or crop) Abbo, Saca, Qusa Climate

Parent Material Alluvium

Physiography Stream terrace, trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes: located in drainage between Rock outcrops

samples (depth inches) Adjacent to small drainage at head cut

All Suitable

inches

Pit Depth ( )

Bedrock (19)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-2			sl	wpl	sh					es	
C	2-12			sl	m	h					s/e	
Btb	12-19			sl	wel	eh					s/e	
2Cr	19 34	Siltstone										

Soil Description

Soil Type Benally

File No.

Area No-Name Permit Area - NE Date 8/19/98 Stop No. 681

Classification Fine loamy, Typic Ustorthent

Location

N. veg. (or crop) Atpl, Sarc

Climate

Parent Material Alluvium

Physiography Fan on stream terrace of the arc Mine

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) located on small knoll 60% rounded sandstone surface

pit ec SAR ESP Hcl lc

0-8 4 7.9-6.9 28 14 SL 2.1

8-18 4 8.4 11.6 27 30 SCL 4.6 Similar to G70

* Area is surrounded by Rock outcrops #G70 - located in Arc S.E. - Rock outcrop

inches

Pit Depth ( )

Bedrock (GH)

Topsoil (O)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AB	0-3	10yr 5-8	10yr 4-6	sl	wpl/wcl	h					sle	
Bkn	3-8	10yr 4-6	10yr 5-4	sl	wsbk	h					sle	
2Bkyn	8-18	10yr 4-4	10yr 4-4	cl	msbk	vh					sle	
2cdky	18-61	10yr 3-3	10yr 4-3	cl	m	eh			clay & salts		sle	

Soil Description

Soil Type Shiprock — File No.

Area No-Name Permit Area - NE — Date 8/18/98 — Stop No. G82 — RM

Classification

Location

N. veg. (or crop) Spcr, Afca, Gusa — Climate

Parent Material eolian

Physiography Toe of Dune / Terrace

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 2% — Moisture

Aspect S — Root distrib.

Erosion Moderate

Permeability

Additional notes: Adjacent to Blow out on Gas Alley Road ↑ To Pipe East 10'

samples (depth inches)

inches

Pit Depth ( )

Bedrock (Got)

Topsoil (40)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			ls	wpl	sh					sle	
Bw	4-9			ls	wSBK	sh					sle	
Bt	9-24			sl	mSBK	vh					es	
Bk	24-40			ls	wSBK/m	h					es/ev	
2Ck (Soil at 2Ck)	40-60			c/c	m	vh/eh					es/ev	
clay & solids												

Soil Description

Soil Type Stumble

File No.

Area No-Name Permit Area - NE Date 8/19/98 Stop No. G82-A

Classification Brunisolic

Location

N. veg. (or crop) Spr, Mtca, Cusc, Ahy, Spsi Climate

Parent Material Colluv

Physiography Mid Slope of Mtn

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 50% | Moisture

Aspect W | Root distrib.

Erosion Moderate / Slight

Permeability

Site located Approx 300 Ft East of Road - Not Surveyed

Additional notes:

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (GSt)

Topsoil (GSt)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6			ls	wgr/wsbk	sh						
C	6-42			s	m	sh						
2CK	42-65			vfsl	m	sh						

Soil Description

Soil Type Shawrock eroded ... File No.

Area No-Name Permit Area NE Date 8/19/98 Stop No. C83

Classification BM

Location

N. veg. (or crop) Spru; Spar, Abla, Climate

Parent Material

Physiography Back Slope of upl. ... landform

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect W Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 40% rounded gravel in subsoil

Matrix

			SAR
0-8	S	sl	17
8-21	U	ls	28

inches

Pit Depth ( )

Bedrock (GOA)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-1			sl	wpl	so			es			
BtKn	1-8			sl	mcl	vh			es			
C1	8-21			grls	m	h			sle		20-25%g	
C2	21-36			lcoss	m	sh			sle			
C3	36-60			ls	m	h			eO			

Soil Description

Soil Type Chapeta | File No.

Area No-Name Permit Area – NE | Date 8/19/98 | Stop No. C84

Classification Fine typic torriorthent | BM

Location

N. veg. (or crop) Atob | Climate

Parent Material Alluvium

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: 80% Channers on Surface

samples (depth inches) Circle contains many shale rock outcrops soil is classified by thin beddes

inches

Pit Depth (30)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/8			C	M	vh						
Cr	8+	SILHstone										

Soil Description

Soil Type Rock outcrop File No.

Area No-Name Permit Area -NF Date 8/19/98 Stop No. G88 13a

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (8)

Topsoil (8)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Bonelly File No.

Area No-Name Permit Area NE Date 8/19/98 Stop No. 686

Classification

Location

N. veg. (or crop) Atob, greasewood Climate

Parent Material Alluvium

Physiography terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4% Moisture

Aspect W Root distrib.

Erosion Severe

Permeability

Additional notes: Site located between Drainage and Rock outcrop

samples (depth inches) Flood Plain is located approx 150' West of Site

No available topsoil - Sodium affected

inches

Pit Depth ( )

Bedrock (66+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3	2.5Y 6-4	2.5Y 4-4	LS	WPL	SH					SLE	
Btn	3-11	2.5Y 5-4	2.5Y 4-4	SL	MABK	VH					SLE	15%C
BtKy	11-17	10YR 3-6	10YR 4-4	SCL	WSBK	VH					CS	
Bc	17-32	10YR 5-8	10YR 4-4	SCL	WSBK/M	H					ES	
Cy	32-56	10YR 4-6	10YR 4-4	LS	M	H					EO/SE	
2Cy	56-66	10YR 2-2		C	M	SH					VSE	

Soil Description

Soil Type Arisayo (1) File No.

Area No-Name Permit Area – NE Date 8/19/98 Stop No. 687

Classification BM

Location

N. veg. (or crop) Atob, Spa. Climate

Parent Material

Physiography Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2-3% Moisture

Aspect W Root distrib.

Erosion Severe -

Permeability

Additional notes: 40-50% rounded gravels on surface - Site is adjacent to channel drainage - many rock outcrops on land forms Appears that approx 24" of soil has been eroded from land forms dissected by thin bedrock

samples (depth inches)

	pH	EC	SAR	Cly	
2-11	8	8.4	35	34	Cl

inches

Pit Depth ( )

Bedrock (11)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eCe	
A	0-2	2.5Y 6-4		ls	wSBK	sh					vsle	
2Ck	2-11	2.5Y 4-4	2.5Y 5-4	cl	m	h					es	
2Cr	11-50	Shale										

Soil Description

Soil Type Shiprock (1) File No.

Area No-Name Permit Area – NE Date 8/19/98 Stop No. 688

Classification BLM

Location

N. veg. (or crop) Spcr, Gusa, Atol Climate

Parent Material eolian over alluvium

Physiography Toe of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		Similar to #682

Additional notes:

samples (depth inches) - located in transitional area between Dune and eroded terrace area

STR text K%

15-30 S 15 SL 8.8

inches

Pit Depth (66)

Bedrock (60)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr	so					sle	? Stones
C	5-15			ls	wSBK m	sh					sle/eo	?
B+b	15-21			sl	mSBK	vh					sle	? Shrock
B+Kb	21-30			sl 19%	STABK	vh					es/ev	?
2BK	30-39			cl	wSBK	sh					ev	
2C	39-60			cl/c	m	sh					es	
2Cr	60+60											

stones

visible ev & es

Soil Description

Soil Type Shiprock ? File No.

Area No-Name Permit Area - NE Date 8/19/98 Stop No. 689

Classification Coarse loamy, typic Natrargid Mississippian

Location

N. veg. (or crop) Sage, Sumi, Atca, Yucca, Climate

Parent Material Colian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: located at head of Dune - Drainage / Defleted trough (located to the South of Site

samples (depth inches)

		pH	ec	SAR	Cl	Texture	Ice
0-14	S	7.8	1.5	3.1	8	S	.9
14-34	4	8	3.3	28	14	SL	2.1
34-60	4	8.6	5.1	35	8	S	.9

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	10yr 5-8	10yr 5-4	lfs	wgr	sh					vsle	
Bw	4-14	10yr 5-8	10yr 4-4	ls	wSBK	sh					sle	
Bt Kkb$_1$	14-24	10yr 4-4	10yr 4-6	sl 20%C	mpr	vh					es	
Bt Kn b$_2$	24-34	10yr 5-8	10yr 4-6	sl 12%C	wSBK	vh/eh					es	
C	34-60	10yr 5-8	10yr 4-3	ls	M	h					es/eo	

Soil Description

Soil Type Hurlbut (1) File No.

Area No-Name Permit Area -NE Date 8/19/98 Stop No. 690 BM

Classification

Location

N. veg. (or crop) ~~Adob~~ Climate

Parent Material Alluvium Residuum

Physiography Terrace / Remnant between uplands drainages and Dunes

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 60% gravels in Subsoil

inches

Pit Depth ( )

Bedrock (11)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AB	0/3			SL/SCL	wcl	h			es			
Btn	3/11			cl	mcl				es/ev			
Cr	11+		SL	Stone								

Soil Description

Soil Type Fruitland Sodic File No.

Area No-Name Permit Area - NE Date 8/19/98 Stop No. G91

Classification Fine loamy, mixed, calcareous, mesic Typic Torriorthent

Location

N. veg. (or crop) Sparse, Atco, Greasewood, Grass Climate

Parent Material Alluvium derived from mixed

Physiography Bottom of Uplands Drainage / Fluvial

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion slight		
Permeability	- Soil is moist throughout	

Additional notes:

samples (depth inches)

		pH	ec	SAR	Clay	
0-14	A	8.0	8.3	21	12	1.9
14-43	A	7.8	13.2	62	13	3.1
43-65	A	8.7	15.7	48	9	1.7

inches

Pit Depth ( )

Bedrock (GST)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	dil Reaction	Boundary		
A	0/3	2.5Y 6-4	2.5Y 5-4	vfsl	wpl	sh			slc			
Bw	3/14	2.5Y 6-4	2.5Y 5-4	vfsl	m sbk	vh			slc			
zC	14/18	10yr 5-6	10yr 4-4	sl	m	h			ec			
zCK1	18/25	10yr 5-6	10yr 4-3	scl	wsbk	h			es			
zCK2	25/43		10yr 4-4	scl	m		sfi		es		moist	
zC1	43/51		10yr 6-4	sl	m		sfi		slc/ec			5%g
zC2	51/65		10yr 4-4	sl	m		fr		slc			

Soil Description

Soil Type Rezito File No.

Area No-Name Permit Area - NE Date 5/19/98 Stop No. G92 RM

Classification

Location

N. veg. (or crop) Grassland, Oak, Sage Climate

Parent Material eolian

Physiography Backslope of Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5% Moisture

Aspect N Root distrib.

Erosion moderate

Permeability

Additional notes: Drainage / trough located immediately to the NW of

samples (depth inches)

AG93 - located in Archeological Site

All Suitable

inches

Pit Depth ( )

Bedrock (GSt)

Topsoil (GSt)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5			ls	wpl/wgr							
C	5-66			ls	m							

Soil Description

Soil Type Be, Bee (1) File No.

Area No-Name Permit Area - N.F. Date 8/20/98 Stop No. G95

Classification Bm

Location

N. veg. (or crop) Chaparral Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1	Moisture	
Aspect N	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	2.5Y 6-4	2.5Y 5-4	LS	wpl/m	so					eo	
C_1	5-31	2.5Y 6-4	2.5Y 5-3	LS/S	m	so/sh					eo	
C_2	31-65	2.5Y 5-6	2.5Y 5-4	LS	m	so					eo	

Soil Description

Soil Type Stumble | File No.

Area No-Name Permit Area – NE | Date 8/19/98 | Stop No. 697 BM

Classification

Location

N. veg. (or crop) Clean, sparsely | Climate

Parent Material colian

Physiography Shrub-capped Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	

Erosion Moderate / severe

Permeability

Additional notes: #696 located in Archaeological Site – Max Queen

samples (depth inches) Adjacent to Gravelly road

		pH	ec	SAR	Clay	Textures	%
0-6	5	7.8	.5	1	6	S	1
6-32	5	7.9	.4	1.7	5	S	1
32-49	5	8.4	1.9	17	5	S	1
49-64	4	8.6	8.6	33	14	SL	2

inches

Pit Depth ( )

Bedrock (64+)

Topsoil (49)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6	2.5Y 6-4	2.5Y 5-3	lvfs	wgr	so					eo	
C1	6-32	2.5Y 6-4	2.5Y 4-4	lvfs	m	so					eo	
C2	32-49	2.5Y 5-6	2.5Y 4-4	ls	m	so					eo	
2C	49-64	10YR 5-6	10YR 4-3	sl	m	sh					vse	

Soil Description

Soil Type Frostland | File No.

Area No-Name Permit Area NE | Date 8/20/98 | Stop No. G98

Classification Coarse loam, frost fractured | BM

Location

N. veg. (or crop) Chara, spp., Grass, Area | Climate

Parent Material Eolian

Physiography Dune

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 4.5% | Moisture

Aspect N | Root distrib.

Erosion moderate | #G99 - located in Archeological Site

Permeability

Additional notes:

samples (depth inches) * Pit Dug approx 30' west of Site on west side of Anaktuvuk Road

17-42 S

inches

Pit Depth ( )

Bedrock ( )

Topsoil (42)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			ls	wsr	so			sle		See G97	
C	4/9			ls	m	sh			eo		3	
2Bw	9/17			sl	wsbk	h			es		interbedded Carbonaceous sandy	
2Ck	17/42			ls 8-9	m	vh			ev		material	
2C'	42/70			ls	m	sh			eo		See G97	C2 Sandy

Soil Description

Soil Type Beebe 1 File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 700 BM

Classification

Location

N. veg. (or crop) Chrys, Gusa, Spgl, Tarantisk Climate

Parent Material Alluvium

Physiography Flood plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope .5	Moisture	
Aspect N	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (G3t)

Topsoil (G3t)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wgr	sh					eo	
C1	3-23			ls	m	sh					eo	
C2	23-63			lcos	m	-	vfr				eo	5-10BG

Soil Description

Soil Type Beebe (1)

File No.

Area No-Name Permit Area - NP Date 8/20/98 Stop No. 701

Classification Sandy type bottomland

Location

N. veg. (or crop) Sand, tennessee, Climate

Parent Material Alluvium

Physiography Flood plain

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope | Moisture

Aspect | Root distrib.

Erosion

Permeability

Additional notes: 702 & 703 in Arc Site

samples (depth inches)

water table @ 51

inches

Pit Depth ( )

Bedrock (51)

Topsoil (5 1/2)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			SCl	pl	vh					sk	
C	3-51			lcos	m		vfr				eo	

Soil Description

Soil Type Stumble (1) File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 704 BM

Classification

Location

N. veg. (or crop) Chna, Spec, orhy, Climate

Parent Material colluvium

Physiography Backslope of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) see 698 for suitability

inches

Pit Depth ( )

Bedrock (71+)

Topsoil (56)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wpl	so					vsle	
C_1	3-28			ls	m	sh					eo	
2CKy	28-56			sl/ls	m	sh			interbedded carbonaceous material		sle/vsle	
2C	56-71			ls	m	so					eo	

Soil Description

Soil Type Beebe File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 706

Classification Sandy typic fluvaquent

Location

N. veg. (or crop) Spai tamarisk Climate

Parent Material Alluvium

Physiography Flood Plain rd toe of Dune Area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion moderate

Permeability

Additional notes: #707 - location Flood Plain Beebe

samples (depth inches)

Water table at 60"

- Severe Flood Hazard #705 Stumph - Backshore of Dune

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	~~eff~~	
A	0-3			ls	wpl/sgr	so					eo	
C1	3-20			lcos	m	sh					eo	
C2	20-60			lcos	m		vf				eo	

Soil Description

Soil Type Bee bp (1) File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 708

Classification Bm

Location

N. veg. (or crop) Clear, Sage, Tamarisk, Atca Climate

Parent Material Alluvium

Physiography Flood Plain / River

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1% | Moisture

Aspect N | Root distrib.

Erosion Moderate / Slight

Permeability

Additional notes:

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wpl	so					eo	
C	3-60			ls	m		vfr				eo	

Soil Description

Soil Type Shiprock eroded File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 709

Classification BM

Location

N. veg. (or crop) Sage, Oakbrush, Grass, Forbs Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect -	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Similar to 710

		pH	EC	SAR	Clay	Text K	
5-17	U	8.1	4.6	25	8	15	1.5
17-60	U	7.4	12.8	31	10	15	1.5

inches

Pit Depth ( )

Bedrock (Not)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	2.5Y 6-4	2.5Y 4-4	LS	wgr	sh					eo	
Btn	5-17	2.5Y 6-6	2.5Y 5-4	SL	mabk	vh					vsle	
ZCKy	17-60	5YR 5-8	10YR 5-6	SL 12%c	m	h			common mottles	prominent	sle/vsle	
	-											
	-											

Soil Description

Soil Type Shiprock

File No.

Area No-Name Permit Area · NE Date 8/20/98 Stop No. 710

Classification Rm

Location

N. veg. (or crop) Sparse, pinon, sage Climate

Parent Material Colluv

Physiography Lwr ht Shale cl Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect W	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

711 - located in Area Silk Scrub Soil type ES 710

inches

Pit Depth ( )

Bedrock (GSF)

Topsoil (25)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	ekf	
A	0-5	7.5Y 6-4	7.5Y 4-4	ls	wgr	LO					vsle	
Bw	5-10	10YR 5-8	10YR 5-4	ls/sl	wsBK	sh					sle	
BK	10 19	10YR 5-6	10YR 4-4	sl	msBK	h					es	
BK	19 25	10YR 5-6	10YR 5-4	ls	wsBK	sh					es	
BKb	25 44	10YR 4-4	10YR 5-4	scl 20% c	wsBK	h					es	Sec Eky #709
C	44 65	10YR 5-6	10YR 4-6	lfs	m	sh		Infingering Ablae materials		of	eo	

Soil Description

Soil Type Bebee Clay, moderately deep — File No.

Area No-Name Permit Area - NE — Date 8/20/98 — Stop No. 712

Classification Typic Fluvaquent — RM

Location

N. veg. (or crop) Species, wise Forested — Climate

Parent Material Alluvium

Physiography Plain of Depression between Floodplain and Nursery Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	cc	SAR	Cl,	text
0-7 4	8	12.6	40	42	4.8

inches

Pit Depth ( )

Bedrock ( )

Topsoil (48)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-7	10yr 3-3	10yr 4-3	sicl/sic	mgr	h/vh					ec	Common fine Fine roots
2C1	7-24	10yr 4-4	10yr 4-4	ls	m		vfr		Common mottes	distinct	eo/vsle	
2C2	24-40		10yr 4-4	cos	m		vfr				eo	
3R	40-+		Sandstone									

Soil Description

Soil Type Beebe (1) File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 713-A

Classification

Location

N. veg. (or crop) Chaa, gusc, InJa Climate

Parent Material Alluvium

Physiography Flat/Plain/terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion (nat).		
Permeability		

713 located in Arcsite - Beebe

Additional notes:

samples (depth inches)

	pH	es	SAN	Cl	K		
4-33	7.7	2.5	7.5	8	1.5	15	5
33-65	7.8	4.8	19	5	1.5	5	4

Water table at 65"

inches

Pit Depth ( )

Bedrock (65+)

Topsoil (33)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			ls	wgr	sg/sh					eo	
C1	4+33			lcos	m	sh					eo	
C2	33-65			lcos	m		vfi				eo	

Soil Description

Soil Type Fruitland — File No.

Area No-Name Permit Area - NE — Date 8/26/98 — Stop No. 715

Classification — San

Location

N. veg. (or crop) Grassland, Sage, Spcr — Climate

Parent Material colluv

Physiography Stream terrace / Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Shown - composite None

All suitable

inches

Pit Depth ( )

Bedrock (70+)

Topsoil (70+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-7			ls	wgr	lo					eo	
C_1	7-17			ls	m	so					eo	
C_2	17-27			18%C sl	m	h					sle	
C_3	27-70			ls	m	so					eo	

Soil Description

Soil Type Shiprock very channery File No.

Area No-Name Permit Area - NE Date 8/20/98 Stop No. 718

Classification BM

Location

N. veg. (or crop) Sparse, pinyon, juniper Climate

Parent Material eolian over alluvium

Physiography Terrace - Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

pH ec SAR Cly

9-23 CL 8.3 1.3 19 8% 15

23-41 CL 8.3 14.2 43 8 15

* #719 located in Proposed Site - Same as 718

* #717 located in Arc Site

* #716 located in Arc Site

inches

Pit Depth ( )

Bedrock (71+)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3	2.5Y 6-4		LS	wpl/wgr	sh					sle	
C	3-9	2.5Y 6-4		LS	m	sh					vsle	
2Btk	9-15	7.5Y 4-6	10yr 5-6	SL	wabk	h					es	Shiprock cracked
2BC	15-23	10yr 4-6	10yr 5-4	LS	m	vh					eo	
3CKy	23-41	10yr 5-8	10yr 5-6	SL	m	h					es/ev	
3CK	41+71	10yr 5-8		LS	m	sh					eo	

Soil Description

Soil Type Shingle Creek - Vanguard File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. 729

Classification Calcareous, Mixed Mesic typic haplustoll Ben

Location

N. veg. (or crop) Spai, Greasewood, Chaa Climate

Parent Material Alluvium

Physiography Uplands. Gently sloping to moderately dissected terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) Adjacent to Ancillary Road

inches

Pit Depth ( )

Bedrock (GCT)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			sl	wpl		fr				vsle	
Bt1	3-7			scl	wabk		sfi				sle	
Bt2	7-23			sl	msBK	vh					sle	
Bk	23-33			sl	wsBK	eh					es/ev	Carbonate Ck
C	33-60			sl/ls	m	vh					sle	

Soil Description

Soil Type Trofthan) - Sodic File No.

Area No-Name Permit Area NE Date 8/24/98 Stop No. 730

Classification Bn

Location

N. veg. (or crop) Spc! Climate

Parent Material alluvium

Physiography Uplands - Trough / dedicated area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect W Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 60% Channers on surface - Trough area surrounded by many small rock outcrops
Small clumps of Spc! Sparse VEG Cover
* percent Makeup is soon adjusted

inches

Pit Depth ( )

Bedrock (GOF)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Bn	0-4			sl	mcl		fi				sle	
Ck	4-7			scl	wpl	h					ev	
C_1	7-23			scl	m	h					eo	
C_2	23-60			sl	m	h					eo	

Soil Description

Soil Type bacobi overblown — File No.

Area No-Name Permit Area -NE — Date 8/24/98 — Stop No. 731 BM

Classification

Location

N. veg. (or crop) Sm, hiTa, ~~Okhy~~ — Climate

Parent Material eolian

Physiography Toe of Dune - adjacent to marsh

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect S	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes: #732 in Alt Site See 739

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (35)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr		vfr				eo	
C	15			ls	m		vfr				vsle	
B+K ox	35			sl	wsbk/m	h					vsle	
2CR	35++	Sandstone										

Soil Description

Soil Type Razito File No.

Area No-Name Permit Area -N.F. Date 8/24/98 Stop No. A 733

Classification

Location

N. veg. (or crop) Spec, oshay, Atrex, mixed Grass, Climate

Parent Material colluvium

Physiography Top of dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (GBF)

Topsoil (GBF)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			ls	wgr		vfr				eo	
C1	5 40			ls	m	sh					eg/vsle	
C2	4063			ls	h						sle	

Soil Description

Soil Type Fruitland - Sodic — File No.

Area No-Name Permit Area - NE — Date 5/24/98 — Stop No. # 734

Classification — Bar

Location

N. veg. (or crop) Sparse — Climate

Parent Material Alluvium

Physiography Playa

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 0 — Moisture

Aspect 0 — Root distrib.

Erosion Severe — #735 - Razito

Permeability

Additional notes:

samples (depth inches) — Similar to 730 Sodium affected Sandc

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-4		10yr 5-6	SCL	wcl		fr				es	
BKy	4-15	10yr 6-6	10yr 6-4	SCL	mpl	vh					vsle	
C	15-60	10yr 5-8	10yr 4-4	LS	m	h					eo	

Soil Description

Soil Type Fr. Hard Soil File No.

Area No-Name Permit Area Date 8/24/98 Stop No. 4737

Classification

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		See 734

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (∅)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. 745

Classification Bn

Location

N. veg. (or crop) Spc., bahia setaria, greasewood Climate

Parent Material Alluvium

Physiography Undulating valley / Deflected flat / stream dunes

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect L Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) parent material similar in color and texture to site located in vicinity to the west

* #744 - Razeto Fine Sand 60+ ins

* #741 - in deflected flat Sodium affected - Benally

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-3		10YR 4-4	cl	mcl		sfi				es	
BKy	3-19	7.5Y 4-6	7.5Y 4-6	scl	wsbk	sh					es/ev	
BtKy b	19-30	7.5Y 5-6	7.5Y 4-6	scl	wsbk	sh					es/ev	
C	30-60	7.5Y 5-6	7.5Y 4-4	sl	m	sh			intercingering of Albic material		es/eo	
									common	faint mottles		

Soil Description

Soil Type Rdz1+0 File No.

Area No-Name Permit Area NE Date 8/24/98 Stop No. 746

Classification Rn

Location

N. veg. (or crop) Mtca, Atca, Gosc, Spcl, Sps, Only Climate

Parent Material Colian

Physiography Top of Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect W Root distrib.

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

All Suitable

inches

Pit Depth ( )

Bedrock (GSH)

Topsoil (GSH)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	~~eff~~ eo	
A	0-4			ls	wgr		vfr				eo	
C_1	4-18			ls	m		vfr				sle	
C_2	18-44			ls	m	sh					sle	
C_3	44-65			ls	m	sh					sle/eo	

Soil Description

Soil Type Stumble File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. 747

Classification BMcCulloch

Location

N. veg. (or crop) Spcr, Mtea, Atca, Gusa Climate

Parent Material colluvium over alluvium

Physiography Swale

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect W Root distrib.

Erosion Modrt

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (54+)

Topsoil (54+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			ls	wpl/wgr		vfr				sle	
C	4-29			ls	m	vh					vsle/eo	
2CK	29-54			scl	m	vh		fine sands w gravels / yellow			vsle	
previous sample												

See

Soil Description

Soil Type Huelbeno File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. 748

Classification Fine loam, typic Natrargid

Location

N. veg. (or crop) Sage Climate

Parent Material Alluvium residuum

Physiography Trough / Uplands Drainage ephemeral

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 70% Clumpers on surface

inches

Pit Depth ( )

Bedrock (3")

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Ahn	0/3			cl	mcl	h			es			
Cr	3/20			cl	wpl/sm	h			es			

Soil Description

Soil Type Huerfano Over Blown File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. #749

Classification 13m

Location

N. veg. (or crop) Spec. Indet., Atca, Atfo Climate

Parent Material colluvium/eolian residuum

Physiography Uplands/valley / dissected Area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion Moderate - adjacent to severely eroded areas

Permeability

Additional notes: located at toe of Blow areas

samples (depth inches) - Valley is composed of severely eroded areas (with desert pavement (moderately well) and fine stable areas with slight eolian and alluvial accumulations (Chia, Spci, and Atca) Typically located on toe slopes of valley sides

- The eroded areas contain no suitable topdressing. The stable areas is generally suitable

inches

Pit Depth ( )

Bedrock (30)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wgr		vfr					
C	3-10			ls	m		vfr					
Btn 2Btn	10-17			scl	mabk	vh						
2Btyn	17-30	10yr 4-4	10yr 5-4	cl	wcl	vh						
2Cr	30-46	Carbonaceous Shale										

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area - NE Date 8/24/98 Stop No. 752

Classification Fine loamy typic Natrargid BM

Location

N. veg. (or crop) Annuals Climate

Parent Material Alluvium

Physiography Blowout - deflated Area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect W Root distrib.

Erosion Some

Permeability

Additional notes:

samples (depth inches) Area is mostly void of perennial vegetation. - Surrounded by Dunes.

No suitable topsoil

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn1	0-3			scl	mcl		fi				es	
Btn2	3-9			scl	msbk	vh					sle	
BtKyn	9-18			scl	mABK	eh					sle	
CKy1	18.41			cl/c	m	vh					sle	
CKy2	41-60			scl	m	vh					sle	

Soil Description

Soil Type Rizzo File No.

Area No-Name Permit Area Date 8/24/98 Stop No. 753

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography Topock Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Huerbano File No.

Area No-Name Permit Area NE Date 8/24/98 Stop No. 755

Classification Bn

Location

N. veg. (or crop) Greasewood, halogeton, Salt, annuals Climate

Parent Material Alluvium

Physiography Blow out / Deflated area Fluvial Plain

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Ø Moisture

Aspect Root distrib.

Erosion Severe * A754 Huerbano

Permeability

Additional notes:

samples (depth inches)

No Topsoil

inches

Pit Depth ( )

Bedrock (26)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-5			cl	wcl		fr				sle	
BtKn	5-17			cl	wSBK	h					sle	
Cy	17-26			c/c	m	sh					vsle/eo	
Cr	26-46	shale										

Soil Description

Soil Type Bracally — File No.

Area No-Name Permit Area - NE — Date 8/24/98 — Stop No. 758

Classification Fine loamy typic Natrargid — RMussleWhite

Location

N. veg. (or crop) Spar, Mka, Gsa, Sacr, Oth — Climate

Parent Material eolian

Physiography Topo's Dunes, mun - Swales / Blowout

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect W — Root distrib. — H756 - location

Erosion Moderate / Severe — Backslope of Dune - Rock

Permeability

Additional notes:

samples (depth inches) Blowout area at top of Dune material is Sodium affected - with accumulations of secondary salts No suitable topdressing

inches

Pit Depth ( )

Bedrock (Gor)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-3			scl	mcl		fi				es	
Cy	3-16			sl	m		vfr				s/e	
2BKy	16-42			sl	wSBK		sfi				es/se	
2BtKnb	42-49			sl	wSBK	vh					es	
2C	49-60			ls	m	sh			Common faint mottles		es	

Soil Description

Soil Type Stumble File No.

Area No-Name Permit Area NE Date 8/29/98 Stop No. 759

Classification

Location

N. veg. (or crop) Chaparral, mtn, scrub, scrub Climate

Parent Material Colica

Physiography Steep Slope adj Mesa

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 20% | Moisture

Aspect SE | Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (52)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4			ls	wgr		vfi				eo	
C	4-24			ls	m	sh	vfr				eo	
B+h	24 36			scl	MASK	h					es	
C K	36 52			ls	m	h					vsle	
2C K.	52 60			ls	m	h			salts visible common fine & distinct mottks		ev	

Soil Description

Soil Type Tocity - Salic | File No.

Area No-Name Permit Area - NE | Date 8/25/98 | Stop No. 775 Bm

Classification

Location

N. veg. (or crop) Grassland, Sparse | Climate

Parent Material alluvium

Physiography Terrace toe of Mesa remnant

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: Most of the upper horizons have been removed by

samples (depth inches) H20 erosion.

Parent Material is sodium affected - Supports perennial veg

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C_1	0/8			CL	wk sbk/pr	vh			VSlc			
C_2	8/18			SL/15	pr	h			eo			
C_y	18/48			SCL/30	pr				VSlc			
C	48/58			C	pr		vfi		Slc			

eff

Soil Description

Soil Type Shiprock over blown File No.

Area No-Name Permit Area - NE Date 8/25/98 Stop No. 777 BM

Classification

Location

N. veg. (or crop) hisa, Spai, grasswood, mtn Climate

Parent Material

Physiography Foot of Dune area / Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect S Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches) Area to the Southeast back of Site is severly eroded (Scalp)

All Suitable

inches

Pit Depth ( )

Bedrock (Got)

Topsoil (32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3		10yr 5-6	SI	wgr		fr					
Bc	3-13		10yr 5-6	SI	wSBK		vfr					
2Bt	13-21	10yr 5-6	10yr 4-6	SI	mSBK	h						
2Btk	21-25	7.5yr 4-6	7.5yr 5-6	SCl 20%	mSBK	h						
2BK	25 32	10yr 5-8	10yr 6-6	SCl 5% K	wSBK	h						
2CK	32 60	10yr 6-6	10yr 4-6	LS	m	vh						

Soil Description

Soil Type Jocity - Sodic File No.

Area No-Name Permit Area - NE Date 8/25/98 Stop No. 779

Classification Rx

Location

N. veg. (or crop) Sparse grassland Climate

Parent Material Alluvium

Physiography Swale / drainage in bluff plain - dune area

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect W Root distrib.

Erosion Moderate

Permeability Same as 775, but less eroded

Additional notes:

samples (depth inches)

No suitable topsoil - sodium adsorbed and soluble salt concentrations

inches

Pit Depth ( )

Bedrock (42+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
C	0-12			cl	m	vh	fi				vsle	
Cy	12-46			scl	m	h					vsle	
Cky	46-62			c/c	m	h					sle	

Soil Description

Soil Type Fruitland — File No.

Area No-Name Permit Area - NE — Date 5/25/98 — Stop No. 780

Classification — PM-

Location

N. veg. (or crop) Spai, hisa, greasewood, chna — Climate

Parent Material Eolian over alluvium

Physiography (Flood) Plain dune / terrace

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect W — Root distrib.

Erosion Moderate / Severe

Permeability — * 781 Fruitland GOT Topsoil

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (GOT)

Topsoil (GOT)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-2	2.5Y 6-4	2.5Y 5-4	SL	wpl/wgr		vfr				eo	
C_1	2-11		2.5Y 5-4	SL 19%	m		sfr				eo/vslp	
C_2	11-36	2.5Y 6-4	2.5Y 5-4	SL	m	sh					eo	
C_3	36-60	2.5Y 5-4	2.5 5-4	LS	m	sh					eo	

Soil Description

Soil Type Jocity File No.

Area No-Name Permit Area - NE Date 8/28/98 Stop No. 784

Classification RM

Location

N. veg. (or crop) h.Ja, Sqci, Atca, Grasses, Forbs Climate

Parent Material colluvium and alluvium

Physiography Terrace dune area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NW	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			15%c SL	wgr		vfr					
C_1	4-8			35%c scl	m		sfr					
C_2	8-24			SL/S 8%c	m	sh						
C_3	24-36			Cl 38%c	m	h			questionable OK if mixed			
C_4	36-60			scl 25%c	m	sh						

Soil Description

Soil Type Rozito File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. 789 BM

Classification

Location

N. veg. (or crop) Mtn. sage, Atcan, oily Climate

Parent Material Colluvium

Physiography None

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches) adjacent to ancillary road

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6			LS	wgr	so/sh					eo	
C_1	6-21			LS	m	sh					eo/sle	
C_2	21-60			LS	m	sh					sle	

Soil Description

Soil Type Persayo 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 490

Classification Loamy, Lithic Torriorthent (Sodic Saline) CM

Location

N. veg. (or crop) Spai, Atob Climate

Parent Material Residuum

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NW Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth ( )

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
E?/C	0-2	10yr 6-3	10yr 4-4	cl	wgr	so				es	very light	color
Cy	2-8		10yr 5-8	sicl	wsbk		sci			es		
R	8+	Si Hstone										

Soil Description

Soil Type Bemally File No.

Area No-Name Permit Area Date 5/26/98 Stop No. 806

Classification

Location

N. veg. (or crop) Atob, Sp.

Climate

Parent Material Residuum

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 7% Moisture

Aspect N Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches)

No Suitable topsoil

inches

Pit Depth ( )

Bedrock (29)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	CaX	
Btkn	0-8	10YR 5-8	10YR 5-3	cl	mcl	h					ev	
2Bkyn	8-29	10YR 3-7		c/c	wsbk	h					ev	
2Cr	29-35	Carbonaceous shale										

Soil Description

Soil Type Rock Outcrop File No.

Area No-Name Permit Area - Lassen Fnl - Date 8/26/98 Stop No. 807

Classification

Location

N. veg. (or crop) Artcon, spp. Climate

Parent Material Res. Dom

Physiography Mesa top Area level

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) - 90% Cherts on surface - Surrounded by rock outcrops

* 807A - Perseyo - 0" A, Topsoil (

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/4											
Cr	4+	Shale										

Soil Description

Soil Type Huerhuero — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/21/98 — Stop No. 485

Classification Fine - Loamy Typic Natrargid — CA

Location

N. veg. (or crop) Atob — Climate

Parent Material Alluvium

Physiography Edge of dune - Blow out Area

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect W — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Area lack vegetation

inches

Pit Depth (40)

Bedrock (21)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Boundary		
Btn	0-4			scl	S.Cl	vh			es			
Bkn	4-16			Sl	SBK	h/vh			es			
C	16-21			Sl	m	vh			es			
2Cr	21-40	Carbonates Shale										

Soil Description

Soil Type Huerhuero — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/13/98 — Stop No. 486

Classification Fine - Loamy Typic Natrargid

Location

N. veg. (or crop) Atob, Atpo — Climate

Parent Material Alluvium

Physiography Lowlands - Trough

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 2% — Moisture

Aspect N — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 35% cf on surface

inches

Pit Depth ( )

Bedrock (24)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Eff~~ Boundary		
C	0-4			scl	m	so				vsle	15-20% g	
Btn	4-10			scl	wsbk		vfi			ce	10% g	
Btkyn	10-18			cl	wsbk	h				sle		
Cy	18-24			cl	m	h/vh				sle		
Cr	24-40	Siltstone										

Soil Description

Soil Type Huerbano File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 487

Classification Loamy Lithic Natrargid

Location Next to small Bluff

N. veg. (or crop) Spai, ~~Atob~~, Atpo Climate

Parent Material Alluvium

Physiography Head of Trough

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture

Aspect N | Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-6			scl	m	so						
Btkn	6-12			cl	msbk		vfi					
Cr	12-30	Siltstone										

Soil Description

Soil Type Huerhuero File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 488

Classification Loamy Lithic Natrargid

Location Next to small Bluff

N. veg. (or crop) Atob, Atpo Climate

Parent Material Alluvium over Residuum

Physiography Head of Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth ( )

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C	0-4			cl	m		so			eo		
Btyn	4-10			c	wsbk		vfi			eo		
2Cy	10-15			scl	m		h			eo	75% gravel	
2Cr	15-48	Siltstone										

Soil Description

Soil Type Persayo File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 489

Classification Loamy, Lithic Torriorthent (Sodic, Saline) CA

Location

N. veg. (or crop) Spai, Rtob, Atpo Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 85-90% of on surface

inches

Pit Depth (10)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF Boundary		
C	0-2			cl	m		lo			cs		
R	2+	Siltstone										

~~Permit Area~~

Soil Description

Soil Type Persayo File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 491

Classification Loamy, Lithic Torriorthent (Sodic, Saline) CA

Location

N. veg. (or crop) Atcon, Atpo Climate

Parent Material Residuum

Physiography MesaTop

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect S Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 70% cf on surface

inches

Pit Depth (11)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-4			cl	m		lo			sle		
R	4+	Siltstone										

Soil Description

Soil Type Rebco - overblown | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/13/98 | Stop No. 492

Classification Coarse-Loamy Torriflurent

Location

N. veg. (or crop) Gusa, Atcon, Spai, Hija | Climate

Parent Material Eolian over Alluvium

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Alluvium is stream terrace material

0-14	7.1	2.8	1	8	15	23	S
14-28	7.1	1.4	2	16	51	5.4	S
28-36	7.6	.58	8	8	5	2.7	S
36-63	8.0	.40	23	5	5	1.6	L

— PH EC SAR Clay Text K%

Na = 11 meq

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4		10yr 4-3	ls			vfr				vslt	
Bw	4-14		10yr 4-4	sl			vfr				sle	
Bw/zk	14-18		10yr 4-5	sl			vfi				ev	
zck	18-30		10yr 5-8	vcs		so					vsle	10% g
zc1	30-36		10yr 5-8	cls		sh					eo	
zc2	36-43		10yr 4-6	vcs		so					eo	20% g
zc3	43-63		10yr 5-8	vcg		lo					eo	

Soil Description

Soil Type Rebco - Gravelly substratum File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 493

Classification skeletal Torrifluvent CA

Location

N. veg. (or crop) Atob Climate

Parent Material Alluvium

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 50% cf on surface

- Material resembles a paleoterrace

inches

Pit Depth ( )

Bedrock (60)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
C1	0/9			cs	m		fr			eo		
C2	9/38			vcls	m	so				eo	50% gravels up to 3"	
C3	38/60			vcls	m	so				eo	40% g	
2R	60+	Siltstone										

Soil Description

Soil Type Persayo File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 494

Classification Fine-loamy Lithic Torriorthent / Sodic, Saline CA

Location

N. veg. (or crop) Spgi, Artem Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 80% of on surface

inches

Pit Depth (10)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ Eff		
C	0-3			cl	m		lo			es		
R	3+	sandstone										

Soil Description

Soil Type Persayo File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 495

Classification Loamy Lithic Torriorthent (Sodic, Saline) CA

Location

N. veg. (or crop) Spai, Atco, Atpo Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Pit EC SAR Clay K

0-6S 7.45 <1 29 9.3

inches

Pit Depth (6)

Bedrock (6)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	cf-f	
C	0-6		10YR 4-5	SCl	M		Lo				ES	
R	6-+	Sandstone										

Soil Description

Soil Type Benally - overwashed | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/13/98 | Stop No. 496

Classification Fine-loamy Typic Natrargid CA

Location

N. veg. (or crop) Atob, Spai | Climate

Parent Material Alluvium

Physiography Alluvial Valley

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Alluvium is composed of carbonaceous material. All material is unsuitable, represents small area.

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	CCC	
C	0-8		10yr 4-3	scl	wpl		sfr				vsle	
2BtKyn	8-21		10yr 4-2	cl	msBk	h					slc	
2Cy	21-48		10yr 4-1	cl	m	h					e	
3CKy	48-60		10yr 5-6	cl	m	vh					es	50% sg unsuitable

Soil Description

Soil Type S Temblor

File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 497

Classification Mixed Mesic Typic Torri ~~Comment~~ CA

Location

N. veg. (or crop) Grass Spp. Hija, Atcon Climate

Parent Material Alluvium

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture 22

Aspect NW Root distrib. 30

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	text	K	
0-11	7.1	.40	1	9	ls	2.1	S
11-24	7.2	.42	2	10	ls	2.7	S
24-44	7.7	1.24	20	11	ls	4.5	CL

→ Na = 12 meq/l

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ Eff		
A	0-5	10yr 6-3	10yr 4-3	ls	wgr	lo				eo		
Bw	5-11		10yr 5-4	ls	m		vfr			es		
BC	11-24		10yr 4-4	ls	wsbk		fr			es		
2Ck	24-44	10yr 6-4	10yr 5-4	ls/sl	m	sh				es/vsle	5-10% gravels	
2C	44-65	2.5y 7-4	10yr 5-4	ls	m	sh				vsle	35-40% unsuitable	gravels

Soil Description

Soil Type 5 Tumble 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 498

Classification Coarse Loamy Typic Torriorthent CA

Location

N. veg. (or crop) Gusa, Spai, Hija, Atco Climate

Parent Material Alluvium

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture 1

Aspect NW Root distrib. 23

Erosion

Permeability

Additional notes:

samples (depth inches) Similar to 497

Botton Ck and Cy of 498 and 497 are old stream terrace deposits similar to 492 & 493

inches

Pit Depth (67)

Bedrock (67+)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			sl	wgr	so				es		
Bw	5-19			ls	wSBK		vfr			es		
C	19-23			ls	m	so				sle		
2Ck	23-47				m					es	}	
2C	47-67				m					sle	}	unsuitable 50-60% 9 and cobbles ranging from 1-5" in diameter

Soil Description

Soil Type Monrico File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 499

Classification - loamy Lithic Torriorthentic CA

Location

N. veg. (or crop) Spai, Atcon Climate

Parent Material Residuum

Physiography MesaTop

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NE Root distrib.

Erosion

Permeability

Additional notes: 50% Coarse Fragments on surface - Calcified samples (depth inches)

inches

Pit Depth (40)

Bedrock (16)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff ev	Boundary		
A	0-3			~~sc~~ cl		so			ev			
Btk	3-10			cl			fi		ev			
Ck	10-16			cl		sh			ev			
R	16+	siltstone										

Soil Description

Soil Type Persayo 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 500

Classification Fine Loamy Lithic Torriorthent CA

Location

N. veg. (or crop) Atcon, Spai Climate

Parent Material Residuum

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect SE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 80% of on surface

✓ #501 - 0-6 C
6+ R Siltstone
No TS

	inches
Pit Depth	(24)
Bedrock	(4)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
C	0-4			scl	m					es		
Cr	4-24	Siltstone										
R	24+	Siltstone										

Soil Description

Soil Type Montero File No.

Area No-Name ~~Permit Area~~ NE Date 4-13-98 Stop No. 502

Classification ..-Loamy, mixed, mesic, Shallow, Haplocalcid CA

Location

N. veg. (or crop) Orhy, Spai, Atcon Climate

Parent Material Residuum

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture 10

Aspect Root distrib. 20

Erosion

Permeability

Additional notes:

samples (depth inches) pH EC SAR Clay K

0-10 7.2 .4 2 19 6.5 5

10-20 7.7 1.2 17 30 14 4

inches

Pit Depth ( )

Bedrock (20)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-3	10yr 7-3	10yr 4-6	sil	wpl	lo			es			
B+K	3-10	C/3	10yr 5-4	scl	wsbk		fi		ev		Not Argillic	
2CK	10-20		10yr 5-4	sicl		sh			ev		20-25% Calcic?	
2Cr	20-+	Siltstone										

Soil Description

Soil Type Persayo

File No.

Area No-Name ~~Permit Area~~ NE Date 7/13/98 Stop No. 503

Classification CA

Location

N. veg. (or crop) Hija, Orhy, Atcon Climate

Parent Material Residuum

Physiography Structural Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 20% Moisture

Aspect W Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

Represents small area

inches

Pit Depth (10)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
A	0-4			scl	wpl		lo			vsle		
C	4-8			cl	m		sfi			sle		
R	8+	siltstone										

Soil Description

Soil Type Razito | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/13/98 | Stop No. 504

Classification CA

Location

N. veg. (or crop) Chna | Climate

Parent Material Eolian

Physiography Loess Deposit, North side of Main Wash — Dune

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture 26

Aspect SW | Root distrib. 45

Erosion

Permeability

Additional notes:

samples (depth inches) See 505 For Suitability

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
C_1	0-30		2.5Y 5/4	ls	m		vfr			es	2 Suitable	
C_2	30-65		2.5Y 5/4	ls	m	10				es		

Soil Description

Soil Type Rozito File No.

Area No-Name ~~Permit Area~~ NE Date 4/13/98 Stop No. 505

Classification Mixed Mesic Typic Torripsamment CA

Location

N. veg. (or crop) Orhy, Chna Climate

Parent Material Eolian

Physiography Dune / Loess Deposit

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K	B	
0-46 S	7.3	.42	4	5	1,2	5	5
46-65 S	7.4	1.8	8	8	1,5	15	5

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Eff ~~Boundary~~		
C1	0-46		2.5Y 5/4	ls	m	lo				eo		
C2	46-65		2.5Y 5/4	ls	m	lo				eo		

Soil Description

Soil Type Shiprock I File No.

Area No-Name ~~Permit Area~~ NE Date 4/14/98 Stop No. 506

Classification Fine-Loamy, Typic Haplargid BM/CA

Location

N. veg. (or crop) Spai, Hija, Atcon, Gusa Climate

Parent Material Alluvium

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect NE Root distrib. 54

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (63)

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			sl	wpl/wgr	sh				rsle		
Bt	4-20			sl 18	wsbk		fr			sle		
C	20-25			sl 8	m	h				sle		
2Bk	25-32			scl	wsbk	h				ev	13-15% calcic?	K
2C1	32-41			lcs	m	sh				eo		
2C2	41-54			egcs	m					vsle/eo	75-80%g	Sn. table if mixed
2C3	54-63			ls	m					vsle	10%g	

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 4/14/98 Stop No. 507

Classification Coarse Loamy, Torrifluvent BM/CA

Location

N. veg. (or crop) Spai, Atcon, Hija Climate

Parent Material Alluvium

Physiography Mid slope / Paleoterrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5% Moisture

Aspect SW Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 45% (rounded) of on surface ranging from .1 - 5" in diameter

0-39 - Reference to other sampled C horizons

	pH	EC	SAR	Clay %
39-68	7.7	7.5	22	15-26 SL

inches

Pit Depth (68)

Bedrock (68+)

Topsoil (68+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			gsl	wpl		fr			es	15-20% g	
C	5-39			gls	m	sh				vsle	same as C horizons from 5-6	5% g
2Ck1	39-44			scl	m	vh				sle		
2Ck2	44-68			scl	m	vh				vsle	Interbedded coarse & fine mater.	

Soil Description

Soil Type Fruitland - Moderately deep — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/14/98 — Stop No. 508

Classification Coarse Loamy, Torrifluvent — BM/CH

Location

N. veg. (or crop) Spar, Hija, Atcor — Climate

Parent Material Alluvium

Physiography Drainage Channel

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(43)
Bedrock	(33)
Topsoil	(33)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-3			ls	wpl	so				vsle		
C1	3-18			ls	m	so				eo		
C2	18-33			sl/sd	m	h				eo/vsle	15809	
2Cr	33-43	shale										

Soil Description

Soil Type Shiprock – extremely gravelly substratum | File No.

Area No-Name ~~Permit~~ Area NE | Date 4/14/98 | Stop No. 509

Classification Coarse loamy Calciargid | BIA/CA

Location

N. veg. (or crop) Sparse Atriplex Kochia | Climate

Parent Material alluvium

Physiography Shoulder slope of badlands Plain / Paleo stream terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect NW	Root distrib.	
Erosion moderate		
Permeability		

Additional notes: 15% rounded gravels on surface | Similar to 505 eroded

samples (depth inches)

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (29)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			sl	wpl	so				clg sle		
Bt	3/14			sl	wsbk 1m		sfi			csbk		
2Bk	14/24			sl	wsbk	sh				cv	not calc 10%bk	
C1	24/29			sl	M	sh				wsbk		
Cr	29/62			cgcs	M	sl				co	75% cgrs unsuitable	

Soil Description

Soil Type Stumble - Eroded File No.

Area No-Name Permit Area Date 4/14/97 Stop No. S10

Classification loamy skeletal Typic Haploxerept BM/CA

Location

N. veg. (or crop) Spar Artcar Lisa Climate

Parent Material Alluvium

Physiography Uplands knoll / Finger / Pleist. Stream terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) located on finger between 2 drainages to the N + S

inches

Pit Depth ( )

Bedrock (70+)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			scl	w pl	so				s/c	5-10% gr	
C1	5/16			sl	m		vfr			s/c/co		
C2	16/70			cos/s	m						unsuitable 75% gr	

Soil Description

Soil Type Beebe - Deep (1) File No.

Area No-Name ~~Permit~~ Area NE Date 4/14/98 Stop No. 511

Classification Coarse loamy, Mesic Typic Haplustalf

Location

N. veg. (or crop) Spal Hisa Agro Grass/Legume Cosa Climate

Parent Material Alluvium

Physiography - Flood Plain of Small Mountain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K	
0-12	5	7.5, 49	2	9	3.6	SL
12-45	4	7.4	5.1	27	10	3.5	LS

inches

Pit Depth (56)

Bedrock (45)

Topsoil (12)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4	10yr 6/4	10yr 4/3	SCL	G-pl	SO				CLS	5-10% +-	
Bw	4/12	10yr 6/4/5/4	"	SL	WCBK		SFI			CLS		
C1	12/23	10yr 4/3	10yr 5/3	SL	M	SO				CLS	10% +-	
C2	23/45		10yr 5/6	VGLS	M	SO				CLS/CO	40% +- 35%	
2Cr	45/56	Coal									Oak Bottom	

Soil Description

Soil Type Farb 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/14/98 Stop No. 512

Classification - Loamy Lithic Torri Orthent BM/CH

Location

N. veg. (or crop) Greasewood Grass, Spai Climate

Parent Material Alluvium

Physiography Midslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture 20	
Aspect SW	Root distrib. 20	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

See 511 for suitability

inches

Pit Depth (29)

Bedrock (20)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			sl	wpl	sh				vsle		
C	3-20			gsl	wsbk/m		sfr			sle	15-20%	g
2Cr	20-29	shale										

Soil Description

Soil Type Persayo (1) File No.

Area No-Name Permit Area Date 4/14/98 Stop No. 513

Classification BM/CA

Location

N. veg. (or crop) Soai, Atcon, Gwood Climate

Parent Material Residuum

Physiography Midslope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5% Moisture

Aspect SE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(5)
Bedrock	(3)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0-3			scl	wpl	sh					65-70% channers	
R	3+	Sandstone										

Soil Description

Soil Type Huerfano - overblown (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/14/98 Stop No. 514

Classification BM/CH

Location

N. veg. (or crop) Spai, Hija, Orhy Climate

Parent Material Eolian over Alluvium

Physiography Midslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 7%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Cl	k
10-21 C	7.8	6.8	42	32	7 Cl

inches

Pit Depth (35)

Bedrock (35)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ Eff		
A	0-4			ls	wgr	sh				eo	} suitable	
Bw	4-10			sl	wsbk		fr			eo		
2Bkm	10-21			gcl	msbk	sh				ev	15% g	
3C	21-35			c	m	h				ev	unsuitable	
R	35+	siltstone										

Soil Description

Soil Type Huerhuero

File No.

Area No-Name Permit Area | Date 4/14/98 | Stop No. 515

Classification BM/CA

Location

N. veg. (or crop) Spai, Hya, Orny, Atco | Climate

Parent Material Alluvium over Residuum

Physiography structural Bench

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 3% | Moisture

Aspect W | Root distrib. II

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K
0-11	5 7.9	.68	11	21	5.1

inches

Pit Depth (36)

Bedrock (18)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			ls	wgr					eo		
Btn	3-11			cl/c	msbk		fi			es		
2Ck	11-18			c	m					ev		
2R	18-36	Limestone										

Soil Description

Soil Type Bebee 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/14/98 Stop No. S 16

Classification BLM CA

Location

N. veg. (or crop) Sparse Grass Shrubs Climate

Parent Material Alluvium

Physiography Flood Plain - toe of Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion moderate / Slight

Permeability

Additional notes:

samples (depth inches) Adjacent to Small Channel leading to the East.

	pH	EC	SAR	Clay	K
12-42 S	7.7	.44	7	7	2.7

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (42)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6	2.5Y 5/4	10YR 4/4	LS	Gr		VFr			CO	}	
Bw	5/12		10YR 4/2	LS/SL	wsbk		Fr			VSC	} Soil Horizon	
C_1	12/25	10YR 4/2	10YR 2/1	LDS	M	SO				VSC	interbedded Gravel layers and Gravels	
C_2	25/42	10YR 6/3	10YR 2/2	LFS	M	SL				CO	}	
C_3	42/60	—	—	GSLS	M	LO				VSC	Consolidated CaCO3 75-80%	

Soil Description

Soil Type Rebel Variant — File No.

Area No-Name Permit Area — Date 4/14/98 — Stop No. 517

Classification Coarse loamy, mixed, superactive, — Nm/CA

Location

N. veg. (or crop) Artr Chsa Sarc Gusa Sarc. — Climate

Parent Material Alluvium

Physiography (Broad) Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NW	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	k
0-4	7.3	.047	1	7	1.3
4-22	7.5	.138	4	7	1.4
22-60	7.6	.157	10	7	1.3

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4	2.5Y 6-4	2.5Y 4-4	ls	wgr		fr			co		
C_1	4/22	2.5Y 5-4	2.5Y 4-4	ls	m	so				co		
C_2	22/60	2.5Y 6-4	2.5Y 4-4	ls	m	so				co		

Soil Description

Soil Type Bebee Variant File No.

Area No-Name Permit Area NE Date 4/14/98 Stop No. 518

Classification Coarse loamy fluvial ent 1321-1/2

Location

N. veg. (or crop) Chaparral, oak, grass Climate

Parent Material alluvium

Physiography Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

similar to 517

inches

Pit Depth ( )

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/2			SL	wA	SO						
C_1	2/15			LS	M	SO						
C_2	15/23			LS	M	SO						
C_3	23/63			grLCS	M	SO					20-25% gr	

Soil Description

Soil Type Bebee - Variant (1) File No.

Area No-Name Permit Area Date 4/14/98 Stop No. 519

Classification BM/CA

Location

N. veg. (or crop) Gusa, Orhy, Spsi, Hija Climate

Parent Material Alluvium

Physiography Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (62+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			ls	wpl	lo				co		
C1	4-16			ls	m	so				s/e		
C2	16-25			fsl	m	sh				s/e		
C3	25-62	10YR 6/3		ls	m	sh				co		

Soil Description

Soil Type Rebec Variant — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/14/98 — Stop No. 520

Classification Sandy Mixed Mesic Typic Torrifluvent — BM/CA

Location

N. veg. (or crop) Chna, Orny, Gwood — Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ ERF		
A	0-5	2.5y 6/4	2.5y 4/4	lfs	wgr	so				eo		
C1	5-15	2.5y 6/4	2.5y 4/4	ls	m		vfr			eo		
C2	15-60	2.5y 6/4	2.5y 4/4	ls	m					eo		

Soil Description

Soil Type Bebee Variant File No.

Area No-Name ~~Permit Area~~ NE Date 4/14/98 Stop No. 521

Classification BM/CA

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Drainage channel

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1% Moisture 60+

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	k	
0-10	S	7.1	.35	4	5	1.3	Sand
10-28	S	7.1	.43	5	4	1.1	Sand
28-60	S	7.0	.80	5	6	2.6	Sand

inches

Pit Depth (60+)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C1	0-10		2.5Y 4/4	cs	m	10 /	sfr			eo	10%g	
C2	10-28		2.5Y 4/4	s	m		vfr			eo		
C3	28-60		2.5Y 5/4	glcs	m		sfr			eo	10-15%g	

Soil Description

Soil Type Huerhuero - overwashed File No.

Area No-Name ~~Permit~~ Area NE Date 4/14/98 Stop No. # 522

Classification Alfic Haploxeralf

Location

N. veg. (or crop) Sparse Clean Annual Grass Cover Climate

Parent Material Alluvium - colluvium derived from sandstone

Physiography Terrace / floodplain at base of small drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K	
0-9 S	7.2	.38	5	6	1.3	S
9-17 4	7.5	3.5	27	9	2	1S
17-28 S	7.2	6	13	9	3.4	SI

inches

Pit Depth (36)

Bedrock (36)

Topsoil (9)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			1S	wpl	so	s			cs		
C	3/9			ls	Mi	h				sl c		
Btkb	9/17			SI	Mab	h				slc		
2 Bkyl	17/28			SI	Mab	h				slc		
3C	28/36			SI	M	so				cs	Consolidated	
B 12	36+	Sand Stone									Secondary Salts	

Soil Description

Soil Type Jocity

File No.

Area No-Name Permit Area NF Date 4/14/98 Stop No. 523

Classification Fine loamy, mixed, frigid Typic Fluvaquent

Location

N. veg. (or crop) Low Sage Greasewood Atriplex Grass Climate

Parent Material Alluvium

Physiography Stream terrace toe of hill

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 2% | Moisture

Aspect W | Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

See 524 for suitability

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (12)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			fsl	wpl	so				cs		
Bw	4/12			fsl	wsbk		vfr			cs		
C1	12/14			sicl	M	sh				vsbk		
C2	14/21			sicl	M	sh				vsbk		
C3	21/36			lfs	M	sl				cs		
C4	36/60			ls	M	so				cs	interbedded 20% fr coarser fines	
											Some interbedding of carbonaceous material	

Soil Description

Soil Type Jocity (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 524

Classification Fine-Loamy Typic Torrifluvent CA

Location

N. veg. (or crop) Hija, Atob, Spai Climate

Parent Material Alluvium

Physiography Terrace base of Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 14

Aspect NW Root distrib. 27

Erosion

Permeability

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	Text	K
0-16	S	7.2	.7	6	13	SL	2.8
16-27	CL	7.4	2.7	20	22	SCL	2.9
27-41	CL	7.3	4.2	19	46	C	2.1
41-60	S	7.2	6.0	14	40	C	5

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10yr 5/4	sl	wpl	so				vs/e	15%/9	
Bw	4-16		10yr 5/4	sl	wsbk		fr			eo		
C_1	16-27	10yr 6/4	10yr 5/4	sl	m	h				eo		
C_2	27-41	2.5y 5/4	2.5y 5/4	cl/c	m	vh				vs/e		
C_3	41-60	2.5y 6/4	2.5y 4/4	c	m	vh				s/e		

Soil Description

Soil Type Beebe - Variant (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 525

Classification Coarse-Loamy Typic Torr. fluvent CA

Location

N. veg. (or crop) Gwood, Chna, Spa., Hija, Gusu, Atca Climate

Parent Material Alluvium

Physiography Alluvial valley bottom

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K	
0-33	7.2	.56	3	8	3.9	LS
33-60	7.2	186	6	13	3.1	SL

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
C_1	0-33			vgcs	m	so				eo	50%G	
C_2	33-60			sl/scl	m	so				eo		If mixed suitable

Soil Description

Soil Type Arbuckle Variant — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/15/98 — Stop No. 526

Classification Coarse Loamy Torri. fluvent — CA

Location

N. veg. (or crop) Gwood, Atca, Chna, Gusa, Hija, Spa: Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture 13	
Aspect NW	Root distrib. 45	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	K
0-4	S	7.4	.27	1	8 SI	1.4
4-29	S	7.6	.141	6	6 S	1.1
29-40	S	7.7	.59	8	7 L	1.3
40-65	S	7.7	1.03	11	5 S	1.4

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4			ls	wpl	so				eo		
C1	4-21			ls	m	so				eo		
C2	21-29			ls	m	lo				eo		
C3	29-40			ls	m	so				eo		
C4	40-65			ls	m	lo				eo		

Soil Description

Soil Type Bobs Variant I File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 527

Classification Coarse Loamy, Typic Fluvent CA

Location

N. veg. (or crop) Chna, Spa, Hija, Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

All material is suitable

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Boundary		
AC	0-3		fls	m		so			eo			
C_1	3-15		ls	m		so			eo			
C_2	15-39		gls	m		so			eo		30%g	
C_3	39-60		ls	m		lo			eo			

Soil Description

Soil Type Rcbee Variant

File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 528

Classification Coarse-Loamy, Typic Fluvent CA

Location

N. veg. (or crop) Spa, Aija, Orhy, Atca, Gwood, Gusa Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 16	
Aspect NW	Root distrib. 50	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(65)
Bedrock	(65+)
Topsoil	(0-5+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-3			ls	wgr	so			eo			
C_1	3-30			ls	m	so			eo			
C_2	30-65			ls	m	so			eo			

'Soil Type'

Soil Description

Soil Type Jocity | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/15/98 | Stop No. 529

Classification :

Location

N. veg. (or crop) Gwood, chna | Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	lc	text		
0-9	8.1	9	46	15	3.4	SL		U
9-15	7.8	16.5	29	19	.2	1	3	U
15-32	7	12	19	20	3.2	1	11.3	U
32-50	7.4	4.8	8	14	1.9	SL	3.7	S

$\bar{x}$ 18% Clay pscs

	inches
Pit Depth	(GS)
Bedrock	(GS+)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff	Boundary		
A	0 4	10yr 6-3	10yr 4-3	cl	wpl	sh			vslc			
C	4-9		10yr 4-3	fscl	m		Fr		vslc			
Byb	9-15	10yr 4-6	10yr 3-3	cl	wsBK	sh			vslc			
C_1	15 22	2.5y 6-6	10yr 4-3	ls	m	so			eo			
C_2	22-32	10yr 3-2	10yr 3-2	scl	m	so			eo			
C_3	32-50	2.5y 6-4	10yr 4-2	sl	m	so			eo			
C_4	50 65	10yr 3-3	10yr 3-2	ls	m	so			eo			5-10%g

suitable
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Soil Description

Soil Type Beebe Variant File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 530

Classification Coarse Loamy Typic Torrifluvent CA

Location

N. veg. (or crop) Chna, Orhy Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 20	
Aspect N	Root distrib. 30	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(66)
Bedrock	(66+)
Topsoil	(66+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
AC	0-3			fls	wpl	so			eo			
C1	3-30			ls	m	so			eo			
C2	30-66			ls	m	so			eo			15%g

Suitable

Soil Description

Soil Type Bebee Variant (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 532

Classification Coarse Loamy Torri Fluvent CA

Location

N. veg. (or crop) Chna, Orhy, Gusa, Hija Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (61+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	cf+	
AC	0-3			ls		so					co	
C1	3-30			cls		sh					co	
C2	30-61			cls		lo					co	

(1) 91+ variant

Soil Description

Soil Type Beebe Variant - Strongly Saline Sodic (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 533

Classification Coarse Loamy Typic Torrifluvent (Sodic / Saline?) CA

Location

N. veg. (or crop) Atob, Gwood Climate

Parent Material Alluvium

Physiography Toe of Alluvial Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib. SZ	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	PH	EC	SAR	Clay	text	k	PSCS	x̄ Clay
0-4	4	8	1.5	20	15	SL	3	
4-26	4	7.9	10.4	30	19	SL	2.2	10.1
26-37	4	8.3	15.7	33	12	SL	1.9	4.4
37-61	4	8.4	23.1	47	17	SL	3	1.7
							=	16.2

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eCF	Boundary		
A	0-4	2.5Y 5-4	10yr 4-4	SCl	mcl	h			vs/e			
C1	4-17	2.5y 5-4	10yr 4-3	c	m	sh			vs/e			
C2	17-26	2.5y 5-4	10yr 5-4	lfs	m	so			vs/e			
2Byb	26-37	10yr 5-8	10yr 4-4	ls	mbk	h			eo			
2Cy	37-61	10yr 4-6	10yr 4-4	ls	m	so			eo			

Soil Description

Soil Type Shirrock Variant

File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 534

Classification Fine-Loamy, Typic Haplargid CA

Location

N. veg. (or crop) Gwood, Atob Climate

Parent Material Alluvium

Physiography Drainage Channel

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K		
0-4	8.1	4	15	18	4.6	SI	S
4-23	7.4	5	7	22	6.1	l	S
23-60	7.5	5.2	12	21	6.1	scl	S

inches

Pit Depth (60)

Bedrock (Gbf)

Topsoil (Tbf)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-4			cl	mpl		vfi		vsle			
B+1	4-10			scl	mabk	h			sle			
B+2	10-23			cl	mpr	h/vh			sle			
C1	23-32			scl	m	h			vsle			
C2	32-60			cl	m	h			vsle			

Soil Description

Soil Type Patel

File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 535

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atob, Atpp Climate

Parent Material Residuum

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (30)

Bedrock (19)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
Btn	0-4			cl/c	mcl	sd				sle		
Btyn	4-10			c	msbk	sh				sle		
Cy	10-19			c	m	sh				sle		
Cr	19-30	Shale										
R	30+	Shale										

Soil Description

Soil Type Persayo 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/15/98 Stop No. 536

Classification Fine-Loamy, Lithic Torriorthent (Sodic & Saline) CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (34)

Bedrock (14)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff	Boundary		
C	0-5		10yr 3-1	cl	m		fi		slc			
Cy	5-14		10yr 4-3	c	m		vfi		es			
Cr	14-34	Limy Shale										
R	34+	Limestone										

Soil Description

Soil Type Benally Overwashed File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 537

Classification Fine-Loamy Typic Natrargid CA

Location Adjacent to Drainage Channel

N. veg. (or crop) Atob, Gwood Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 7	
Aspect W	Root distrib. 40	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ES	SAR	Cly%	Text	K%
13-33 C	7.4	9.6	21	25	scl	4.8
33-45 C	7.6	11.4	24	36	cl	6
45-61 C	8.2	18.4	45	24	scl	5

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff	Boundary		
A	0-3			scl	wpl	sh			vsle		}	
C	3-7			cl	m		fi		vsle		} See #533	
Ck	7-13			cl	m	h			vsle		}	
Bt(n)b	13-33			cl	sABk	h			vsle			
Bkyb	33-45			cl	mabk	vh			sle			
2Cy	45-61			scl	m	vh			vsle			

Soil Description

Soil Type Beebe Variant 1 File No.

Area No-Name ~~Permit Area~~ NE Date 9/20/98 Stop No. 538

Classification Coarse-Loamy Typic Torrifluvent CA

Location

N. veg. (or crop) Gwood, Spai, Gusa Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-2			sl	wpl	sh			CO			
C_1	2-16			ls	m	sh			PO			
C_2	16-33			ls	m	sh			PO			
C_3	33-44			ls	m	sh			PO			
C_4	44-65			ls	m	sh			PO			

Hill suitable

Soil Description

Soil Type Tocity

File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 539

Classification Fine-Loamy, Typic Torrifluvent (Sodic, Saline) CA

Location Adjacent to Drainage Channel

N. veg. (or crop) Atob, Climate

Parent Material Alluvium

Physiography Alluvial Flats

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect W Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff	Boundary		
A	0-3			scl	wpl	so			vsle			
C_1	3-13			scl	m	sh			vsle			see #540
C_2	13-24			scl	m	h			vsle			
B+K(n)b	24-37			cl	mSBK	vh			sle		–	
C_1'	37-44			sl	m	h			vsle			see 537
C_2'	44-65			sl	m	sh			sle		15%g	

Soil Description

Soil Type Tocity - deep | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/20/98 | Stop No. 540

Classification Fine-Loamy, Typic Natrargid | CA

Location

N. veg. (or crop) Atob, Gwood | Climate

Parent Material Alluvium

Physiography Toe-slope below bluff

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

			SAR	Clay	Text	pH
0-13	8.1	2	26	13	SL	7.3
13-22	7.4	12.3	80	26	L	6.4

inches

Pit Depth (44)

Bedrock (44)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3			sl	wgr	sh			vslc		10%g	
C	3-13			gsl					co		15%g	
B+k(n)b	13-22			cl					vslc		10%g	
C1	22-44			vgsl					vslc		35%g	unsuitable
	44-+	Sandstone.										

Soil Description

Soil Type Beebe Variant Clay loam File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 541

Classification Sandy Mixed Mesic Typic Torrifluvent CA

Location

N. veg. (or crop) Gwood, Gusa, Spal, Hija Chna Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) PH EC SAR Clay Text K

S 0-5 7.8 .71 5 32 CL 2.6
S 5-10 7.5 .52 4 12 SL 1.8
S 10-28 7.5 .37 3 8 LS 1.5
S 28-63 7.8 .67 5 8 LS 1.4

inches

Pit Depth (63)
Bedrock (63+)
Topsoil (63)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Effervescence~~ Reaction	Boundary		
A	0-5	10yr 5-3	10yr 3-4	cl	wpl	h			vs/e			
Bw	5-10	10yr 5-4	2.5y 5-4	sl/cl	wsbk	sh			eo			
C1	10-28	2.5y 5-4	2.5y 4-4	ls	m	so			eo			
C2	28-42	2.5y 5-4	2.5y 4-4	ls	m	so			eo			
C3	42-63	2.5y 5-4	2.5y 5-4	ls	m	so			eo			

Soil Description

Soil Type Beebe Variant File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 542

Classification Sandy Mixed Typic Torrifluvent CA

Location

N. veg. (or crop) Chna, Gwood, Gusa, Spsi, Hija Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture 65	
Aspect W	Root distrib. 40	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

See #541. For suitability

inches

Pit Depth (65)

Bedrock (65+)

Topsoil (65)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Ac~~ Reaction	Boundary		
A	0-5			SL	wpl	so			eo			
C1	5-22			LS	m	so			eo			
C2	22-65			LS	m	so			eo			

Soil Description

Soil Type Bebee Variant — File No.

Area No-Name ~~Permit Area~~ NE — Date 4/20/98 — Stop No. 543

Classification Sandy Mixed mesic Typic Torri. Fluvent — CA

Location

N. veg. (or crop) Chna, Gusa, Spai, Orhy — Climate

Parent Material Alluvium

Physiography Floodplain

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 0-1% — Moisture 24

Aspect W — Root distrib. 50

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (66)

Bedrock (66+)

Topsoil (66)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-4			ls	wpl	so			eo			
C_1	4-33			ls	m	so			eo			
C_2	33-66			ls	m	so			eo			

Soil Description

Soil Type Razito

File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 544

Classification Mixed, Mesic Typic Psamment CA

Location

N. veg. (or crop) Chna, Gwood, orhy, Gusc Climate

Parent Material eolian

Physiography Dune

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 24

Aspect NW Root distrib. 60

Erosion

Permeability

Additional notes:

samples (depth inches)

0-31

31-60

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Boundary		
A	0-2	2.5Y 6-2	2.5Y 5-4	LS	wgr	SO			EO			
C1	2-31	2.5Y 6-4	2.5Y 4-4	LS	M	SO			EO			
C2	31-60	2.5Y 6-4	2.5Y 4-4	LS	M	SO			EO			

Soil Description

Soil Type Tujunga Variant (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 545

Classification Coarse-Loamy, Typic Torrifluvent CA

Location

N. veg. (or crop) Gusa, Spa., Hija, Atca, Chna Climate

Parent Material

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect SW	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(63)
Bedrock	(63+)
Topsoil	(63 A)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			LS	wgr	so			vsle			
Bw	4-19			LS	wSBK		Fr		vsle			
BK/CK	19-43			LS	mBK	h			vsle			
C	43-63			LS	m	sh			eo			

#11 Soil Sample

Soil Description

Soil Type Patel - very Deep File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 547

Classification Fine-loamy Mixed Typic Natrargid CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Alluvium

Physiography Adjacent to Drainage Channel

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect W Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)	pH	EC	SAR	Clay	Text	K	
0-4	~~7.6~~	.79	8	36	Cl	2.6	S
4-17	~~7.5~~	8	24	52	C	2	4
17-54	~~7.6~~	5.3	16	32	Cl	3.5	4
54-64	7.4	2.8	20	16	SI	4.8	S

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-4	2.5y 6-4	2.5y 4-4	cl	wcl	sh			vs/e			
BtKyn	4-17	2.5y 4-2	2.5y 5-4	c	pr	vh			vs/e			
C1	17-35	2.5y 6-2	2.5y 5-4	sicl	m	vh			vs/e			
C2	35-54	2.5y 5-4	2.5y 4-4	sicl	m	h			vs/e			
C3	54-64	2.5y 4-4	2.5y 4-2	scl	m	h/sh			s/e			10%g

Soil Description

Soil Type Patel - Very Deep File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 548

Classification Fine Typic Natrargid CA

Location

N. veg. (or crop) Atob, Spg, Atpo Climate

Parent Material Alluvium

Physiography Toeslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~ eff	Boundary		
C	0-3			scl	m	sh			sle		10YR 9	Suitable
Btn	3-8			c/cl	pr		vfi		vsle		} See 547 for Suitability	
Btkyn	8-18			c	msBK	h/sh			vsle			
C1	18-45			c	m	vh			vsle			
C2	45-60			c	m	vh			vsle			

Soil Description

Soil Type Patel' File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 549

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atob Climate

Parent Material Residuum

Physiography Badlands - Rock outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 90% cf on surface

inches

Pit Depth (20)

Bedrock (8)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btkyn	0-5			cl/c	wcl					es		
Cy	5-8			c	m					es		
Cr	8, 15	Shale										
R	15+	Shale										

Soil Description

Soil Type Beebe Variant Sodic File No.

Area No-Name ~~Permit Area~~ NE Date 4/20/98 Stop No. 550

Classification Sandy mixed, Typic Torrifluvent CA

Location

N. veg. (or crop) Hija, Atcon, Orhy, Gusa, Spai Climate

Parent Material Alluvium

Physiography Midslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 85% cf on surface

	pH	EC	SAR	Clay %	Text	ks %
0-4	S	7.5	1.2	5	20	scl	3.8
4-30	S	8.4	.8	10	8	ls	3.4
30-60	4	8.2	2.1	32	8	ls	1.7

L Na = 21 meq/l

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4	10yr 4/4	2.5y 5/4	scl	wgr	sh				sle	10%g	
C1	4-16	2.5y 5/6	2.5y 5/4	gcs	m	sh				eo	15%g	
C2	16-30	2.5y 6/4	2.5y 5/4	s	m	sh				eo	10%g	
C3	30-48	2.5y 6/6	2.5y 5/4	sl	m	sh				eo		
C4	48-60	2.5y 6/4	2.5y 5/4	ls	m	sh				eo		

Soil Description

Soil Type Fruitland File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 551

Classification Fine Loamy Typic Haplargid CA

Location

N. veg. (or crop) Gusa, Spsi, Hija, Spcr, Chna Climate

Parent Material Alluvium

Physiography Bottom of midslope drainage channel

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 8% Moisture 60

Aspect SW Root distrib. 25

Erosion

Permeability

Additional notes:

samples (depth inches) Did not sample because pit represents a small area. Material is likely suitable.

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(60?)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
C	0-7		2.5Y 5-4	ls	m		fr		vslc			
B+b	7-14		2.5Y 5-4	scl	msBK		fi		vslc	no	[illegible]	
B+yb	14-37		2.5Y 5-4	scl	msBK		fi		vslc			
Cy	37-46		2.5Y 5-6	scl	m		fi		vslc			
C'	46-60		2.5Y 5-4	sls	m		fi		vslc			

Soil Description

Soil Type Fruitland File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 552

Classification Coarse Loamy Typic Torriorthent CA

Location

N. veg. (or crop) Atcon, Gasa, Spai Climate

Parent Material Alluvium

Physiography Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture 35

Aspect E Root distrib. 35

Erosion

Permeability

Additional notes:

samples (depth inches) 95% of on surface

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Eff~~ Reaction	Boundary		
A	0-4			scl	wgr	so			es			suitable
BK	4-14			scl	wSBK		fr		es			suitable
C1	14-48			egcsl	m	lo			eo		70%g unsuitable	
C2	48-64			ls	m	so			eo			

Soil Description

Soil Type SH rock l/cly (wet) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 553

Classification CA

Location

N. veg. (or crop) Spar, Hija, Atco~ Climate

Parent Material Colluvium over Terrace Alluvium

Physiography Midslope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 20% Moisture

Aspect SW Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 85% cf on surface

	pH	EC	SAR	Clay text	K%
0-4 S	7.4	.4	4	14	SI
4-9 S	7.8	.54	6	12	SI
9-16 S	8.2	.94	11	14	SI
16-34 CL	7.8	7.9	30	8	15

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-4	10yr 5/1	10yr 4/4	gsl	wgr		vfr			es	25%g	
Bw	4-9	10yr 5/1	10yr 5/4	sl	wgr		fr			es	10%g	
Btk	9-16	10yr 5/8	10yr 5/4	gsl	sabk	vh				cv	15%s	
C	16-34	10yr 5/6	10yr 5/4	sl	m	h				eo	15%s	
2C	34-62	2.5y 6/4	2.5y 4/4	ls	m	h				eo	See #550 for suitability	
											Consistence SAR	

Soil Description

Soil Type Farb (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 554

Classification Loamy Lithic Torriorthent CA

Location

N. veg. (or crop) Spa. Hig, Atcon Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 95% cf on surface

inches

Pit Depth (10)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
A	0-2			sl	wgr		fr			es		
R	2+	Sandstone										

Soil Description

Soil Type Shanock - Very Gravelly Substratum (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 555

Classification Coarse loamy Typic Haploxeroll CA

Location

N. veg. (or crop) Spa, Hija, Atco, Gusa Climate

Parent Material Alluvium - Paleo Terrace

Physiography Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture 18	
Aspect NW	Root distrib. 18	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 50% cf on surface

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-6			lfs	wgr	vh			sle			
BtK	6-18			lfs	wsbk		sfi		SLE			
CK	18-60			vgscl	m		fr		VSLE	unsuitable	50% g	

Soil Description

Soil Type Shirrock - gravelly substratum (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 556

Classification Coarse Loamy Typic Haplargid CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Alluvium

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NW	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-5			SL	wgr					es		
Bw	5-12			SL	wgr/m					es	See 553 for suitability	
Btn	12-18			SCL	wsbk					ev		
2C1	18-47			egcS	m					vsle/eo		50% G unsuitable
2C2	47 61			CS	m					eo		

Soil Description

Soil Type Stumble - crooked 3 | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/21/98 | Stop No. 557

Classification Coarse Loamy Typic Torriorthent CA

Location

N. veg. (or crop) Spgi, Hija, Atcon | Climate

Parent Material Alluvium

Physiography Bottom of mid-slope drainage channel

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 7% | Moisture

Aspect SW | Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 65% cf on surface

inches

Pit Depth (64)

Bedrock (64+)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3			sl	wgr		fr				10%g	}
Bw	3-15			gsl	wsbk		vfr				20%g	} See 553
C	15-40			vgls	m	h					45%g	Unsuitable gravel
2C	40-64			vgls	m	h					30%g	

Soil Description

Soil Type Persayo (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 559

Classification Fine-Loamy Lithic Torriorthent (Sodic, Saline) CA

Location

N. veg. (or crop) Atca, Atob Climate

Parent Material Alluvium

Physiography Toe-slope, base of bluff

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture 11	
Aspect N	Root distrib. 11	

Erosion

Permeability

Additional notes:

samples (depth inches)

See 560

inches

Pit Depth (30)

Bedrock (11)

Topsoil (7)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C1	0-7		2.5Y 4/4	scl	m					vsle		
C2	7-11		2.5Y 4/4	scl	m					vsle		
Cr	11+	Coal										

Soil Description

Soil Type Persayo | File No.

Area No-Name ~~Permit Area~~ NE | Date 4/21/98 | Stop No. 560

Classification Fine-Loamy Lithic Torr.orthent (CA

Location

N. veg. (or crop) Atob | Climate

Parent Material Alluvium

Physiography Drainage channel

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Sampled for characteristics #561 - 0-1 C scl 1+ Coal

	pH	EC	SAR	Clay text	K%
0-8 S 7	3.1	3	24	scl	3.6
8-14 S GR	3.2	7	22	scl	3.8

Lithic Torriorthent (Sodic)

inches

Pit Depth (25)

Bedrock (14)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C1	0-8		10yr 3-1	scl	m	sh				eo		
C2	8-14		10yr 4-2	scl	m	so				eo	10%g	
Cr	14+	Coal										
					/							

Soil Description

Soil Type Persayd

File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 562

Classification CA

Location

N. veg. (or crop) Atob Climate

Parent Material Alluvium

Physiography Small Alluvial Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 65% cf on surface

inches

Pit Depth (40)

Bedrock (24)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
C	0-5			cl	m	so				s/e		
Cy1	5-12			scl	m	so				eo	10%y	
Cy2	12-24			gscl	m	so				eo	35%g	15-20%y gypsic
Cr	24+	Coal										

Soil Description

Soil Type Monarch CO (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 563

Classification Loamy Lithic Torriorthent CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Colluvium

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

See #502 for Suitability

inches

Pit Depth (39)

Bedrock (17)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Boundary		
A	0-3			sl	wpl	so			sk			
Btk	3-8			scl	wSBK	so			es			
Cw/2Ck	8-17				m	so			ev			
2Cr	17-39	siltstone										
2R	39-+	limestone										

Soil Description

Soil Type 12 Tc 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 564

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atob, Gwood Climate

Parent Material Residuum

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (40)

Bedrock (11)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Effer~~ Reaction	Boundary		
Btn	0-7			c	mcl	so			vslc			
Cy	7-11			c	m	so			vslc			
Cr	11-40	shale										

Soil Description

Soil Type Monarca (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/21/98 Stop No. 565

Classification loamy Skeletal, Lithic Haplargid CA

Location

N. veg. (or crop) Atcon, Spai, Atob Climate

Parent Material Colluvium

Physiography Base of Bluff

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 80% cf on surface

Unsuitable gravel content

	inches
Pit Depth	(43)
Bedrock	(18)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-4			gsl	wpl	sh			s/e		20%g	
Bt	4-8			scl	msbk		fi		es		40%cs	
2C	8-18			cl	m	so			s/e			
2Cr	18-43	siltstone										
2R	43-+	siltstone										

Soil Description

Soil Type Razito (1) File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 566

Classification CA

Location

N. veg. (or crop) Guso, Spa, Orny, Atca, mTca Climate

Parent Material Eolian over Alluvium

Physiography Upland

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 1% | Moisture 25

Aspect W | Root distrib. 30

Erosion Low

Permeability

Additional notes:

samples (depth inches) See pit #492 for soil ability #484

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (61+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-4			LS	wgr	sh			es			
Bw	4-10			LS	wgr/m		Fr		es			
Bt	10-19			LS/SL	wsBK		Fi		es			
C/2C	19-30			LS	m		Fr		es/sle			
2CK	30-61			CS	m	sh			es/sle			

Soil Description

Soil Type Rock Outcrop File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 567

Classification CA

Location

N. veg. (or crop) Climate

Parent Material Residuum

Physiography Midslope - Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (0)

Bedrock (0)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Rock Outcrop												

Soil Description

Soil Type Monterco - 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 568

Classification Fine-Loamy Typic Haplargid CA

Location

N. veg. (or crop) Climate

Parent Material Colluvium

Physiography Midslope of Large Outcrop

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 7% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 60% cf on surface

inches

Pit Depth (46)

Bedrock (46)

Topsoil (32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			LS	wgr	sh			sle			
C	4-15			LS	m		fr		sle			
2B+K	15-32			scl	SABK	h			es/sle		15% K	
3C	32-46			C	m	vh			eo		unsuitable clays	
3R	46-+	shale										

4111 - suitable soils

Soil Description

Soil Type Patel

File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 569

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atpo Climate

Parent Material Residuum

Physiography Uplands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect E Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 90% cf on surface

inches

Pit Depth (30)

Bedrock (15)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
Btn	0-6			cl	mcl	h				cs		
Cy	6-15			c	m	vh				sle		
Cr	15-30	Shale										
R	30+	Shale										

Soil Description

Soil Type Bocoli

File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 570

Classification Typic Torripsamment CA

Location

N. veg. (or crop) MTea, Gusa, Spai, Hija, Orhy Climate

Parent Material Eolian

Physiography Upland Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (60)

Bedrock (41)

Topsoil (20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~pH~~ Reaction	Boundary		
A	0-4			LS	wgr	sh			eo			
Bw	4-15			LS	wgr		fr		sle			
Bt	15 20			SL s	msBK		fi		sle		argillic	
2CK	2041			C	m	h			ev		unsuitable	
2Cr	41-60											

Soil Description

Soil Type Patel 1 File No.

Area No-Name ~~Permit Area~~ NE Date 4/22/98 Stop No. 571

Classification Fine Lithic Natrargid CA

Location

N. veg. (or crop) Atpo Climate

Parent Material Residuum

Physiography Uplands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 85% cf on surface # 572 - Badlands Area
Rock outcrop
No TS

inches
Pit Depth (35)
Bedrock (10)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Cff~~ Reaction	Boundary		
BtKn	0-5			cl	mcl	vh			es			
BtKyn	5-10			cl	wcl	h			sle			
Zcr	10-35	shale										

Soil Description

Soil Type Shiprock (1) File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. #573

Classification BM - FP

Location

N. veg. (or crop) ORHY Gusa Atca Lig Climate

Parent Material Alluvium

Physiography Upland Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4% N	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

No Samples

inches

Pit Depth ( )

Bedrock (65+)

Topsoil (65+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5			sl	wpl	so/sh			sk			
Bw	5-12			sl	wpl/wSBK	sh			es			
Bt	12-23			sl	mSBK	h			es			
Bk	23-32	3-4%	K	sl	wSBK	sh/h			es			
Ck	32-65	Discontinuous layer	of g	sl	m	sh			sle/es			

Soil Description

Soil Type Shiprock — — — — File No.

Area No-Name Permit Area - North Fease Date 8/11/98 Stop No. 574

Classification Brusselite

Location

N. veg. (or crop) Galleta, Aster, Grass, Sand Climate

Parent Material Alluvium

Physiography mesa - Adjacent to small drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5% N	Moisture	
Aspect	Root distrib.	

Erosion moderate

Permeability

Additional notes:

samples (depth inches) eroded vertisol crack 573 with stronger Bk some C horizon

0-4	7.6	.52	21	1	11	sl	2.2
4-11	7.6	0.4	24	3	13	sl	2.7
11-30	8.1	1.14	47	13	27	scl	7.9
30-62	7.6	6.8	26	15	7	s	1.5

1M ice sat SAR clay %

inches

Pit Depth ( )

Bedrock (62+)

Topsoil (62+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4	10yr 5-8	10yr 5-4	sl	wpl	so						
Bt	4-11	10yr 5-8	10yr 4-6	sl	wsbk	sh						
Bk	11-30	10yr 7-4	10yr 6-4	cl	mabk	h						
C	30.62	10yr 5-8	10yr 5-8	ls 6	m	sh					Discontinuous layer of gravels	

Soil Description

Soil Type Shiprock Overblown (1) File No.

Area No-Name Permit Area Date 8/11/98 Stop No. 5715

Classification BM

Location

N. veg. (or crop) Mtn Shrub Aftcn Grass hi Sa Other Climate Semi arid

Parent Material Alluvium

Physiography Mesa

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3%	Moisture	
Aspect	NW	Root distrib.	
Erosion			

Permeability Area to the North is dissected by small drainage channels

Additional notes:

samples (depth inches) eroded @ 573 Bt horiz loca removed

	inches
Pit Depth	( )
Bedrock	(61+)
Topsoil	(41)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction (CaCO3)	Boundary		
A	0/4			sl	wgr	so			slc			
C	4/14			sl 15	m/wsbk	sh			slc			
B*b	14/26			sl 12	wabk	h			es		5% ck	
B*b	26/41			ls	wsbk	sh			slc/es			
2Ck	41/61			cgls	m	h			slc		70-75% g	unsuitable cf %

Soil Description

Soil Type Stumble File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. 4576

Classification Bk

Location

N. veg. (or crop) Gusa Sru Atco Climate

Parent Material Alluvium

Physiography edge of Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) eroded Ap/Ac - 40% covered gravelly surface

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (.15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3			scl	wgr	so/sh					10%g	
CK1	3-15			ls	m	h						
CK2	15-60			egls	m	sh					15%g	unsuit. CF %
						lp	some	os	.575			

Soil Description

Soil Type Persayo (1) File No.

Area No-Name Permit Area NF Date 8/12/98 Stop No. 577

Classification

Location

N. veg. (or crop) Greasewood/Atos Climate

Parent Material Alluvium

Physiography Terrace near escarpment

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (~~0~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/3			SCl	wsg/m	Sh			es			
R	3+	Cobl										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area NE Date 8/12/98 Stop No. 578

Classification Loamy Hilltop Terrace Hill

Location

N. veg. (or crop) Atlas Greasewood Climate

Parent Material Alluvium

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect W	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 50-60% rounded gravels on surface

No Available Topsoil Sodium affected and Clayey

inches

Pit Depth ( )

Bedrock (15)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Ck	0/15			Cl	M	h						
R	15+	limey shale										

Soil Description

Soil Type Stumble (1) File No.

Area No-Name Permit Area -NE Date 8/12/98 Stop No. 579

Classification BM

Location

N. veg. (or crop) China / Alk / [illegible] / Athan / Spec Climate

Parent Material eolian derived from [illegible]

Physiography Flood Plain / Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1% NW	Moisture	
Aspect	Root distrib.	

Erosion [illegible]

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	K%
4-51 S	7.8	1.1	7	6	1.2
51-63 S	7.6	1.7	6	4	1.4

inches

Pit Depth ( )

Bedrock (63+)

Topsoil (63)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-4	2.5Y 6-4	2.5Y 5-4	lvfs	wgr	h/sh					eo	
C1	4-51	2.5Y 6-4	2.5Y 5-3	lfs		s					eo	
C2	51-63	2.5Y 6-3	2.5Y 4-4	gcoss		sh					eo	15%g

Soil Description

Soil Type Razo | File No.

Area No-Name Permit Area | Date 8/12/98 | Stop No. 580

Classification typic psammment | bm

Location

N. veg. (or crop) Grassland/grass/ Juniper/Aspen | Climate

Parent Material Eolian : Alluvium

Physiography Floodplain - Shrub covered dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Sec 579 Poor Suitability

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			vfls	wg	so						
C	4/60			vfls	m	so						

Soil Description

Soil Type Huerfano

File No.

Area No-Name Permit Area NE Date 5/12/98 Stop No. 581

Classification Fine loamy, Ustic Natrargid

Location

N. veg. (or crop) Atob/Grassland / Soil Climate

Parent Material Alluvium over residium

Physiography Terrace Between wash & mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-2% Moisture

Aspect NW Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (32)

Bedrock (13)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5			SCl	MCl	vh			Slc			
2Cky	5/13			Cl	M/Lgsbk	h			cs			
2C1	13/32		Mvc	stone								

Soil Description

Soil Type Beebe | File No.

Area No-Name Permit Area | Date 8/11/98 | Stop No. 582

Classification Coarse loamy, Typic Torrifluvent | Rain

Location

N. veg. (or crop) | Climate

Parent Material Paleo terrace / loess / sand | Alluvium

Physiography Mesa / Terrace

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope | Moisture

Aspect | Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 80% rounded gravels on surface. Site is located on terrace remnant, dissected by small drainages to the North and South

pit ec SAR Cly

0-40 7.7 8.4 27 10 4

40-68 8.0 7.1 32 11 4

inches

Pit Depth ( )

Bedrock ( )

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			gls	wpl/wgr	sh			vs/e		10-15%g	
C1	4-40			srcos	m	h			eo		15-20%g	
C2	40-68			s/ls	m	h			eg/s/e		other layer of coursed-fine mater	

Soil Description

Soil Type Shiprock I File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. 583

Classification 13m

Location

N. veg. (or crop) Wildspecies/clay/Sage/Aster/Grass Climate

Parent Material Eolian / Alluvium

Physiography Mesa / Paleo terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1% br Moisture

Aspect W Root distrib.

Erosion Slight

Permeability

Additional notes:

samples (depth inches)

Same as 573

		pH	EC	SAR	Cly	text	K%
0-11	S	7.6	.46	9	7	15	1.6
11-22	S	7.8	.50	5	11	15	3
22-50	S	8.2	1.0	16	9	15	3.8
50-61	u	8.0	3.6	30	5	5	2.3

inches

Pit Depth ( )

Bedrock (Sst)

Topsoil (50)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~Reaction~~	Boundary		
A	0-5	10yr 5-8		sl	wgr	sh			sl e			
Bw	5-11	10yr 5-6	10yr 4-4	s l 10%	wsBK	sh			es			
Bt	11-22	7.5yr 5-6	10yr 5-4	s l 18%	ABK	h			es			
BCk	22-34	10yr 5-8	10yr 5-4	s l 10%	wsBK/m	h			ev/es		5% K	
Ck1	34-50	2.5y 5-6	10yr 4-6	ls	m	sh/h			es/ev		5% g	
2Ck	50-61	10yr 5-4	10yr 3-6	grcos	m	h			e0		5-20% g	

Soil Description

Soil Type Shiprock

File No.

Area No-Name Permit Area - NE Date 9/11/98 Stop No. # 584

Classification

Location

N. veg. (or crop) Sage / Grass / Atcon / prickly pear Climate

Parent Material colluvium

Physiography Mesa / head of small drainage / Paleo terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) See 583 bag soil

	inches
Pit Depth	(62)
Bedrock	(62+)
Topsoil	(41)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	~~eff~~ Reaction	Boundary		
A	0-5			sl	wpl/wgr	sh			sle			
Bw	5-15			sl	wSBK	sh			sle			
Bt	15-26			scl	mSBK	vh			es/ev			
CK	26-41			ls	m	h			es			
2CK	41-62			gr ls	m	sh			sle		30-35% g	

Soil Description

Soil Type _____ File No. _____

Area No-Name Permit Area - NF Date 8/11/98 Stop No. 585

Classification _____ BM

Location _____

N. veg. (or crop) Atcon Grass Spec Oaks Climate _____

Parent Material Alluvium

Physiography Mesa edge - Finger between small drainage cuts

Relief _____ Drainage _____ Salt or Alkali _____

Elevation _____ Gr. Water _____ Stoniness _____

Slope 3% Moisture _____

Aspect SW Root distrib. _____

Erosion Moderate

Permeability _____

Additional notes: 50% rounded gravels on surface

samples (depth inches) Donicol Area located 100' South CG 5.1.

No Avabil. Topsoil CF%

inches

Pit Depth ( )

Bedrock (66')

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-2			scl	wgr/m	so					10%g	
C1	2-28			vgrs	m	vh					35%g	
C2	28-66			vgrs	m	sh					35-40%g	

Soil Description

Soil Type Frostland File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. #586

Classification Run

Location

N. veg. (or crop) Spec / Gusa / Atcon Climate

Parent Material Alluvium

Physiography peripheral of area on Binger / Nash terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 10% Moisture

Aspect S Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 50% rounded gravels on surface

		pH	ec	SAR	Cly	
0-19	S	7.8	1.2	14	13	SI
19-42	S	8	10	29	7	LS
42-63	S	8.1	8	31	6	S

inches

Pit Depth ( )

Bedrock ( )

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	ec Reaction	Boundary		
A	0-2	10yr 6-4	10yr 4-4	gls	wgr	so			slc		15%g	
C1	2-19	2.5y 6-4	2.5y 5-4	gscl	m	sh			slc		30%g	
C2	19-42	2.5y 6-4	10yr 4-4	vfls	m	h			vslc			
C3	42-50	10yr 3-3	10yr 2-2	s	m	sh			eo			
C4	50-63	2.5y 6-4	10yr 5-4		m	h			eo/vslc			

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 8/12/98 Stop No. 587

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Not accessible by backhoe

inches

Pit Depth ( )

Bedrock ( )

Topsoil (Ø)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Bebee variant — File No.

Area No-Name Permit Area NF — Date 8/12/98 — Stop No. 588

Classification — Bf

Location

N. veg. (or crop) Grasswood/Aspen/Hairgrass/Sedge — Climate

Parent Material

Physiography Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes: 589 - located in Arc site

samples (depth inches) No pit dug - Rozito

inches

Pit Depth ( )

Bedrock (Silt)

Topsoil (Silt)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-7			sl	wgr	sh					vsle	
C_1	7-27			sl	m	sh					vsle	
C_2	27-61			1S/S	m	h					sle	

Soil Description

Soil Type Pinaleño

File No.

Area No-Name Permit Area NE Date 8/12/98 Stop No. 591

Classification 13m

Location

N. veg. (or crop) Climate

Parent Material

Physiography Terrace / Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock ( )

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Persayo

File No.

Area No-Name Permit Area - NE Date 8/12/98 Stop No. 592

Classification RM

Location

N. veg. (or crop) Ja / Atan / Gusa / Atos Climate

Parent Material Residuum

Physiography Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 70% Channers on Surface

inches

Pit Depth ( )

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			SCl	wgr				es			
Cr	4+	Sandstone										

Soil Description

Soil Type Razor CVW Gravelly File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. 4593

Classification GM

Location

N. veg. (or crop) Sage, Squaw Wtr Aspen Scrub Climate

Parent Material Colluv over Alluvium

Physiography Mesa

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect W Root distrib.

Erosion moderate

Permeability

Additional notes: Collen Sand Cap

samples (depth inches)

	Pit	cc	SAN	Cly		K%
30-47 U	8.2	11.3	45	23	scl	8.4
47-64 U	8.7	7.4	SC	7	15	4.4

inches

Pit Depth ( )

Bedrock (64+)

Topsoil (30)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-7	10yr 6-4	10yr 3-4	ls	wgr	so			vsle			
C	7-23	10yr 5-8	10yr 4-4	ls	m	so			sle			
CB	23-30	10yr 5-8	10yr 3-6	ls	wabk	vh			esle			
2B+K	30-47	7.5yr 4-6	7.5yr 4-4	scl 35%	stpr	vh			es ev			
2C	47-64	10yr 5-8	10yr 5-4	lcos	m	sh			es	10% g		

Soil Description

Soil Type Bracklin - Sandy loam File No.

Area No-Name Permit Area - NE Date 8/11/98 Stop No. H 594

Classification

Location

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Meso - Low Stage of Drainage Bank

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion moderate

Permeability

Additional notes: 25% formed gravels on soil surface

samples (depth inches) eroded section of S93

	EC	SAR			
0-10	2.8	18	SL	4	

Cg from S86

inches

Pit Depth ( )

Bedrock (68+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
BtK(n)	0/10			SL	M Abk	sh			ev			
BCk	10/19			gls	wsbk/m	h			ev		30% gs	
Ck1	19/47			ls	M	sh			eo		[illegible]	see previous sampling
Ck2	47/68			gls	M	sh			es		10-15%	

Soil Description

Soil Type Fruitland File No. 595

Area No-Name Permit Area - NE Date 8/12/98 Stop No. BM

Classification

Location

N. veg. (or crop) Wisa / Gusa / Oliy / Atco Climate

Parent Material colluvium

Physiography edge of Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

		pH	ec	SAR	Cly	K%	Sd
10-35	S	7.9	2.0	18	10	5.4	23
35-61	u	9.2	2.4	98	4	2.6	25

inches

Pit Depth ( )

Bedrock (61+)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wgr	so					es	
BCk	3-10			sl	wSBK	sh					ev	5%G
Ck	10-35			grls	m	sh/h					ev/es	10-15%G 4-5%K
C	35-61			grs	m	sh					eo	20-25%G

Soil Description

Soil Type 1 Berge 2 File No.

Area No-Name Permit Area - NF Date 8/12/98 Stop No. 596

Classification Course loamy textural BM

Location

N. veg. (or crop) Atdo / Cpai Climate Semi-arid

Parent Material /

Physiography River / uplands terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect South	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: 70% gravels on surface

samples (depth inches)

See Cinclzons from 5780's

inches

Pit Depth ( )

Bedrock (68+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	eff Reaction	Boundary		
A	0-3			scl	wpl/wgr	sh			es			
C_1	3-10			lcos	m	h/sh			sle			
C_2	10-22			cossl	m	h			sle			
C_3	22-68			grs	m				eo/vsle		10-15%g	

Soil Description

Soil Type Huerhuero | File No.

Area No-Name Permit Area -NE | Date 7/12/98 | Stop No. 597

Classification Loamy, Lithic Haploxeroll | ISM

Location

N. veg. (or crop) Annual | Climate

Parent Material Residuum

Physiography Hillside - Toe of Knoll

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 3% | Moisture

Aspect E | Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 80% Channers on Surface

Sodium Wyoming

inches

Pit Depth ( )

Bedrock ( )

Topsoil ( )

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
E		0-2		ls		sh					vsle	
Btn		2-12		scl 20%		vh					sle	
Ck 5%		12-16		vchsl		h					sle	25-30ch
R		Calcareous		Sand	Stone							

Soil Description

Soil Type Monserco (1) File No.

Area No-Name Permit Area NK Date 8/12/98 Stop No. 598

Classification Loamy mixed mesic Shallow Haplocryoll

Location

N. veg. (or crop) Atfol Atcon Sneo Climate

Parent Material

Physiography Upland Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5-6% Moisture

Aspect S Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 60% rounded gravels on soil surface

	pHcc	SAR	Cly	K/o
3-8	S	8.1	7	8	5.8
8-20	S	X	16	6	18	5.6

inches

Pit Depth ( )

Bedrock (20)

Topsoil (20)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	CCG Reaction	Boundary		
A	0/3	10yr 6-6	10yr 4-4	SL	Gr	SO/10			SL			
Btk	3/8	10yr 4-3	10yr 4-4	SCL	WSBK				CS	5%g		
Ck	8/20	10yr 5-8	10yr 4-6	gracs	M				Strg	25%g		
2R	20+	Calcareous Sandstone										

Soil Description

Soil Type Rositа

File No.

Area No-Name Permit Area NE Date 8/12/98 Stop No. 599

Classification Typic torripsamment

Location

N. veg. (or crop) Greasewood / Atob / Spai / Gras / Artca Climate

Parent Material = Eolian

Physiography Floodplain dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2% SE	Moisture	
Aspect SE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (72)

Bedrock (72+)

Topsoil (72+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-9	2.5Y 6-4	10yr 5-4	lfs	wgr	so					eo	
C	9-56	2.5Y 5-6	10yr 4-6	lfs	m	so					eo	
2C	56-72	2.5Y 6-6	10yr 5-3	l	m	sh					sle	

Soil Description

Soil Type Rezito (1) File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G15 BM

Classification pasture

Location

N. veg. (or crop) Clover, Grassland, Orchy, Spag, Mtca, Lupin Climate

Parent Material eolian

Physiography Floor Plain / Terrace Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect	Root distrib.	
Erosion Slight		
Permeability	Shrub coppice dune crest	

Additional notes: Similar to 599

samples (depth inches)

inches

Pit Depth ( )

Bedrock (Gl+)

Topsoil (0l+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-8			lfs	wgr	sh					eo	
C1	8-24			lfs	m	so					eo	
C2	24-61			lfs	m	so					eo	

Soil Description

Soil Type Boebe (1) File No.

Area No-Name Permit Area -NF Date 8/17/98 Stop No. C16

Classification Sandy typic torrifluvent

Location

N. veg. (or crop) Chrs, Atcon, Gusc Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

		pH	ec	SAR	Cly	tex	lc
0-14	S	7.5	1.4	1.8	13	LS	2
14-35	S	7.8	13	7	10	LS	1.3
35-60	S	7.8	10.7	12	11	LS	1.5

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	effC	
A	0-3	2.5Y 6-4	2.5Y 4-4	scl	wpl	sh					slc	
C_1	3-14	2.5Y 6-4	2.5Y 5-3	ls	m	sh					eo	
C_2	14-35	2.5Y 6-4	2.5Y 5-4	s	m	sh					eo	
C_3	35-39	2.5Y 5-4	2.5 5-3	lvfs	m	sh					eo	
C_4	39-60	2.5Y 6-4	2.5 5-4	s	m		fr				eo	

Soil Description

Soil Type Jacty — File No.

Area No-Name Permit Area - NE — Date 8/17/98 — Stop No. G17

Classification Fine loamy, typic fragiaquult — Ryan Muskeglik

Location

N. veg. (or crop) Atdo, Atco, Atca, Spai, Grass-sedge — Climate

Parent Material Alluvium

Physiography Flood Plain / Dune

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect NW — Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

G18 - Same as G17 Same Landform

	pH	ec	SAR	Ca	K	
0-5	4	8	6	33	18	1.8
5-36	4	7.8	14.5	42	16	1.5	13.9
36-62	4	8.2	14.3	76	28	2.5	3.7

inches

Pit Depth ( )

Bedrock ( )

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AB	0-5	2.5Y 6-4	2.5Y 4-4	sc1	wpl/ wsbk	h					vsle	
Cy1	5-24	2.5Y 5-6	2.5Y 4-4	sl	m	sh					vsle/eo	
Cy2	24-36	2.5Y 6-4	2.5Y 5-4	vfsl	m	sh					vsle/eo	
Cy3	36-62	2.5Y 5-6	2.5Y 5-3	cl	m	sf					sle	

Soil Description

Soil Type Joe'ity

File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G20

Classification B Muskegwhite

Location

N. veg. (or crop) Atob, Wi Ja, Spec Climate

Parent Material

Physiography Tx Outwash Terrace Flood Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) pH ec SAR clay #G19 Society

0-12 S 7.9 .8 5.9 19 SL

12-20 4 7.9 7.95 21 20 scl

20-37 4 7.0 5.24 21 18 SL

inches

Pit Depth (Go)

Bedrock (Got)

Topsoil (12)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			scl	wpl	sh					sle	
Bw	5-12			sl	wsbk	h					es	
C1	12-20			cl	m	h					sle	
C2	20-37			scl	m	h					sle	
C3	37-60	see	G17	ls	m	so					vsle	

Soil Description

Soil Type Mayburen — File No.

Area No-Name Permit Area - NE — Date 8/18/98 — Stop No. 622

Classification — Burn assessment

Location

N. veg. (or crop) Spec, grass, Atrex other, misc — Climate

Parent Material eolian

Physiography Uplands terrace, Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2	Moisture	
Aspect N	Root distrib.	
Erosion Slight		
Permeability		

Additional notes: HG21 - located in Arc site

samples (depth inches) Mayburen

SAN text k
38-60 cm 20 scl 12%

inches
Pit Depth (60)
Bedrock (60+)
Topsoil (38)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6			LS	Vgr	So			eo			
Bw	6/15			LS	WSbk/M	So			slc		Scattered hardness	
Bt1	15/25			SL BA	WSbk BA	h			Slc			
Bt2	25/38			SL pr	M Sbk	vh			Slc			
2Bck	38/60			scl	WSbk/M	h			ev		10% k Gypsum	

Soil Description

Soil Type May Queen File No.

Area No-Name Permit Area -NE Date 8/17/98 Stop No. HG23

Classification Bm

Location

N. veg. (or crop) Spcl, Atcon, Grass, Oak Climate

Parent Material colian

Physiography Uplands, Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0 Moisture

Aspect Root distrib.

Erosion Slight

Permeability

Additional notes: located in slight swale

samples (depth inches)

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	10yr 5-6	10yr 3.6	ls	wgr	so					slp	
BW	5-13	10yr 6-6	10yr 4-4	ls	wSBK	sh					es	
Bt	13-31	10yr 6-4	10yr 4-4	sl	wSBK	sh					es	
C	31-49	10yr 6-6		ls	m	sh					es	
2C	49-60	10yr 6-8	10yr 5-4	fsl	m	sh					es	

Soil Description

Soil Type Stumble (1) File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G24

Classification Typic torri: Pavement RM

Location

N. veg. (or crop) Bush, Atrex, Sarcobatus, Aster Climate

Parent Material Colian

Physiography Uplands terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect NW	Root distrib.	
Erosion Slight		
Permeability		

Additional notes:

samples (depth inches)

All suitable

inches

Pit Depth ( )

Bedrock (67+)

Topsoil (67+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-6			LS	wgr	so						
C	6-38			LS	m	sh/h						
2CK	38-67			LS	1 coss	sh/h						

Soil Description

Soil Type STUMBLE (1) File No.

Area No-Name Permit Area - NE Date 8/13/98 Stop No. 625

Classification Typic Torripsamment BM / DK

Location

N. veg. (or crop) Climate

Parent Material Colluvium over alluvium

Physiography Shoulder slope of terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 6% dk	Moisture	
Aspect W	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes: Gusa Atca Hija Spg; Eptr Atco

samples (depth inches) pH EC Sar Cly K

0-5 S 7.4 .4 1 7 15 1.6

5-28 S 7.5 .3 1 6 15 1.6

28-66 S 7.7 2.7 9 6 S 2.1

inches

Pit Depth (66)

Bedrock (66+)

Topsoil (66+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-5			LS	WGR	SH			SLE			
C1	5-17			LS	M	SOFT			ES			
C2	17-28			LS	M-WSBK	SH			ES			
2Ck	28-66			LS	M	SH			ES-BO		10% Gr	

Soil Description

Soil Type Benally - crowed

File No.

Area No-Name Permit Area - NE Date 8/13/98 Stop No. 626

Classification

Location Rim DR

N. veg. (or crop) Ato6 / Akon Spcr Climate

Parent Material Alluvium

Physiography Terrace / Alluvial

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 5 Moisture

Aspect W Root distrib.

Erosion Severe

Permeability

Additional notes: Alternating layers of Coarse & Fine Material

samples (depth inches) Sodium Affect -

No available Topsoil

inches

Pit Depth ( )

Bedrock (30)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AB_n	0-3			SL	WGr DCL	SH			ES			
C	3-10			GLS	M	H			ES		15% G	
C_{ky}	10-30			LS	M	H-VH			SLE-ES		10% G	
2Cr	30+										Siltstone Carb	Shale

Soil Description

Soil Type Shiprock Overblown — File No.

Area No-Name Permit Area NE — Date 8/13/91 — Stop No. 627

Classification — Cr DR

Location

N. veg. (or crop) Grassland/Artemisia — Climate

Parent Material Alluvium

Physiography Trough / Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect SW	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SP%	SAR	Clay	K%
0-14	S	7.6	.5	24	3	10	2.1
14-27	S	7.7	.7	23	7	14	2.7
27-66	S	7.8	.6	25	6	12	2.2

inches

Pit Depth ( )

Bedrock (66+)

Topsoil (66+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	2.5Y 6/4	10YR 4/3	SL	WGR	SH					s/e	
C	5-14	2.5Y 6/4	10YR 4/3	SL	M	SH					s/e	
Bt2	14-27	2.5Y 5/4	10YR 5/4	SL	MSBK	H					es	
C'	27-66	10YR 5/6	10YR 5/3	SL	M	SH					s/e	

Soil Description

Soil Type Shirrock - Wet y Variant File No.

Area No-Name Permit Area - NE Date 5/17/98 Stop No. 628

Classification Coarse loamy typic Natrixeroll Bu.

Location

N. veg. (or crop) Atob, Sarc. Climate

Parent Material Alluvium

Physiography Trough Between Small Ridges

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4% Moisture

Aspect S Root distrib.

Erosion Severe

Permeability

Additional notes: Toe of Terrace adjacent to Alluvial plain

samples (depth inches) No Available Topsoil North of Site

40% Channers on Surface

		pH	EC	SAR	Cly	%	K
5-21	U	8.2	2.5	23	17	SI	3.5
21-39	U	8.0	7.8	23	16	SI	3.5

inches

Pit Depth ( )

Bedrock (39)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AB	0-5	2.5Y 6-4	2.5Y 5-4	sl	wpl	h					es	
Bt(n)	5-21	2.5Y 5-6	2.5Y 5-3	sl	MABK	vh					sle	
C	21-39	2.5Y 5-4	2.5Y 5-3	scl	m	h					sle/es	50%
2Cr	39-50	Carbonaceous Shale										

Soil Description

Soil Type Pel Seyo (1)

File No.

Area No-Name Permit Area - NF Date 8/17/98 Stop No. G30

Classification

Location

N. veg. (or crop) Atob Spp: Climate

Parent Material Residuum

Physiography Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect NW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 90% Charmers on surface

Site G29 - located in Archaeological Buffer Zone - Pel Seyo / Tesya

inches

Pit Depth ( )

Bedrock (3)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/3			Cl	M				es			
Cr	3+	Silt Stone										

Soil Description

Soil Type Monsuco - Overwashed File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. S31

Classification BM

Location

N. veg. (or crop) Climate

Parent Material eolian and alluvium

Physiography Trough / lowlands

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect SW Root distrib.

Erosion moderate

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth ( )

Bedrock (24)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3			ls	wgr	sh					sle	
C	3-8			sl	m	h					sle	
2Bt	8-24			sl	msbk	vh					sle/es	
3Cr	24-+	cadaverous shale										

Soil Description

Soil Type - RG2 to Moderately Rap

File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G32

Classification Sandy Typic torri Blowout / ortent BM

Location

N. veg. (or crop) Atrip, grass, Spaz Climate

Parent Material Alluvium

Physiography Stream terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 3% Moisture

Aspect S Root distrib.

Erosion Severe

Permeability

Additional notes: Similar to 598

samples (depth inches) 70% Gravels or Soil

Adjacent to Similar Entrance to the East and through to the South

	SAR	Test	K
0-32	18	15	3.5

inches

Pit Depth ( )

Bedrock (32)

Topsoil (32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3	10yr 6-8	10yr 4-4	SL	wpl	sh					es	
C	3-32	2.5y 5-6	10yr 5-4	COSS	m	h					eo	5%g
2 Cr	32-42	Calcareous Sandstone										

Soil Description

Soil Type Fruitland

File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. 633

Classification RM

Location

N. veg. (or crop) Sage, Atcon, Gusa Climate

Parent Material

Physiography Uplands terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Arr edge of Terrace / head slope
40-50% rounded gravels on surface

Same as 635

inches

Pit Depth (60)

Bedrock ( )

Topsoil (6 ot.)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3			ls	Lgr							
C	3/60			ls	M						5-10% g	

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area - NE Date 5/17/93 Stop No. # 634

Classification Typic Cobeid

Location

N. veg. (or crop) Misc Shrubs, Grass Climate

Parent Material Eolian over Alluvium

Physiography Uplands Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Ø Moisture

Aspect S Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches) located near edge of uplands terrace

	SAN	Cl	Ic%
8-19	4.3	18	51 10

Color?

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-2	10yr 5-6	10yr 3-6	SL	wpl	so					es	
Bw	2-8	10yr 5-8	10yr 4-4	fS	WSBK 1/m	sh					es	
2BK	8-19	10yr 7-4	10yr 5-4	SL	m	h					ev	8-10% K
2C	19-60	10yr 6-6	10yr 4-4	coss	m	h					sle/ec	5%g

Soil Description

Soil Type Fruitland

File No.

Area No-Name Permit Area - NE

Date 8/17/98 Stop No. # 635 BM

Classification

Location

N. veg. (or crop) Juni, Sage, Atcon, Spcl

Climate

Parent Material Alluvium

Physiography Rolling Slope of Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 8%	Moisture	
Aspect S	Root distrib.	
Erosion Severe		
Permeability		

Additional notes: 30% rounded gravels on Surface

samples (depth inches)

Similar to # 636

See 636 for Soil

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			L	wgr	SO						
C_1	4/24			SiL	M	Sh					15% gravels	
C_2	24/60			SiCL	M	Sh						

Soil Description

Soil Type (Fruitland | File No.

Area No-Name Permit Area - NE | Date 7/17/98 | Stop No. HG36

Classification Coarse loamy, typic haplocalcid, loamy-skeletal, carbonatic, frigid

Location

N. veg. (or crop) Atcan Sage, Grass, [illegible] | Climate

Parent Material

Physiography Rockslope Terrace

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 5% | Moisture

Aspect | Root distrib.

Erosion Moderate / Severe

Permeability

Additional notes: This material is Sand CLS substrate

samples (depth inches) Found on uplands, below eolian material

		pH	cc	SAR	Cl	text	k
0-15	S	7.6	.37	1.8	12	SL	3
15-23	S	7.9	.92	11	14	SL	4.6
23-63	S	8.3	.64	9.8	9	LS	2.1

inches

Pit Depth ( )

Bedrock (63+)

Topsoil (63+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-3	10YR 6-4	10YR 5-4	SL	WPL/WGR	SO					ES	
C	3-15	10YR 6-6	10YR 4-4	LS	M	SO					SLE	
CK	15-23	10YR 6-8	10YR 5-8	SL	M	H					EV	
C'	23-63	2.5Y 5-4	2.5Y 5-3	LCOS	M	SO	5-10% S				CC	

Soil Description

Soil Type Maywood A File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G37

Classification BM-sola. Le

Location

N. veg. (or crop) Sacr, Grass, mtn mahg Climate

Parent Material eolian

Physiography Terrace Dune

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1%	Moisture	
Aspect	N	Root distrib.	
Erosion	Slight		

Permeability

Additional notes:

samples (depth inches)

	P&S	Cly	S/R	lc
14-28		14%	.43	2.8

All suitable

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (60)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6	10yr 5-6	10yr 4-4	ls	wgr	so					ec	
Bw	6-14	10yr 5-6	10yr 4-4	ls/sl	wSBK	sh					s/e	
Bt	14-28	10yr 5-4	10yr 4-4	sl	mSBK	h					es	
C	28-47	10yr 5-8	10yr 5-4	ls	m	sh					s/e	
2CK	47-60	2.5y 5-6	2.5y 5-4	ls	m	sh					s/e	

Soil Description

Soil Type Stumpble | File No.

Area No-Name Permit Area - NE | Date 8/17/98 | Stop No. G38

Classification | BMSSA.NP

Location

N. veg. (or crop) Spur, Gusa, Atca, Artca | Climate

Parent Material Colluvium

Physiography Swale

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) * See G35 for [illegible]

inches

Pit Depth ( )

Bedrock (GSt)

Topsoil (GSt)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6			ls	wgr	so					s/e	
C	6-42			ls	m	sh					s/e/eo	
2C	42-58			ls	m	sh					s/e	
2Ck	58-65			grsl	m	sh/h					s/e	15% g

Soil Description

Soil Type Mayqueen

File No.

Area No-Name Permit Area - NE Date 8/14/98 Stop No. 639

Classification Fine loamy, Typic Haplocryoll

Location

N. veg. (or crop) Spri, Pico, Pusa, Climate

Parent Material Colluvium

Physiography Uplands - Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect W	Root distrib.	
Erosion Moderate / severe		
Permeability		

Additional notes:

samples (depth inches) collected to delineated area approx 200' West

	pH	EC	SAR	Cl,	K%
0-11	5	7.5	.3	1	10	1.1
11-35	5	8.2	.8	7	15	7.8
35-60+	7.9	5.6	27	11	2.4

inches

Pit Depth ( )

Bedrock (60+)

Topsoil (35)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5	10yr 6-4	10yr 3-6	LS	wgr	LO					sle	
Bw	5-11	10yr 5-8	10yr 4-6	SL	wSBK	SH					sle	
Btb	11-35	10yr 6-8	10yr 4-4	SCL	STABK	VH					sle	
2Ck	35-60	10yr 6-8	10yr 5-8	lcos:	M	h					vsle	5-10% G

Soil Description

Soil Type Benally? File No.

Area No-Name Permit Area - NE Date 8/17/98 Stop No. G41

Classification BM

Location

N. veg. (or crop) Mtn Brush Climate

Parent Material Alluvium

Physiography Uplands / terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) Site located between ancillary road and drainage

		pH	ec	SAR	Cly	text	k%
0-6	S	8.2	1	5	22	SCl	3.1
6-22	9	8	12	38	17	SCl	2.8
22-46	4	7.9	11	30	10	LS	1.7

inches

Pit Depth ( )

Bedrock (Got)

Topsoil (6)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-6			scl	mcl	vh					sle	
CKy	6-22			sl	m	h					sle	10%g
C	22-46			gls	m	vh					vsle/eo	25-30%g
2C	46-60	unsuitable		cl/c	m	vh					eo	

Soil Description

Soil Type Shiprock (1)

File No.

Area No-Name Permit Area -NE Date 8/17/98 Stop No. G42

Classification Rm

Location

N. veg. (or crop) Spar bursa G-Sa Climate

Parent Material

Physiography Toe of Dune / Swale

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 4% Moisture

Aspect SW Root distrib.

Erosion Moderate

Permeability

Additional notes: Adjacent to arroyo headcut by drainage

samples (depth inches)

#643 - Shiprock

All Suitable

inches

Pit Depth ( )

Bedrock (64+)

Topsoil (64+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-6			LS	wgr	Sh					vsl e	
Bw	6-17			SL 8%	wSBK	sh					e o	
2Bk	17-25			SL	mSBK	h					es	
2Btk	25-29			SL	wSBK	h					ev	
2Ck	29-64			loSS	m	sh/h					e o/vsl e	

Soil Description

Soil Type Grieta Deep — File No. DH #A

Area No-Name Permit Area — Date 2/16/98 — Stop No. 2.11 Hole - A

Classification Cobbly mixed mesic typic Torriorthent — Bk

Location — DH #1

N. veg. (or crop) Sparse Acacia — Climate

Parent Material Alluvium

Physiography alluvial

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 10%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

		pH	EC	SAR	Clay	text	K%
0-5	S	7.4	.44	1	10	LS	1
5-21	S	7.4	.38	3	14	SL	3
21-27	S	7.8	.62	9	24	scl	16
27-51	C	7.9	1.42	17	20	scl	18

inches

Pit Depth (52)

Bedrock (51)

Topsoil (27)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 5/3	LS	wgr		fr			cw		
Bt	5/16		10YR 5/4	SL	mod		sfr			cls/c		
Btk	16/21	7.5YR 7/4	10YR 5/4	scl	mod	h				cs		
2Btk	21/27	10YR 7/2	2.5Y 6/4	cl	msbk	h				cs/cv	10%	
2Ck	27/51	10YR 8/1	2.5Y 7/2	scl	m	vh				cv	0%	
2Cr	51+	Calcrete SS ... SLst										

Soil Description

Soil Type Patel - Clay loam — File No.

Area No-Name Permit Area — Date 3/24/98 — Stop No. DH-B

Classification Fine Mixed Mesic Udic Natrargid — BM/CN

Location

N. veg. (or crop) — Climate

Parent Material Res. duum

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 85% cf on surface

	pH	EC	SAR	Cl%	Text
0-10 H	7.9	36	25-39	Cl	H
10-21 H	7.9	9.9	24-48	C	H

	inches
Pit Depth	(45)
Bedrock	(21)'
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn1	0-5	10yr 6/2	10yr 5/4	cl	wcl		fi			es		
Btn2	5-10	10yr 4/2	10yr 4/3	cl/c	wsbk	h				es	Interfingering of sands along pr	
Bky	10-21	2.5Y 4/2	2.5Y 5/3	c	wsbk	h				es/sle	gyp xls	10%
Cr	21-45	Carbonaceous Shale										

Tsoyo

Soil Description

Soil Type [redacted] gravelly Sandy clay loam — File No.

Area No-Name Permit Area — Date 3/24/98 — Stop No. 12H-C

Classification Loamy, skeletal, mixed, mesic Lithic haploxerept — Lithic/CA

Location

N. veg. (or crop) Grass / Sagebrush / Ponderosa — Climate

Parent Material Residium / Alluvium

Physiography Uplands / Rock Stone

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect S	Root distrib.	
Erosion Moderate		
Permeability		

Additional notes:

samples (depth inches) 80% Sandstone & limestone channers on surface
Unsuitable CF%

	pH	EC	SAR	Cl	Text	K	
0-10"	7.4	1.4	2.0	19	SL	17%	S

inches
Pit Depth (17)
Bedrock (10)
Topsoil (0)

Horizon	Depth in	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3	10YR 7/3	10YR 4/4	GrSCl	Mas	SO/10				CU	20-35%	channers
Ck	3/10	10YR 5/6	2.5Y 6/4	VgSCl	M	SO				CU	50%	channers
Cr	10/17		Colluvium	Sandstone								
R	17+		Brown	Sandstone								

Soil Description

Soil Type Patel clay — File No.

Area No-Name Permit Area — Date 3/25/98 — Stop No. DH-D

Classification fine mixed Aquic Haplic Natragid — CA

Location

N. veg. (or crop) Atob, Atpo, Atca — Climate

Parent Material Residuum

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 50% CF on Surface

	pH	ES	Silt	CAR	C%	text	k%
0-4	7.6	7.9	63	19	45	C	5.4
4-9	7.9	10.8	91 ✓	31	53	C	4.7

inches

Pit Depth (35+)

Bedrock (9)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
Btn	0-4		10yr 4-2	C	wcl		vfi				eo	
Btyn	4-9		10yr 4-2	C	cl		vfi				eo	
Cr	9-35	light										
R	35+	Shale										

Soil Description

Soil Type Persayo — File No.

Area No-Name Permit Area — Date 3/25/98 — Stop No. DH-E

Classification Fine-Loamy Lithic Torriorthent

Location BM CA

N. veg. (or crop) Atob, Spai, Atpo — Climate

Parent Material Alluvium

Physiography Plain - Alluvial Flats

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	Sat	CaCO3	Text	K%
0-3	7.8	.7	39	2	cl	4.7 5
3-15	7.7	.76	39	4	sc	4.1 5

inches

Pit Depth (33)

Bedrock (15)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	CaCO3	
AC	0-3		10yr 3-2	cl	WPl		SFr				VSk	
C	3-15		10yr 3-3	cl	M		fr				Slc	
2Cr	15-33	Sandstone										
2R	33+	Sandstone										

Soil Description

Soil Type Patel - Deep File No.

Area No-Name Permit Area Date 3/24/98 Stop No. DH-H

Classification Fine mixed Mesic Typic Natrargid BM/CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material Alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Crystals on surface
45% cf on surface

	pH	EC	SAR	Clay	text	Salic
0-4	7.9	9.6	23	32	Cl	.07
4-16	8.2	20.6	61	48	C	.17
16-34	8.3	21.7	46	48	C	.15
34-49	7.1	22.4	51	20	Scl	.06

inches
Pit Depth ( )
Bedrock (49)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Effs Boundary		
AC	0-4	10yr 4/1	10yr 3/2	el	wp1/wsbk	sh				sle		
Btyn	4-16	10yr 3/2	10yr 3/2	cl	wsbk	h				eo	15-20% y	soft masses
By	16-34	10yr 4/2	10yr 3/2	c	wsbk	h				eo		
Cy	34-49	10yr 3/3	10yr 2/2	scl						eo		
2Cr	49-63	Coal										

Soil Description

Soil Type Tsaya File No.

Area No-Name Permit Area Date 3/24/98 Stop No. DH-I

Classification Loamy mixed Lithic Haplocryolls Rural CA

Location

N. veg. (or crop) Conif/Htcom Climate

Parent Material Residuum/colluvium

Physiography Uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 90% Sand Stone Channers on surface - Unsuitable because % concentration of rock exceeds OSM Suitability Standards - Material is likely a suitable source of Topsoil

	pH	EC	Sat	SAR	C%	Text	R%
0-7	8.1	1.8	31	14	28	CL	16

inches

Pit Depth (7)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/7	10YR 7/3	2.5Y 5/4	VGSCL	wcl/m	sh	fi			CW	35-40% Channers	55
R	7+	Sand Stone										

Soil Description

Soil Type Chipeta - Very Deep File No.

Area No-Name Permit Area Date 3/25/98 Stop No. DH-J

Classification Fine mixed mesic typic haplocalcid CA

Location

N. veg. (or crop) Atob, Atpo Climate

Parent Material alluvium

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	Clay	text	k%	Est G	Sol Sc
0-8	7.9	1.18	G	36	Cl	.30		0
8-26	7.5	8.06	11	43	Cl	.35		0
26-68	7.5	8.7	12	55✓	C	.40		01
68-80	4.7	10	9	20	L	5.0✓	.16✓	

inches

Pit Depth (80)

Bedrock (80)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AC	0-4		10yr 3-2	cl	wpl		sfi				eo	
C	4-8		10yr 3-2	cl	m		sfi				eo	
Bty	8-26		10 yr 3-2	cl/c	sBK						eo	
Cdy	26-68		10yr 3-2	C	m	vh					eo	
2C	68-80		10yr 2-1	cl	m	sh					eo	
2Cr	80-+	baked shale										

Soil Description

Soil Type Tesuque File No.

Area No-Name Permit Area Date 3/25/98 Stop No. DH-K

Classification loamy skeletal mixed calcic Ustic Torriorthent CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 85% cf on surface

pit FC SAR Clay text ks

0-7 7.6 690 2 18 SL 12

Material unsuitable because of Coarse Fragment Content according to OSM Standards

inches

Pit Depth (7)

Bedrock (7)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
C	0-7	10yr 6-4	10yr 5-6	scl	m	sh					eg	60%g
R	7-+	Sandstone										

Soil Description

Soil Type Razuto - Moderately Deep File No.

Area No-Name Permit Area Date 3/24/98 Stop No. DH - V

Classification Coarse-loamy mixed mesic typic Haplargid BM/CA

Location

N. veg. (or crop) Gusa, Hija, Spai, Orhy Climate

Parent Material Eolian \ Residuum

Physiography midslope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	Sil	Silt	Clay	text	ES
0-4	7.4	.45	25	00	10	ls	3 S
4-12	7.3	.4	27	00	11	ls	5 S
12-24	7.4	.4	24	1	13	sl	5 S
24-36	7.8	16	32	5	00	scl	1-2 S

inches

Pit Depth (48)

Bedrock (36)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	EFF Boundary		
A	0-21	10yr 6/4	10yr 4/4	ls	wpl/wgr	so				sle		
Bw	4-12		10yr 5/4	sl 10	wsbk		fr			es		
Ck	12-24	10yr 6/4	10yr 5/4	sl 10	wsbk/m	sh				es/ev		
2Ck	24-36	10yr 8/2	10yr 6/4	scl 25	m	sh/h				ev		x
2Crk	36-48	Calcareous Sandstone										
2R	48+	Calcareous Sandstone										

Soil Description

Soil Type Beebe Variant File No.

Area No-Name Permit Area Date 2/25/95 Stop No. #1

Classification Coarse Loamy Typic Torrifluvent CA

Location

N. veg. (or crop) Spai Hija, Greasewood Climate

Parent Material Alluvium

Physiography Stream Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion Light		
Permeability		

Additional notes: Possible drill site

samples (depth inches)	pH	ec	SAT%	SAR	S	C	K%	
S 0-4	7.4	.39	28	0	78	15	3.1	#2 Located near arch.
S 4-14	7.4	.4	26	2	74	18	4.4	site No pit dug.
S 14-22	7.5	.49	27	5	70	20	3.5	
U 22-64	7.9	1.83	32	22	83	8	1.4	

	inches
Pit Depth	(64)
Bedrock	(64+)
Topsoil	(22)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		10yr 5-4	ls	wgr		Fr					
Bw	4-14		2.5y 4/4	sl	sl. bk		SFi					
2C	14-22	2.5y 4-4	2.5y 6-3y	sl	sbk	sh	f					
2C	22-64	2.5y 4-3	2.5y 4-3	ls	m	sl						

Soil Description

Soil Type Moyaquean — File No.

Area No-Name Permit Area — Date 7/25/98 — Stop No. #3

Classification Coarse - Loamy Typic Haplargid — CA

Location

N. veg. (or crop) Spai, Atob, Greasewood — Climate

Parent Material Alluvium

Physiography Alluvial Flat - Base of Rock Outcrop

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1-2% — Moisture

Aspect N — Root distrib.

Erosion Moderate

Permeability

Additional notes: 25% ce

samples (depth inches)

	pH	ec	SAT%	SAR	S	C	K%	
0-4	7.5	.57	29	2	78	15	3.1	S
4-21	7.9	1.09	30	10	70	19	4.4	S
21-53	7.6	7.71	32	18	78	15	3.5	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (53)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4	.	10yr 3-6	ls	wgr		Fr					
Bt	4-21	10yr 5-3	10yr 3-4	sl	wsbk/msbk		vfr/vh					
C	21-53	10yr 4-4	10yr 3-6	gls	m	vh					Interbedded fine & Coarse material 25-30% g	
2Ck	53-60	10yr 4-2		cl	m	h						

Soil Description

Soil Type Tsaya File No.

Area No-Name Permit Area Date 2/25/98 Stop No. #4

Classification Mixed Mesic Typic Torrifluvent (Sodic, Saline)? Coarse-Loamy

Location

N. veg. (or crop) Atob, spa. hija Climate

Parent Material Alluvium

Physiography Toe of Bluffs

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-2% Moisture

Aspect N Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) Shallower version of #3

C horizon at #3 has SAR of 18

inches

Pit Depth (36)

Bedrock (26)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C1	0-7			SL	m		SFi					
C2	7-26			VGLS	m	1.0					50%g	
2R	26-36	Sandstone										

Soil Description

Soil Type Monterco — File No.

Area No-Name Permit Area — Date 2/25/98 — Stop No. #5

Classification Mixed Mesic Fine-Loamy Typic Torriorthent — CA

Location

N. veg. (or crop) Atob, Spai — Climate

Parent Material Residuum

Physiography Structural Bench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 95% of at surface

Inaccessible by backhoe

	inches
Pit Depth	(25)
Bedrock	(23)
Topsoil	(23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			Sl	wgr		Fr				material is likely suitable	
Bt	4-19			Sl	wsbk		SFi				Not argillic	
Ck	19-23			scl	msbk	Sh						
Cr	23-+	sandstone										

2

Soil Description

Soil Type Monjerco File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #6

Classification FINE LOAMY MIXED MESIC ULTIC HAPLARGID BM/JH

Location

N. veg. (or crop) Spar. atem. Climate

Parent Material Residuum

Physiography HILLTOP

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 0-1 Moisture

Aspect NE Root distrib.

Erosion

Permeability

Additional notes: 50% ROCK FRAGS ON SURFACE

samples (depth inches)

inches

Pit Depth (15)

Bedrock (15)

Topsoil (15)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-3	2.5Y 7/3	10YR 5/4	scl	wgr		Fr			vsle		
Bt	3-10	2.5Y 7/4	10YR 5/3	scl	wsbk		sfr			es		
Ck	10-15	2.5Y 7/4	2.5Y 6/4	scl/sc	m	sh				ev		
R	15+										CM CONTINUOUS S.S	

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #7

Classification FINE LOAMY TYPIC TORRIORTHENT (SODIUM AFFECTED) BM/SH

Location

N. veg. (or crop) hija, spai, Climate

Parent Material ALLUVIUM

Physiography CONCAVE AREA - LOW DENSITY OF PERENNIAL PLANTS NEAR ESCARPMENT

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-3%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(38)
Bedrock	(24)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ eff		
A	0-2	2.5Y 7/3	2.5Y 5/4	cl	M		sfi			es		
C_1	2-11	2.5Y 7/3	2.5Y 5/4	cl	M		sfi			s/e		
C_2	11-24	10YR 4/2	10YR 3/1	cl	M	sh				eo		
2Cr	24-38										BAKED SHALE HYDROPHOBIC	

Soil Description

Soil Type ~Patel Overblown File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #8

Classification Mixed Mesic Fine-Loamy Bm1 54

Location

N. veg. (or crop) Snai, atcon, hija Climate

Parent Material

Physiography MIDSLOPE

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-3% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) SAR text pH EC Clay

13-26 18.7 C 7.9 8.24 42

inches

Pit Depth (60)

Bedrock (44)

Topsoil (13)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~eff~~ Boundary		
A	0-4	10YR 6/6	10YR 5/4	sl	wgr		vfr			es	SUITABLE	
Bw	4-13	2.5Y 5/3	10YR 5/4	sl	m/wsbk		fr			es	SUITABLE	
2Bkb	13-26	10YR 7/2	2.5Y 6/2	cl/c	wsbk		h/vh			ev	20-25% K Calcic	14%
2C	26-44	2.5Y 6/2	2.5Y 6/2	cl/c	m		h			es		
3Cr	44-60										CARBONACEOUS SHALE	

SUIT.

Soil Description

Soil Type Persayo — File No.

Area No-Name Permit Area — Date 2/11/98 — Stop No. #9

Classification FINE LOAMY MIXED MESIC LITHIC TORRIORTHENT — BM/JH

Location

N. veg. (or crop) hija, spmi, afcon — Climate

Parent Material

Physiography UPLANDS

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 1% — Moisture

Aspect — Root distrib.

Erosion

Permeability

Additional notes: 70-80% CHANNELS ON SURFACE

samples (depth inches)

inches

Pit Depth (12)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-2	10 YR 7/3	10 YR 5/4	scl	wgr					cv		
R	2+										SANDSTONE	

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #10

Classification FINE LOAMY MIXED MESIC LITHIC TORRIORTHENT

Location

N. veg. (or crop) artem. spp. Climate

Parent Material

Physiography 100' WEST OF ROCK OUTCROP AT HEAD OF DRAINAGE

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-4 %	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes: 75-80% CHANNERS ON SURFACE

samples (depth inches)

inches

Pit Depth (5)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~ eff		
C	0-5	10YR 7/3	10YR 5/4	scl	wgr		Fr			es		
R	5+										SANDSTONE	

Soil Description

Soil Type Shiprock - Brown Moderately Deep File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #11

Classification COARSE LOAMY HAPLARGID BM/JH

Location

N. veg. (or crop) spsi, atcon, hija Climate

Parent Material

Physiography MID SLOPE

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2-5%	Moisture	
Aspect	N	Root distrib.	

Erosion

Permeability

Additional notes: Similar

samples (depth inches)

inches

Pit Depth (30)

Bedrock (28)

Topsoil (28)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3	Similar to #12 colors		ls	wgr		vfr			eo		
Bt	3-12			sl	wsbk		sfr			es		
2Bk	12-19			gscl		h				ev	30% gravel	
2Ck	19-28			gsl		h				ev	30% gravel	
3R	28+										calcareous sandstone	

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/11/98 Stop No. # 12

Classification Coarse loamy Calcid BM/1H

Location

N. veg. (or crop) atcon, spai, Climate

Parent Material

Physiography MIDSLOPE

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1-3%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes: SIMILAR TO #15

samples (depth inches)	SAR	Clay	Sand	K%	PH		EC
0-4	.4	12	76 sl	2.4	8.2	S	.34
4-16	1.7	13	79 sl	5.1	7.8	S	.67
16-27	4.8	14	76 sl	8.9	8.2	S Calcic	.67
27-40	21.1	14	81 sl	3.6	8.3	4	1.36

inches

Pit Depth (40)

Bedrock (40)

Topsoil (27)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4	10yr 5/3	10YR 6/3	sl	l gr		vfr		slc			
Bt	4-16	10yr 4/2	2.5Y 5/4	sl			sfi		es			
Bk1	16-27	2.5Y 7/3	2.5Y 6/4	sl		h			eb		Calcic	
Bk2	27-40	2.5Y 5/4	2.5Y 6/3	sl		sh/h			es			
2R	40+										Calcareous Sandstone	

Soil Description

Soil Type May Queen Moderately deep File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #13

Classification COARSE LOAMY MIXED MESIC TYPIC Haplargid — BM/JH

Location

N. veg. (or crop) SPAI, atcon, snakeweed Climate

Parent Material ALLUVIUM

Physiography ADJACENT TO BADLANDS NEAR SMALL KNOLL IN SLIGHT DEPRESSION

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (44)

Bedrock (29)

Topsoil (29)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-5		10YR 4/4	lfs	wgr		vfr			eo	SUITABLE	
BC	5-13		10YR 4/2	sl	m		fr			sle		
Btb	13-23	10YR 4/3	10YR 5/2	sl	msbk	vh				sle/es		
C	23-29	10YR 4/3	10YR 4/2	sl	m	vh/eh				es	SUITABLE	
2C/Cr	29-36				m					es		
3Cr	36-44											

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #14

Classification Fine-Loamy Mixed Mesic Haplargid BM/JM

Location

N. veg. (or crop) Nija, atrom, snakeweed Climate

Parent Material

Physiography CONVEX LANDSCAPE - MIDSLOPE

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-3% Moisture

Aspect N Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (55)

Bedrock (36)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
A	0-4		10YR 4/4	Lfs	wgr		vfr			eo		
Bt	4-14		10YR 6/4	sl	wsbk		sfi			es		
Btk	14-22	10YR 5/4	10YR 5/3	sl	wsbk	vh				es		
2Btk	22-36	10YR 8/4	10YR 7/3	cl	wsblk/m	h				ev	Gravels & cobbles common	
2Cr	36-55	Shale										

Soil Description

Soil Type Shiprock Variant - Deep File No.

Area No-Name Permit Area (Continuation) Date 2/11/98 Stop No. # 15

Classification Fine loamy mixed mesic Typic Haplocalcid BM/JM

Location

N. veg. (or crop) atcon, hija, Climate

Parent Material ALLUVIUM

Physiography SHOULDER SLOPE / CONVEX LANDSCAPE

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes: POSSIBLE TYPIFYING - MAY NEED TO SAMPLE UPPER HORIZONS

samples (depth inches) pH SAR Sand Clay K°s

19-30	7.6	2.8	26	18	14	SIL
30-46	8.0	6.2	71	17	11	SL

inches

Pit Depth (60)

Bedrock (46)

Topsoil (46)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
A	0-6		10YR 5/4	LFS	wgr		Fr			SIc		
Bt	6-16		10YR 5/4	SL	WSbk		Sf			es		
Btk	16-19		10YR 6/4	SL/SCL	WSbk		Sf			ev		
Bk1	19-30	10YR 6/6	2.5Y 6/3	SL	WSbk/m	h				ev		
Bk2	30-46	2.5Y 5/4	2.5Y 6/3	SL/SCL	m	h				ev		
2Cr	46-60											

Soil Description

Soil Type PerSayo File No. #16

Area No-Name Permit Area Date 2/11/98 Stop No.

Classification FINE LOAMY MIXED MESIC LITHIC TORRIORTHENT BM/JH

Location

N. veg. (or crop) hijs, spai, atcon Climate

Parent Material

Physiography SHOULDER SLOPE OF HILL

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-5%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes: 25% SANDSTONE CHANNERS

samples (depth inches)

inches

Pit Depth (3)

Bedrock (3)

Topsoil (0-3)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
AC	0-3		10 YR 5/2	scl	wgr		Fr			es		
R	3+										calcareous sandstone	

Soil Description

Soil Type Shirrock Variant - File No.

Area No-Name Permit Area Date 2/11/98 Stop No. M 17

Classification fine loamy mixed Aquic typic Haplargid

Location

N. veg. (or crop) [illegible] Climate Semi arid

Parent Material eolian

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-4%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	SAR	E.C.	Clay	Text	K%	
0-3	7.5	.50	74	14	SL	2.1	S
3-15	7.5	2.1	76	19	SL	2.1	S
15-38	7.7	5.9	81	12	SL	2.4	S
38-62	7.6	6.5	86	12	LS	1.8	S

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (62+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 4/3	SL	wgr		fr			CW		
C_1	3/11	10YR 4/4	"	scl	w sbk		fr			SW		
C_{1k}	11/18	"	"	fSL	w sbk	vh				SW		
BK	18/38	"	"	fSL	m	h				CW	27% CK	
C_2	38/43	"	"	LFS	m					VSW		
C_2	43/62	"	"	LFS	m					VSW		

Soil Description

Soil Type Monierco File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #18

Classification Loamy Shallow Haplocalcid BM/JH

Location

N. veg. (or crop) spai, hija, atcon Climate

Parent Material RESIDUUM

Physiography ALLUVIAL PLAIN ~~ERDD~~

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1-2 %	Moisture	
Aspect	SE	Root distrib.	
Erosion			
Permeability			

Additional notes: 20-30% COARSE FRAGS ON SURFACE - ERODED AREA

samples (depth inches)	pH	~~EC~~	SAR	SAT%	S	C	K %	
0-4	7.4	.5	1	24	51	28	9.3	S
4-9	7.8	.49	5	30	34	29	19	S
9-16	8.3	.93	11	43	19	27	9.6	S

inches

Pit Depth (24)

Bedrock (16)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
A	0-4	2.5Y 7/4	2.5Y 5/4	scl	wgr		Fr			es		
Btk	4-9	2.5Y 6/6	10Y 6/4	cl	wsbk	sh				ev	Calcic	
Bk/Ck	9-16	2.5Y 7/3	2.5Y 7/3	cl	wsbk	h				ev		
Cr	16-24										Calcareous S.S.	

Soil Description

Soil Type Shiprock Variant - ~ File No.

Area No-Name Permit Area Date 2/11/98 Stop No. #19

Classification Fine loamy, mixed, Mesic typic haplargid BM/JH

Location

N. veg. (or crop) hoja, atcon. Climate

Parent Material Alluvium

Physiography Alluvial Flat

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1%	Moisture	
Aspect	SE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	PH	EC	SAR	Sand (%)	Clay (%)	K%			
0-2	7.4	.36	1.5	61	22	2.4	scl		S
2-17	7.5	2.77	5.1	54	36	1.4	sc		S
17-29	7.3	2.1	8.3	69	24	3.4	scl		S
29-60	7.3	2.4	7.8	76	17	2.3	sl		S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-2	2.5Y 6/3	2.5Y 4/3	scl	wgr		Fr			s/sle		
Bt	2-17	2.5Y 6/3	2.5Y 5/3	cl	sabk	vh/eh	vf			sle		
Bca	17-29	2.5Y 5/3	2.5Y 4/2	scl	spr	eh				sle		
Ck	29-60	2.5Y 5/4	2.5Y 4/2	sl	m	vh				sle/es		

Soil Description

Soil Type Benally | File No.

Area No-Name Permit Area | Date 2/11/98 | Stop No. A20

Classification Fine-loamy, mixed Mesic typic Haplargid | 13th

Location

N. veg. (or crop) Hisa Sopa' Atcon | Climate

Parent Material Calcareous alluvium

Physiography Alluvial Plain

Relief | Drainage | Salt or Alkali

Elevation | Gr. Water | Stoniness

Slope 0-1% | Moisture

Aspect E | Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) # eroded area (Good) Many shale chips on surface

inches

Pit Depth (52)

Bedrock (52+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/5	10YR 4/2	10YR 3/1	SCl	M	h				CO		
Btn	5/12		10YR 4/1	SCl	mCl	vh				SIC		
Btkyn	12/27		10YR 4/2	SCl	m Sbk	eh				CS/SIC	8% K	
Bdky	27/38		10YR 3/2	scl/SC		eh				SIC		
Cdy	38/52		10YR 3/2	SC	M	eh				SIC		

Soil Description

Soil Type Monserco — File No.

Area No-Name Permit Area — Date 2/11/98 — Stop No. #21

Classification — CA/JH

Location

N. veg. (or crop) spgi, atcon. — Climate

Parent Material

Physiography ALLUVIAL PLAIN

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2 %	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

PH	EE	SAR	Ca	Mg	Na	K%	Gyp	SAT%	
9-19	7.3	3.0	2.0	8.3	9	6.7	14%	46	Gypsic ?

inches

Pit Depth (55)

Bedrock (43)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
A	0-3		2.5Y 6/3	scl	wgr		vfr			sle	Suitable	
Bk(n)	3-9		2.5Y 6/2	cl	wsbk		vfi			es		
2Bky	9-19	2.5Y 7/4	2.5Y 6/2	cl	msbk	h				es	gypsic	
3Cr	19-43	~~2.5Y~~ 7/3			m					es	shale	
4Cr	43-55									es	SILTSTONE	
R	551										SILTSTONE	

Soil Description

Soil Type Riverbend File No.

Area No-Name Permit Area Date 2/11/98 Stop No. A 22

Classification Fine loamy Aridic Lithic Haplargid BM

Location

N. veg. (or crop) Shai HiJu Atcan Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 80 % CF on surface Sandy eroded

inches

Pit Depth (44)

Bedrock (19)

Topsoil (3)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/9	10YR 6/3	10YR 4/3	SCl	m cl		Fr			CS		
2Bk	9/19	10 8/3	2.5Y 6/2	cl/c	w pr	h	l			CU	10-15% lk fcakes	
2C1	19/44	Cu	bonaceous	Shale							rock les	

Soil Description

Soil Type Baccobi Braun — File No.

Area No-Name Permit Area — Date 2/11/98 — Stop No. # 23

Classification FINE LOAMY MIXED MESIC TYPIC CALCIARGID — CA/JH

Location

N. veg. (or crop) spai, atcon. — Climate

Parent Material

Physiography PLAINAR

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	0-1 %	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (34)

Topsoil (23)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff Boundary		
AC	0-4		2.5Y 5/2	sl	wgr		sfi					
Bt1	4-10		2.5Y 4/2	scl	wgr		fi					
Bt2	10-17	2.5Y 5/4	10YR 4/2	scl								
Btk	17-23	2.5Y 6/3	10YR 5/2	scl		vh						
Bk	23-34	2.5Y 7/2	2.5Y 6/2	scl							Qualifiers 25% k	calcic
2R	34+										SANDSTONE	

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #24

Classification Fine-Loamy, Mixed Mesic Typic Natrargid CA

Location

N. veg. (or crop) Atpo, Hija, Sa, b Climate

Parent Material Carbonaceous Alluvium

Physiography Alluvial Flat

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1 %	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (58)

Bedrock (58)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Btn1	0-3		2.5Y 4/2	cl	wgr		fi				vs/e	
Btn2	3-16	2.5Y 3/2		cl	msbk	h					s/e	
BKyn	16-32	2.5Y 4/2		cl	msbk	h/vh					s/e	
Cy	32-58	2.5Y 4/2		cl/c	m	vh					s/e	
2Cr	58+	Lignite										

Soil Description

Soil Type Bacobi — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. 11 25

Classification Fine mixed Mesic typic Haplocalcid — T5N

Location

N. veg. (or crop) Sparse Grass — Climate

Parent Material Alluvium

Physiography Alluvial plain / [illegible]

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Area has small scattered dunes, veg. appears same than surrounding areas

	Pit	EC	SAR	Sand(%)	Clay(%)	pH
	3-21	7.6	7.4	8.2	34	(43) 5.2

inches

Pit Depth (48)

Bedrock (32)

Topsoil (21)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		10YR 5/2	cl	gr	h				s/c		
Bk	3/21		10YR 5/2	cl (c)	mpl / mod c	eh				vs/c		
2Cy	21/32	10yr 3/1		cl	m	vh				co	Cm. Mg & Ca Clays & Salts	
3Cr	32/48	Coal										

Soil Description

Soil Type Benally Clay loam — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. A26

Classification Fine-loamy mixed mesic typic Haplargid — 13m

Location

N. veg. (or crop) Atos — Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Highly eroded Area 80-85% Cl on surface

NO Samples

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (Ø)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn1	0/5		10yr 4/2	cl	mcl		fi			clg ws/c		
Btn2	5/13	10yr 6/3	10yr 4/2	cl/c	msbk	vh				ws/c		
Byn1	13/29			cl	wsbk	h/vh				ws/c		
Byn2	29/40			cl	wsbk/m	h/vh				ws/c		
Cdy1	40/60			cl/c	m	eh				ws/c		

Soil Description

Soil Type Patel — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. 27

Classification Fine Mixed Mesic Lithic Natrargid — CA

Location Badlands Area

N. veg. (or crop) Atpo — Climate

Parent Material Carbonaceous Residuum

Physiography Toe slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-30%	Moisture	
Aspect N	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

All unsuitable

Possible gypsic

inches

Pit Depth (22)

Bedrock (14)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
Byn1	0-3		2.5Y 4/2	cl	wgr		fr				eo	
Byn2	3-8	2.5Y 3/2	2.5Y 4/2	c	wgr/m	so					eo	
Cy	8-14	2.5Y 3/2	2.5Y 4/2	c	m	h					eo	
2Cr	14-22	Shale										
3R	22+	22+	Lignite/Carbonaceous Shale									

Soil Description

Soil Type Huerfano File No.

Area No-Name Permit Area Date 2/12/98 Stop No. # 28

Classification RI Lithic Ustorthent BM

Location

N. veg. (or crop) Atob Climate

Parent Material Alluvium

Physiography Alluvial fan / Sloping - head of slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) highly eroded area 90% CF on surface - Adjacent to incised creek to the north.

inches

Pit Depth (13)

Bedrock (13)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4		10YR 5/3	CL	wCl		fi					
Btkn	4/13		2.5Y 5/4	CL	fmSbk		Vfi					
2Cr	13+	Weathered Siltstone / Sandstone										

Soil Description

Soil Type Patel

File No.

Area No-Name Permit Area

Date 2/12/98

Stop No. #29

Classification Fine Mixed Mesic Natrargid

CA

Location

N. veg. (or crop) Atpo, Atcor

Climate

Parent Material Residuum

Physiography Mesa Top, Small Depression

Relief

Drainage

Salt or Alkali

Elevation

Gr. Water

Stoniness

Slope 0-1%

Moisture

Aspect E

Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

Gyp. Only 6-22

1% 4

inches

Pit Depth (43)

Bedrock (22)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-3		10yr 3/2	cl	pr		sfi				vsle	
Btyn	3-6		2.5y 4/2	cl/c	msbk		fi				vsle	
Cy	6-22	2.5y 4/2	2.5y 5/3	c	m	h					eo	Unsuitable 5-7% gy ristble
Cr	22-43	Carbonaceous shale										
2R	43+	Siltstone										
	16×											

Soil Description

Soil Type Patel — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. # 30

Classification Fine Silty Mixed — 13m

Location

N. veg. (or crop) Atoka and Atoka hybrid — Climate Semi arid

Parent Material Alluvium derived from Carbonaceous sources

Physiography Alluvial Plain Soil Inset to incised area located to the SW

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3-5%	Moisture	
Aspect SW	Root distrib.	
Erosion moderate		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (21)

Bedrock (21)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/5		2.5Y 5/4	C	vcl		Fi			Vslc		
Btyn	5/12	10YR 4/3	10YR 4/4	C		ch				vdc		
Cy	12/21	10YR 3/2		C		vh				Vslc		
Cr	21+	Carbonaceous Shale										

Soil Description

Soil Type Patel — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. #31

Classification Fine-Loamy Typic Natrargid — CA

Location

N. veg. (or crop) Atpo, Atcon Hybrid — Climate

Parent Material Residuum

Physiography Slope Hinge → into badlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(49)
Bedrock	(39)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btny	0-4		2.5yr 5/2	cl	pr		F;					
Byn	4-12	2.5y 5/3	2.5y 4/2	cl	wsbk	sh						
Cy	12-39	2.5y 3/3	2.5y 6/6	scl	m	sh so						
Cr	39-49	shale										
R	49+	shale										

Soil Description

Soil Type Miscellaneous Area - Badlands / Badlands File No.

Area No-Name Permit Area Date 2/12/98 Stop No. # 32 BM

Classification Not a soil

Location

N. veg. (or crop) - Area lacks vegetation Climate

Parent Material Residuum

Physiography Badlands / Badlands

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	2%	Moisture	
Aspect	SW	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

Area is highly eroded

inches

Pit Depth (3)

Bedrock (3)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/3		Black									
Cr	3+	Light Gray		Coal								

Soil Description

Soil Type Shiprock Variant

File No.

Area No-Name Permit Area Date 2/12/97 Stop No. # 33

Classification Coarse-Loamy Typic Haplargid RM

Location

N. veg. (or crop) Sparse Climate Semi arid

Parent Material Alluvium

Physiography Structural terrace

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3-5%	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	pH	es	SAR	S	C	K	
0-5	7.2	.47	1	71	18	5.4	S
5-14	7	2.05	1	71	20	8.7	S
14-37	7.3	4.86	8	79	16	3.1	S
37-60	7.4	8.23	13	71	18	5.2	S

	inches
Pit Depth	(60)
Bedrock	(60+)
Topsoil	(60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-5		10yr 3/2	sl	wgr		sfi				es	
2Btk	5-14		10yr 5/3	scl	wsbk		sfi				ev	
2Bk	14-37	10yr 5/8	10yr 5/4	fsl	m/wsbk	h					ev	
2Ck	37-60	10yr 5/6	10yr 5/4	scl	m	vh					es	

Soil Description

Soil Type Patel (Eroded) File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #35

Classification Fine-loamy, Sodic Haplo Gypsid BM-CA

Location

N. veg. (or crop) Atcon, Spai, Hija, Climate

Parent Material Carbonaceous Alluvium

Physiography Lowland area,

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) Eroded area 10-15% g on surface
Material is Na affected

8-32 see #36

inches
Pit Depth (52)
Bedrock (41)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
CA	0-4		10yr 4/1	scl	wgr/m		fr					
2Bkn	4-8		10yr 4/2	cl	m/wsbk		fi					
2Byn	8-32	10yr 3/1	10yr 5/1	cl	wsbk	vh					gypsic	10-15%
2Cy	32-41	10yr 5/2		cl/c	m							
2Cr	41-52	Siltstone										

Soil Description

Soil Type Patel (Eroded) File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #36

Classification Fine-loamy, Typic Sodic Haplogypsid BM-CA

Location

N. veg. (or crop) Spai, Ateon, Hija Climate

Parent Material Carbonaceous Alluvium

Physiography Low Drainage Areas

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2 %	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Material is Not Affected

Analyze for Gypsum only
14-28 Y% = 14

inches
Pit Depth (49)
Bedrock (49)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
CA	0-4		10yr 4/2	scl	m		fr				sle	
2BCn	4-14	10yr 4/3	10yr 3/1	cl	wsbk	vh/eh					vsle	
2Byn	14-28	10yr 3/1		cl/c	wsbk/m	vh					sle	gypsic 10-15%
2Cy	28-49			cl/c	m	eh					es	
Cr	49-56	Shale										

Soil Description

Soil Type Benally File No.

Area No-Name Permit Area Date 2/10/18 Stop No. # 37

Classification Fine-Loamy Typic Natrargid

Location

N. veg. (or crop) Atcan Sosa - Atpo Climate

Parent Material Alluvium - Carbonaceous

Physiography

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) dolitic caco3 - 50% cleared on surface

	pH	ec	SAR	S	C	K%			
0-9	8.1	1.84	17	56	32	5	scl	u	

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0/4		10yr 5/4	cl	mpr		fi			vslc		
Btkn	4/9	10yr 4/3	10yr 3/2	cl	sabk	h	fi			slc		
Bkyn	9/19	" 4/1		c/c	wsbk	vh				gc		
Byn	19/29	4/1		c/c	wsbk	vh				slc		
Bkyb	29/38	4/1		c/c	wsbk	eh				es		
Cy	38/51			c/c	m	eh				slc		
C	51/60			cl	m	eh				es		

Soil Description

Soil Type Fruitvale (Only haplargid with Y) File No.

Area No-Name Permit Area Date 7/10/98 Stop No. #38

Classification Fine loamy mixed mesic typic Haploxeroll MLRA

Location

N. veg. (or crop) Alfalfa Climate Semiarid

Parent Material Alluvium (carbonaceous)

Physiography Dissected area uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 40-50% Chunks on surface (see #41 Same soil haplargid)

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
CA	0/6		10yr 4/3	SL	wsr		fr			cls/c		Suitable
2Btn	6/24	10yr 3/2	10yr 4/3	CL	sabk	eh				vfs/c		
3Bk	24/40	10yr 3/1		CL	sabk	eh				sg/es		
4Cky	40/60	10yr 4/2		CL		vh/eh				es		

Soil Description

Soil Type Gricta - Moderately Deep File No.

Area No-Name Permit Area Date 2/10/98 Stop No. # 39

Classification Fine-Loamy, Typic Haplargid OM / CA

Location

N. veg. (or crop) Atco - Sp: Ir: Ja Climate

Parent Material Alluvium

Physiography Midslope of drainage terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-4	7.6	.53	2	79	13	1.9	S
4-10	7.5	.41	2	71	19	6.4	S

inches

Pit Depth (57)

Bedrock (35)

Topsoil (27)

Horizon (depth)	Depth (horizon)	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	cl/l	
0/4	A		10YR 5/3	SL	WAR		VFr		VSk		VSk	
4/10	Bt		10YR 5/4	SCL	WSBk		SFi				ES	
10/27	Bk	10YR 7/6	10YR 5/6	CL	M/WSBk	L/Lk					EV	See #42
27/35	2Bk	10YR 6/8	10YR 5/6	GCL	M	L/Lk			unsuitable Chrys + salts		ES	15% channers
35/46	3Cr	10YR 6/4	Shale						?			
46/57	3R	weathered	Shale	/ sandstone								

Soil Description

Soil Type Monicaco Overwashed File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #40

Classification Fine-Loamy Lithic Haplargid BM/CA

Location

N. veg. (or crop) Hija, Spai, Atkon Climate

Parent Material Alluvium

Physiography Lowland Orangeburg Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Area with 50-60% channers on surface 50' SE of pit

	pH	ec	SAR	C	S	K		
7-16	7.5	.55	4	22	71	5.3	S	SCl

inches

Pit Depth (48)

Bedrock (16)

Topsoil (16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-2		10yr 5/3	scl	vfgr		vfr				vs/e	Smt.
C	2-7		10yr 4/3	sc	m		fr				s/e	
2Btkl	7-16	10yr 4/6	10yr 4/3	scl	msbk	h					es	
3Cxr	16-48	Interbedded S.S. S.h.										

Soil Description

Soil Type Fruitvale (Orthic Haplargid, mixed Cry) File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #41

Classification Fine loamy mixed ... typic Haplargid BM/CA

Location

N. veg. (or crop) Hija, Atpo, Atcon Climate

Parent Material Carbonaceous Alluvium

Physiography Low Drainage Area Level Area

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%		
4-21	7.4	.41	2	56	32	2.7		U
21-34	7.3	1.1	2	64	32	11		S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (34)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
CA	0-4		10yr 4/2	scl	~~m~~		fr				sle	Suitable
2Bt	4-21	10yr 2/2	10yr 3/2	cl	sabk	vh					sle	
2Bky	21-34	10yr 4/6	10yr 5/3	el	mabk	vh					es	
3Cky	34-60	10yr 5/4	10yr 5/3	C	m	vh	Unsuitable Clay%				es/sle	8-10% K

Soil Description

Soil Type Grieta File No.

Area No-Name Permit Area Date 2/10/98 Stop No. 42

Classification Fine .. Typic Calciargid BM/CA

Location

N. veg. (or crop) Spa:, Itiga, Atcon Climate

Parent Material Eolian/Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect S.	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

0-11 - Sec #43 #43 0-11 15% C

samples	pH	ec	SAR	S	C	K%		
11-20	7.9	.74	7	31	39	19	S	calcic
20-29	7.6	8.89	18	24	39	9.2	u	i

inches

Pit Depth (56)

Bedrock (49)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4		10yr 5/3	scl	wgr		fr				vsle	
AB	4-11		2.5 5/2	cl	wgr		sfi				es	
Bk	11-20	10yr 7/2	10yr 6/3	cl	msbk	h					ev	Continuous k distribution
2Bky	20-29	10yr 3/2	10yr 5/3	cl/c	msbk	h					es	
2Cky	29-49	10y 5/3	10yr 5/3	cl/c	m						sle/es	
3Cr	49-56	Sandstone										

Soil Description

Soil Type Bacco 61 File No.

Area No-Name Permit Area Date 2/5/98 Stop No. #43

Classification Fine-Loamy Typic Haplargid BM/CA

Location

N. veg. (or crop) Spai, Hija, Ateon Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes: Pit was dug 100' West, along the road, of the surveyed site.

samples (depth inches)

	pH	ec	SAR	S	C	K%		
0-10	7.1	.58	3.97	72	15	4	S	
10-19	7.7	.62	5.78	58	23	13	S	
19-32	7.8	1.56	16.2	41	23	17	L	loam

inches

Pit Depth (60)

Bedrock (32)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A1	0-4		10yr 4/2	sl	wgr		fr				vsle	
A2	4-10		10yr 4/2	sl	mgr		sfi				es	
Btk	10-19	10yr 5/2	10yr 5/3	scl	wsbk	h					es	
2Ck	19-32	2.5y 7/4	2.5y 6/4	gcl	m	h					ev	15%-20% channers
2Cr	32-48	Siltstone										
3Cr	48-60	Carbonaceous Shale										
4R	60+	Sandstone										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/5/98 Stop No. #44

Classification Fine Loamy, mixed, mesic, Lithic Torriorthent

Location

N. veg. (or crop) Sage, Juniper, Pinon Climate

Parent Material eolian

Physiography knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4-5%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 80% Channers on Surface

inches

Pit Depth (5)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		Ef
A	0-5			gscl			sfi				20% channers	e
R	5+	Sandstone										

Soil Description

Soil Type [illegible] - Overlook File No.

Area No-Name Permit Area Date 2/5/98 Stop No # 45

Classification Coarse ... Typic Haplargid Amador CA

Location

N. veg. (or crop) Wild Rose, Artemisia Climate

Parent Material colluvium over residuum

Physiography Knoll

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1-3%	Moisture	
Aspect	S	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-4	7.2	4.32	.715	81	11	2	S
4-11	7.1	.35	1.03	75	15	5	S
11-26	7.6	.841	10	51	28	11	S

inches

Pit Depth (54)

Bedrock (37)

Topsoil (26)

Horizon	Depth (in)	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	[illegible]	
A	0/4		10YR 5/3	SL	wgr		VFr				VSlc	
Bt	4/11		10YR 5/3	SCL	wSbk/m		fr				slc	
2 Bk	11/26	2.5Y 6/4	2.5Y 5/4	scl	MSBK	vh					es	nodules
2 Cky	26/37	10YR 7/3	2.5Y 5/4	SiCl	M	h		Unsuitable Clay Content			eV/cs	
2 Cy	37/54	Interbedded Shale and Calcareous Sandstone										

Soil Description

Soil Type Ecoc (Correlation) File No.

Area No-Name Permit Area Date 2/5/98 Stop No. #46

Classification Fine-Loamy Typic 12Mj CA

Location

N. veg. (or crop) Sphi: Hisa Atco Gusa Climate Semi arid

Parent Material eolian over residuum

Physiography Mesa top : terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%
18-26	7.5	.55	5.8	31	28	1.41	S

	inches
Pit Depth	(54)
Bedrock	(26)
Topsoil	(26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4		10YR 5/4	SL	Wgr		vfr		eo			
CB	4/11		10YR 5/4	SL	M		vfr		slc			
2Bk	11/18		10YR 6/3	SCL	w 5mk	sh			es		8%	
2Bk2	18/26		2.5Y 6/4	CL	w 5mk/m	h			ev		15-18% (dissem. inc.)	
2Cr	26/54	Sandstone										For Calcic Horizon

Soil Description

Soil Type Peralta 1 r — File No.

Area No-Name Permit Area — Date 2/4/98 — Stop No. #47

Classification Coarse loam, Typic Natrargid — BM/CA

Location

N. veg. (or crop) Hija, Spai Atcon — Climate Semi Ar. D

Parent Material Eolian

Physiography Foot of Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes: 10% Cleanness on Surface

samples (depth inches)

Cropped #43

	pH	EC	SAR	S	C	K%	
0-3	7.2	.45	1.74	76	13	2	5
3-8	7.7	.5	4.1	78	17	4	5
8-18	8	1.58	18.2	36	10	14	4

inches

Pit Depth (60)

Bedrock (41)

Topsoil (8)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0/3		10YR 5/3	SL	wgr		Vfr				ce	
Bt	3/8		10YR 6/3	SCL	m sbk		Sfr				ce	2%
Btkn	8/18	10YR 7/4	2.5Y 6/4	SCL	MSBK	VL					ev	15% k
2 Ck	18/41		2.5Y 6/4	SiC	M	L/VL			Consistence Transition Material		ev	/
3 Cr	41/60	Weathered Sandstone									Discontinuous	
											Cemented CaCO3	

Soil Description

Soil Type May Queen - Clayey Substratum File No.

Area No-Name Permit Area Date 2/5/98 Stop No. 48

Classification Coarseloamy, mixed, mesic, typic, Haplocalcid - Calcid BM/CA

Location

N. veg. (or crop) Hija, Spai, Atcon Climate Semi arid

Parent Material Colluvium (- alluvium)

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes: 10% g on surface

samples (depth inches)

Bt1 and Bt2 are same as sampled in 49

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3		10yr 5/4	sl	wgr		vfr		sle		18% g	
Bt1	3-11		10yr 4/4	scl	msbk	sfi			es		20-22% c	
Bt2	11-18	7.5yr 5/6	10yr 5/4	sl	msbk	vh			es		15-18% c	
2Bk	18-36	10yr 3/1	10yr 5/3	sic	sab	eh			ev		~50% s	13-15% k
2Cky	36-55	10yr 5/1	10yr 5/3	sic	m	eh			es		~50% s	

Soil Description

Soil Type May Queen Moderately deep File No.

Area No-Name Permit Area Date 2/5/98 Stop No. 49

Classification Coarse Loamy mixed Mesic Typic Haplargids :0 C/M/CA

Location

N. veg. (or crop) Hilaria, Spar, Atrip Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2 %	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Overblown · buried Phase of 50

	pH	ec	SAR	S	C	V-%	
12-34" PSCS	7.2	.78	4.3	75	13	2	5

	inches
Pit Depth	(39)
Bedrock	(34)
Topsoil	(34)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4		7.5yr 3/3	sl	wgr		vfr		eo		10%c	
Bw	4-12		10yr 3/3	sl	wsbk		fr		vsle/eo		10-12%c	
Bt1b	12-27	7.5yr 4/6	10yr 4/3	sl/scl	msbk	h			sle		20%c	
Bt2b	27-34	7.5yr 4/4	10yr 4/4	sl	msbk	vh			sle		15-18%c	
2Cr	34-39	Calcareous Sandstone		same as sl 50, 51								

Soil Description

Soil Type Marysvale Cracked, Shallow File No.

Area No-Name Permit Area Date 2/5/98 Stop No. A 50

Classification Coarse Loamy, Mixed, Mesic, Lithic Haplogel

Location

N. veg. (or crop) JC SARI /1 Cor Climate

Parent Material Colian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-3	7.1	.5	.46	76	13	2	S
3-7	7.2	.34	1.24	73	15	3	S
7-17	7.3	.39	2.89	76	14	4	S

inches

Pit Depth (35)

Bedrock (17)

Topsoil (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3		10yr 3/4	sl	vfgr		vfr		vsle			
Bt1	3-7		10yr 5/4	scl	wsbk		sfr		sle			
Bt2	7-17		7.5yr 4/4	sl	msbk	sh			sle/es			
2Cr	17-35	Sandstone										
2R	35+	Sandstone										

Soil Description

Soil Type Jocity File No.

Area No-Name Permit Area Date 21 / 8 Stop No. 13 15' / JH

Classification Fine-Loamy Typic Torrifluvent

Location

N. veg. (or crop) Sparse / Greasewood / Shrub Climate

Parent Material Alluvium

Physiography Floodplain / terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)	pH	ec	SAR	S	C	K%		
0-3	7.4	1.5	2	61	24	4.2	S	
3-18	7.6	.6	3	56	24	4	S	Not Argillic

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
A	0-3	10YR 5/4	10YR 4/2	scl	wsbk	sh				Vsle		
Btv	3-18	10YR 4/6	2.5Y 5/2	scl	msbk	sh				Vsle		
C1	18-44	2.5Y 4/4	2.5Y 4/3	scl	m	sh/h				eo	SUITABLE	
C2	44-60	2.5Y 5/4	2.5Y 4/3	scl	m	sh				Vsle	SUITABLE	

Soil Description

Soil Type Fruitland - Moderately Deep File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #56

Classification Coarse-Loamy, Typic Torriorthent BM-CA

Location

N. veg. (or crop) Atpo hybrid Hija, spec. Climate

Parent Material Alluvium

Physiography Floodplain Terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Salt Precipitate on surface

15% g on surface

	pH	ec	SAR	S	C	K%	
0-4	7.3	.6	1	74	17	3	S
4-13	7.3	2.4	1	84	12	1.6	S
13-24	7.2	3.6	4	81	14	1.7	S
24-55	8.2	18.4	52	72	17	1.8	U

inches

Pit Depth (55)

Bedrock (55)

Topsoil (24)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4		2.5Y 4/4	vfsl	wgr		fr				vsle	
Bw	4-13		2.5Y 5/4	lfs	wsbk		sfr				sle	
Cy1	13-24	10yr 6/6	10yr 4/3	vfsl	wsbk	h					vsle	
Cy	24-55	10yr 5/4	2.5Y 4/4	sl	m	h					eo/vsle	
C/Cr	55+	Carbonaceous Shale		Also found at 36"								

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #57

Classification Fine Loamy, Mixed, Mesic, Lithic Torriorthent Sodium affected GM/CA

Location

N. veg. (or crop) Atcon, Hijc, Atpo Hibrd Climate

Parent Material Alluvium / Residuum

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

50% channers on surface

inches

Pit Depth (6)

Bedrock (6)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
AC	0-6	2.5 5/4	2.5Y 4/2	scl	wgr/m		sfr				sle	
~~BC~~ R	6+	Siltstone										

Soil Description

Soil Type Jocity File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #58

Classification Fine Loamy, mixed Typic Torrifluvent BM-CA

Location

N. veg. (or crop) Atpo, Atcon Climate

Parent Material Alluvium

Physiography Floodplain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Na affected

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
C1	0-5		10yr 4/2	scl	wgr/m		fr				sle	
C2	5-10	10yr 4/3	2.5Y 4/2	c	m	vh					sle/es	
C3	10-18	10yr 5/4	2.5Y 4/4	vgsl	m	vh					usle	45-50%gs
2Cd	18-25	10yr 4/2	2.5Y 4/2	cl/c	m	eh		similar to	#59		sle	
2Cdy	25-40	←	2.5Y 5/4	cl	m	vh					sle	10%g
3C	40-60	←	2.5Y 5/4	scl	m	h					e0/usle	

Soil Description

Soil Type Hos.kay. File No.

Area No-Name Permit Area Date 2/10/98 Stop No. H 59

Classification Fine / mxd / csk typic Haploxeroll BM/CA

Location

N. veg. (or crop) Hlb Spc. Climate Semi-arid

Parent Material Alluvium

Physiography Convex floodplain / terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Some of H60

inches

Pit Depth (70)

Bedrock (70+)

Topsoil (~~0~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/3		2.5Y 3/2	cl	w gr		vfr			vsic		
Btn	3/11	2.5Y 4/4	2.5Y 4/2	cl/c	w sbk	h	fi			vsic/sic		
Btkyn	11/23	2.5Y 4/4	2.5Y 4/4	c l	s sbk		vh			sic		
Cy	23/36	2.5Y 4/4	2.5 5/4	cl	m		h/vh			sic		
Cdyz	36/46	2.5Y 4/4	2.5 5/4	cl/c	m		vh/eh			sic		
Cdyz	46/70			cl/c	m		vh/eh			vsic		

Soil Description

Soil Type Hockay File No.

Area No-Name Permit Area Date 2/10/98 Stop No. #60

Classification fine mixed mesic typic haplustolls BM/CA

Location

N. veg. (or crop) Hardpo Climate Semi-arid

Parent Material Alluvium

Physiography flood plain / convex

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	0-1%	Moisture	
Aspect		Root distrib.	
Erosion	eroded areas low perennial cover		
Permeability			

Additional notes:

samples (depth inches)

	pH	ec	SAR	S	C	K%	
0-3	7.6	1.15	9	26	44	7.7	s
3-6	7.5	3.99	12	29	42	8.4	u
6-17	7.5	9.63	1	24	46	7.8	u
17-60	7.5	8.82	20	14	56	5.8	u

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (ecb)		
A	0/3	2.5Y 4/2	2.5Y 4/2	CL	WAK		SFr			VSlc		
Btn	3/6		2.5Y 4/2	C	WPK		fi			Slc		
Btkyn	6/17	2.5Y 4/4	2.5Y 4/2	C	MSBK	h/vh				es		
Cdy	17/60	2.5Y 4/2	2.5Y 4/2	C	M	ch				es		

Soil Description

Soil Type Jocity - Moderately deep File No.

Area No-Name Permit Area Date 2/10/94 Stop No. #61

Classification Fine loamy mixed mesic typic Torrifluvent Series / USDA / CA

Location

N. veg. (or crop) Atpo - Greasewood Climate

Parent Material Alluvium / Colluvium

Physiography Nearly level - Bottoms and lowlands - Flood plain of Panoche Fan

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Sodium affected

inches

Pit Depth (29)

Bedrock (29)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/5		10YR 4/1	SCl	v-gr	So	SFi			eo		
BC	5/14	10YR 3/2	10YR 3/2	Cl	m-sbk	Vh				VSlc		
Cy	14/29	10YR 4/2	10YR 4/1	Cl	M	Sh/h				VSlc		
2R	29+	Coal										

Soil Description

Soil Type: Miscellaneous Area — File No.

Area: No-Name Permit Area — Date: 2/10/98 — Stop No.: #62

Classification: Torriorthent — BM/CA

Location

N. veg. (or crop): Atpo, Saltbush - Greasewood — Climate

Parent Material: Carbonaceous Eolian Material

Physiography: Badlands - Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 4%	Moisture	
Aspect W	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

Hydrophobic

	pH	ec	SAR	S	C	K%	Se(tot)	
0-9	4.2	1.57	3	66	23	0	1.2	u
9-33	3.9	4.41	3	64	22	0	1.4	u
33-60	3.8	4.07	3	54	32	0	1.4	u

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A_1	0-5		10yr 2/1	scl	wgr		sfr				eo	
A_2	5-9	10yr 2/1	10yr 2/1	sl	wgr	so					eo	
C_1	9-23	10yr 2/2	10y 2/1	l	m	sh					eo	
C_2	23-33	10yr 2/1	10yr 2/1	l	m	sh					eo	
C_3	33-60	10yr 2/1	10yr 2/1	l	m	sh					eo	

Soil Description

Soil Type Fruitvale File No.

Area No-Name Permit Area Date 2/18/98 Stop No. HGS

Classification Fine loamy mixed Aquic typic Haploxeroll

Location

N. veg. (or crop) Native Grass Climate

Parent Material Alluvium

Physiography Uplands / Marsh

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Moderately grazed Area - low perennial veg cover

Hardy alluvium encountered 30% at on surface

	pH	ec	SAR	S	C	K%		
2-17	7.6	5.7	12	45	33	4.4	S	

inches

Pit Depth (52)

Bedrock (52)

Topsoil (29)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/2			Cl	wk		fr			Sc		
Btn)	2/9	10YR 4/2	10YR 4/2	C	msbk/a	h/m	fi			Slc		
Btkn)	9/17	10YR 4/2	10YR 4/2	Cl	mpr	vh				cs		
2Bky	17/29	10YR 5/4	10YR 4/3	Sl	msbk	sh/h				cs		
2cky	29/35		10YR 5/2	SCl	m	h				cs		
3 Ck	35/52	10YR 7/1	10YR 4/2	SCl	m					cv		
3 R	52+	Calcareous Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #66

Classification Fine-Loamy, mixed mesic Typic Haplargid CA

Location

N. veg. (or crop) Spay, Hija, Atcon Climate

Parent Material Eolian / Residuum

Physiography Mesa Top - Near edge of Mesa

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Highly Bioturbated

0-10 same as most pits on North side of road

inches

Pit Depth (40)

Bedrock (31)

Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3		10yr 5/4	sl	wgr		fr				eo	
Bt	3-10		10yr 5/4	sl	wsbk		fi				eo	
2Ck	10-31			cl	m	h					es	Carbonaceous Unsuitable
2Cr	31+	Carbonaceous shale										

Soil Description

Soil Type Persayo File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 67

Classification Fine, mixed, mesic Lithic Torriorthent (Sodic CA

Location ?

N. veg. (or crop) Atca, Atpo Climate

Parent Material Eolian / Residuum

Physiography Edge of Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect W	Root distrib.	
Erosion		
Permeability		

Additional notes: 85% g on surface

samples (depth inches)

Similar to #68

inches

Pit Depth (25)

Bedrock (2)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
C	0-12		10yr 5/4	cl	pr		vfi				sle	
2Cr	2-11	Carbonaceous Shale										
R	11+											

Soil Description

Soil Type Pinsayo File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #68

Classification fine loamy Ustalf transitional (Sodic) SCS

Location

N. veg. (or crop) Artcon - Artca spp. Elyca Climate

Parent Material colian over residium

Physiography uplands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) moderately eroded area 80% C6 on surface

inches

Pit Depth (18)

Bedrock (18)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
AC	0/5			gscl	vgr		sfi					
2Ck	5/18			Cl	m	h						
2C1	18+	Carbonaceous Shale										

Soil Description

Soil Type Per.Sandy File No.

Area No-Name Permit Area Date 2/16/10 Stop No. AG9

Classification RM

Location

N. veg. (or crop) Atco Atco Climate

Parent Material Residuum derived from carbonaceous shale

Physiography knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Historically graded area - adjacent to shale cut areas and small impoundment - 50% Cb on surface

inches

Pit Depth (5)

Bedrock (5)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0/5			Cl/C	M		Fi			Gc		
Cr	5+	Cx	Sandstone	Shale								

Soil Description

Soil Type Shingle Creek — File No.

Area No-Name Permit Area — Date 2/16/98 — Stop No. A 70

Classification Coarse loamy, mixed, superactive, frigid Typic Haplustolls

Location

N. veg. (or crop) Open ponderosa pine / bitterbrush / mixed grass Climate Semi arid

Parent Material Colluvium

Physiography Foot slope of knoll

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(63)
Bedrock	(63+)
Topsoil	(55)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5		10YR 3/2	LS	1vf gr		VFr			CO		
C	5/17		10YR 5/3	LS	M		VFr			CO		
Btkb	17/37		10YR 5/2	LS/SL	M pr	Vh				CW/SW	k stains & filaments	
Ck	37/55		10YR 5/3	SL	M	Sh				CO		
2Ck	55/63	10YR 4/2		C	M	Vh				CV		

Soil Description

Soil Type: Jarbidge Variant — File No.

Area: No-Name Permit Area — Date: 2/12/98 — Stop No.: #71

Classification: Fine loam mixed, mesic, Typic Cryoboroll — Bw

Location

N. veg. (or crop): Artem spp. — Climate

Parent Material

Physiography: Alluvial Plain / wetlands

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope: 2%	Moisture	
Aspect: E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches): profile is highly bioturbated (krotovina's)

inches

Pit Depth (51)

Bedrock (51)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4		10YR 4/2	SL	wgr		vfr			cd		
Bw	4/9		10YR 4/3	SL	wsbk		fr			sl c		
Bt	9/14		10YR 5/3	SCL	msbk	cl				cs		
Btk	14/21		10YR 5/3	SCL	msbk	vfr/fr				cs/cv		
2Bk	21/36		10YR 6/2	CL	wcbk	h				cv	1%	#77
2Ck	36/51			CL/C	m	h				cv		
3R	51+	Concretions		Sand Stone								

Soil Description

Soil Type Bacon! File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #72

Classification Fine loamy mixed Calcareous, mesic Typic Haplargid CA

Location

N. veg. (or crop) Hija, Spai, Atcon Climate

Parent Material Eolian - Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Carbonate in Bk is derived from weathered sandstone

inches

Pit Depth (26)

Bedrock (26)

Topsoil (26)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4		10yr 4/3	sl	wgr		sf				es	
Btk	4-11		10yr 6/3	fscl	wsbk		fi				es	
2Bk	11-26	2.5y 8/2	2.5y 6/3	fscl	msbk	h					ev	Calcic
2R	26+	Sandstone										

Soil Description

Soil Type Shiprock Variant - Overblow File No.

Area No-Name Permit Area Date 2/12/98 Stop No. # 74

Classification Fine loamy - Typic Haplocalcid Bar

Location

N. veg. (or crop) [illegible] Climate

Parent Material Alluvium

Physiography Alluvial flat

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	1-3%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches) possible typifying pedon site

	inches
Pit Depth	(62)
Bedrock	(62)
Topsoil	(62)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4	10YR 5/3	10YR 4/2	SL 10%	w sbk		vfr			cw		
C	4/12	[illegible]	10YR 5/3	SL 8%	m		fr			cw		
Bt1	12/24	10YR 6/4	10YR 4/3	SL 12%	spr	vh				gsw		
Bt2	24/40	10YR 4/4	10YR 4/4	SCL 25%	spr	vh	14.2			cs	2-3%	K
Bk	40/62	10YR 6/3	10YR 5/3	SL 15-20	w sbk	hd				cs/cw	3-5% mod	K calcic
R	62+	Calcareous Sandstone										

Soil Description

Soil Type Shiprock - (Brown File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #75

Classification Course loamy, mixed, mesic typic Haplargids CA

Location

N. veg. (or crop) Spa, Hig, Atco Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (57)

Bedrock (57)

Topsoil (46)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4		10yr 4/4	ls/sl	wgr		fr				eo	
Bw	4-14		10yr 5/3	sl	wgr/m		sfi				sle	
Bt	14-24	10yr 5/4	10yr 5/3	sl		vh					es	
Btk	24-38	7.5yr 5/6	10yr 5/4	scl		h/vh					es	10%g
2Ck	38-46	10yr 6/3	10yr 6/2	cl		h					ev	
3Ck	46-57	10yr 8/2	2.5y 6/4	scl		h					ev	Calcic
3R	57+	Sandstone										

Soil Description

Soil Type Monisco File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #76

Classification Loamy mixed Mesic Shallow Haplargid CA

Location

N. veg. (or crop) Sepa, Hija, Atcon Climate

Parent Material Eolian / Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (34)

Bedrock (18)

Topsoil (18)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	eff ~~Boundary~~		
A	0, 4		7.5Y 4/3	sl	wgr		fr			sle		
Bt	4, 10		7.5Y 5/3	scl	wsbk		sfi			es		
2Ck	10, 18	10YR 4/6	7.5Y 5/4	scl	m	h/vh				ev	~5%g	#83
2Crk	18, 34	Coarsegrained Sandstone w/ 25%g										
3R	34+	Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/12/78 Stop No. 477

Classification Fine loamy Typic Haplargid

Location

N. veg. (or crop) SA: [illegible] Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) less eroded erosional surface #43

	pH	ec	SAR	S	C	K%	
0-6	7.6	152	1	76	13	1.2	5
6-22	7.5	148	2	70	20	3.4	5
22-32	7.7	737	6	71	18	14	5

inches

Pit Depth (32)

Bedrock (32)

Topsoil (32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/6		10YR 4/3	SL	gr					cs		
Bt	6/12		10YR 5/4	SCL 20%	m cb					cs		
Btk	12/22	10YR 5/4	11	SCL 18	m ab					cw		
Btk	22/32	10YR 7/3	10YR 7/4	SL 19	w sbk					cw	Continuous CaCO3	
C	32+	C. Accretions		SL	Stone							

Soil Description

Soil Type Maricopo — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. #78

Classification Fine loamy, Lithic Haploxeroll — CA

Location

N. veg. (or crop) Spa., Hija, Atcon — Climate

Parent Material Eolian

Physiography Mesa Top, near edge of Cuesta

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

similar to #72

inches

Pit Depth (61)

Bedrock (11)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3		10yr 4/3	sl	wgr		fr				es	
Bt	3-11		10yr 5/4	scl	wsbk		sfi				ev	15-20% G
2Cr	11-33	Calcareous		Sandstone								
3R	33-60	Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/12/98 Stop No. 79

Classification Fine-Loamy Typic Haplargid CA

Location

N. veg. (or crop) Spai, Itiju, Atcon Climate

Parent Material Eolian, Residuum

Physiography Mesa Top, near edge of Cuesta

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches)

inches

Pit Depth (37)

Bedrock (28)

Topsoil (19)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-3			sl			Fr				vsle	
Bt1	3-14			scl			Fr				es	
Bt2	14-19			scl/sl		h					es	
2Cky	19-28			cl		sh					ev	
2Cr	28-37		Calcareous Sandstone									
R	37+	Sandstone										

Soil Description

Soil Type Bacobi File No.

Area No-Name Permit Area Date 2/12/98 Stop No. # 80

Classification Calcid LSR

Location

N. veg. (or crop) Sporobolus Atcon Climate

Parent Material Alluvium

Physiography Alluvial Plain / Level Slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect NE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Lower part of profile is Calcium carbonate leached

Same as # 71

inches

Pit Depth (48)

Bedrock (48)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			SL/10	w g		VFr		vslc			
Bw	5/14			SL/10	w sbk/m		VFr		cs			
2 Bk	14/28			Cl	w sbk	h			ev	Cal Sonuccer possible	15-20% k carbonate	
2 Ck	28/48			Cl	m	h			cs			
3 R	48+	Calcareous Sandstone										

Soil Description

Soil Type Monierco File No.

Area No-Name Permit Area Date 2/12/98 Stop No. 81

Classification Complex CA

Location Near small drainage channel

N. veg. (or crop) Spary Arbor, Hija Climate

Parent Material Eolian

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (18)

Topsoil (11)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	Eff	
A	0-4			sl	wgr		fr				vsle	
Bw	4-11			sl	WSBK		Fr				es	
2Ck	11-18			vg sl							ev	50% g
2Cr	18-36	Interbedded SS./SH.										
2R	36+	Sandstone										

Soil Description

Soil Type Shiprock Loam - Moderately Deep File No.

Area No-Name Permit Area Date 2/12/98 Stop No. A82

Classification Coarse loamy, mesic, Typic Argid

Location

N. veg. (or crop) Atcon Spp. Climate

Parent Material Alluvium

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2-3% Moisture

Aspect NE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Adjacent to small drainage to the South

inches

Pit Depth (38)

Bedrock (38)

Topsoil (38)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
A	0/3			VSL	wgr		vFr			eo		
Bt	3/12			SL	wSBK		sFr			es		
Bk	12/21			SL		sh				ev	10-15%	G
Ck1	21/31			lVSF	m	sh				ev/es		
Ck2	31/38			gSL	m	h				ev		
R	38+											

Soil Description

Soil Type Razito - Moderately deep File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #83

Classification Mixed, Mesic Typic Torripsamment 13m

Location

N. veg. (or crop) [illegible] Acacia Climate Semi-arid

Parent Material Colian

Physiography Knoll / Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-10	Moisture	
Aspect N	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)	pH	ec	SAR	S	C	K%	
0-4	7.4	.39	0	84	10	1.7	5
4-18	7.3	.37	1	84	10	3	5
18-32	7.5	.45	3	81	13	3.8	5

	inches
Pit Depth	(32)
Bedrock	(32)
Topsoil	(32)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			LS	Gr		VFr			CS		
BC	4/18		10YR 5/5	SL	8% 10 WSBK/M		VFr			CS		
2 Ck	18/32			SL	10% M		L			CV		
3 R	32+	Cbl	Siltstone									

Soil Description

Soil Type Bacco6;' File No.

Area No-Name Permit Area Date 2/12/98 Stop No. #84

Classification CA

Location small eroded drainage area

N. veg. (or crop) Climate

Parent Material Alluvium

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

Sample	pH	ec	SAR	S	C	K%		
12-21	7.8	1.08	7	59	28	13	S	
21-39	8	1.57	17	61	20	12	U	scl

	inches
Pit Depth	(60)
Bedrock	(39)
Topsoil	(21)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-4			LS	wgr	sfi			eo		} suit.	
B·C'	4-12			LS	wgr/m	sfi			eo			
B+K(ca)	12-21			scl	SSBK	vh			ev			
2 CK	21-39			vgsl	m	vh			ev		35% g	
3 Cr (Interbedded Shale)	39-44											
4 Cr (sandstone)	44-50											
5 Cr (Shale)	50-60											

Soil Description

Soil Type Borosi — File No.

Area No-Name Permit Area — Date 2/12/98 — Stop No. #85

Classification — 15m

Location

N. veg. (or crop) Hija Atcon — Climate

Parent Material Alluvium

Physiography Alluvial Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-3%	Moisture	
Aspect NW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) eroded #74

inches

Pit Depth (34)

Bedrock (34)

Topsoil (34)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Ak	0/5			ls	gr		vfr			sic		
Btk	5/12			scl	sbk		fr	disseminated lk derived		cs	Similar to Btk #74	
2Ck	12/34			scl	m				from Bedrock	cv	Questionable soil for sampling	
2Cr	34+	Calcareous		ss								

Soil Description

Soil Type Mada File No.

Area No-Name Permit Area Date 2/16/98 Stop No. #86

Classification Fine Loamy, mixed, mesic Typic Natrargid CA

Location

N. veg. (or crop) Atcon Climate

Parent Material Alluvium / Residuum

Physiography Mesa Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0	Moisture	
Aspect	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) 75-80% g on the surface 1-2 cm K nodules
very little veg. no grasses

0-3	7.9	.83	10	45	43	13	si	s	
3-10	8	.77	14	60	30	8.3	sl	s	
10-18	7.6	6.8	18	68	23	4.7	sl	u	scl
	pH	ec	SAR	s	c	K%			

inches
Pit Depth (55)
Bedrock (30)
Topsoil (10)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	EC	
AB	0-3		10yr 5/4	cl	[illegible]		sfi				sle	
Btk(n)	3-10	10yr 4/6	10yr 6/4	scl	msbk	h					es	
Ck	10-18	10yr 5/6	10yr 5/6	scl	m	vh					es	5-10%g
2Ck	18-30	10yr 3/1	10yr 3/2	cl	m	h	Carbonaceous Unsuitable				sle	
2Cr	30-55	Carbonaceous Shale										

Soil Description

Soil Type Fruitland - Deep File No.

Area No-Name Permit Area Date 2/16/98 Stop No. 17 87

Classification Coarse loamy, mixed, superactive, calcareous, mesic Typic Torriorthents

Location

N. veg. (or crop) Shad Hills Atcon Climate

Parent Material

Physiography Alluvial plain

Relief		Drainage	Salt or Alkali
Elevation		Gr. Water	Stoniness
Slope	3%	Moisture	
Aspect	NE	Root distrib.	
Erosion			
Permeability			

Additional notes:

samples (depth inches)

inches

Pit Depth (42)

Bedrock (42)

Topsoil (42)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/4			SL	w gr	sh				SIC		
Bw	4/11			LS/SL	w sbk		vfr			SIC		
Bk	11/19			LS/SL	w sbk	h				SIC/cS	2-3% lk	
Ck1	19/25			LS	M	sh				VSIC/SHC	nodules	
Ck2	25/42			SL	M	h				VSIC		
Ckr	42+	Calcareous Shale										

Soil Description

Soil Type Monicrco File No.

Area No-Name Permit Area Date 2/12/98 Stop No. 88

Classification FINE LOAMY MIXED MESIC LITHIC HAPLARGID CA

Location 50 5' of Drainage channel

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Alluvium

Physiography Mesa Top - Small Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2-3%	Moisture	
Aspect E	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (36)

Bedrock (23)

Topsoil (14)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-8			sl	wgr/m		vfr					
Bt	8-14			scl	wsbk							
2C	14-23	10YR 5/4		cl/c	m	eh						
2Cr	23-36		Carbonaceous Shale									

Soil Description

Soil Type Illonicca File No.

Area No-Name Permit Area Date 2/12/98 Stop No. 89

Classification Loamy mixed mesic Shallow Lithic

Location BM

N. veg. (or crop) Mixed Prairie Grass Climate

Parent Material colluvium

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 10% Moisture

Aspect NE Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)	pH	ec	SAR	S	C	K%	
0-4	7.3	.47	1	76	10	1.2	S
4-11	7.2	.41	1	70	19	2.5	S
11-16	7.2	.49	2	61	24	7.2	S

	inches
Pit Depth	(16)
Bedrock	(16)
Topsoil	(16)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (ecb)		
A	0/4		10YR 5/4	fsl 12	wgr		vfr			eo		
Bt	4/11		10YR 5/4	scl 20	wsbk		sfr			es		
Btk	11/16	10YR 5/6	10YR 5/4	scl 30	msbk					ev		
2R	16+										SILTSTONE	

Soil Description

Area 4 South

Soil Type	Natrargid	Date 12/7/07 Time	Stop No. 11A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(19)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area 4 South

Soil Type	Farb	Date 12/7/07 Time	Stop No. 12A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(8)
Elevation	---	Topsoil	(8)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area 4 South

Soil Type	Jocity	Date 12/7/07 Time	Stop No. 13A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(>60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No Name Permit Area

Soil Type	Badlands	Date 2/17/98 Time	Stop No. 146
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(0)
Slope	0-1%	Drainage	
Aspect	W	Root distrib	
Erosion	Severe	Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No Name Permit Area

Soil Type	Barren lands/Badlands	Date 2/18/97	Time	Stop No. 158
Classification				BM/CA
Climate	Semi-Arid			Inches
Parent Material			Pit Depth	( )
Physiography			Bedrock	(3)
Elevation	---		Topsoil	(0)
Slope	0-1%		Drainage	
Aspect	W		Root distrib	
Erosion	Severe		Surface Salt	
Permeability			Surface Stoniness	
N. Veg. Shrubs				
N. Veg. Grass/Forbs				
Additional notes:				
Sample (depth inches)				

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No Name Permit Area

Soil Type	Huerfano	Date 2/18/98 Time	Stop No. 187
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Persayo	Date 3/2/98 Time	Stop No. 259
Classification			BM
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography	Deflational Area	Bedrock	(3)
Elevation	---	Topsoil	(0)
Slope	0-1%	Drainage	
Aspect	W	Root distrib	
Erosion	Severe	Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes: Located on Mesa Top, sandstone bedrock			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Rock Outcrop	Date 3/4/98 Time	Stop No. 303
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes: Located in Barren Lands			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/4/98 Time	Stop No. 305
Classification	Fine Lithic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	( )
Physiography	Plain	Bedrock	(7)
Elevation	---	Topsoil	(0)
Slope	1%	Drainage	
Aspect	E	Root distrib	
Erosion		Surface Salt	
Permeability	Severe	Surface Stoniness	
N. Veg. Shrubs	Atob		
N. Veg. Grass/Forbs			
Additional notes: 35% cf on surface			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Btyn	0-7		Cl/C		wcl		vfi	sle			
Cr	7+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/4/98 Time	Stop No. 306
Classification	Fine Lithic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	( )
Physiography	Plain	Bedrock	(18)
Elevation	---	Topsoil	(0)
Slope	1%	Drainage	
Aspect	E	Root distrib	
Erosion		Surface Salt	
Permeability	Severe	Surface Stoniness	
N. Veg. Shrubs	Atob		
N. Veg. Grass/Forbs			
Additional notes: 35% cf on surface			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Btyn	0-18		Cl/C		wcl		rfi	sle			
Cr	18+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/4/98 Time	Stop No. 307
Classification	Fine Lithic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	( )
Physiography	Plain	Bedrock	(16)
Elevation	---	Topsoil	(0)
Slope	1%	Drainage	
Aspect	E	Root distrib	
Erosion		Surface Salt	
Permeability	Severe	Surface Stoniness	

N. Veg. Shrubs Atob

N. Veg. Grass/Forbs

Additional notes: 35% cf on surface

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Btyn	0-16		Cl/C		wcl		rfi	sle			
Cr	16+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/4/98	Time	Stop No. 308	
Classification	Fine Lithic Natrargid				BM/CA
Climate	Semi-Arid				Inches
Parent Material	Residual			Pit Depth	( )
Physiography	Plain			Bedrock	(6)
Elevation	---			Topsoil	(0)
Slope	1%			Drainage	
Aspect	E			Root distrib	
Erosion				Surface Salt	
Permeability	Severe			Surface Stoniness	
N. Veg. Shrubs	Atob				
N. Veg. Grass/Forbs					
Additional notes: 35% cf on surface					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Btyn	0-6		Cl/C		wcl		rfi	sle			
Cr	6+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/4/98 Time	Stop No. 309
Classification	Fine Lithic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	( )
Physiography	Plain	Bedrock	(24)
Elevation	---	Topsoil	(0)
Slope	1%	Drainage	
Aspect	E	Root distrib	
Erosion		Surface Salt	
Permeability	Severe	Surface Stoniness	
N. Veg. Shrubs	Atob		
N. Veg. Grass/Forbs			
Additional notes: 35% cf on surface			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Btyn	0-24		Cl/C		wcl		rfi	sle			
Cr	24+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 3/5/98 Time	Stop No. 316
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(36)
Physiography	Uplands/Plains	Bedrock	(17)
Elevation	---	Topsoil	(0)
Slope	2%	Drainage	
Aspect	NE	Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	

N. Veg. Shrubs Atob, Atca

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
Btn	0-4		Cl		Ucl			Eo			
Cy	4-17		Cl		M	Sh		usle			
Cr	17-36		Shale								

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 318
Classification	Fine Lithic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 321
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 326
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(12)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Rock Outcrop	Date 3/5/98 Time	Stop No. 334
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 2/17/98 Time	Stop No. 339
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/07 Time	Stop No. 341
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(20)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 342
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(20)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 344
Classification	Fine Typic Natrargid		BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(25)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Benally	Date 3/5/98 Time	Stop No. 345
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type Patel	Date 3/5/98	Time	Stop No. 354
Classification			BM/CA
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(2)
Elevation ---		Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-2										
Cr	2+		Sandstone	Siltstone							

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/5/98 Time	Stop No. 357
Classification	Fine Lithic Natrargid		CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(8)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
Btn	0-8										
R	8+		Mudstone								

Soil Description

No-Name Permit Area

Soil Type	Badlands	Date 3/12/98 Time	Stop No. 382
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Badlands	Date 3/5/98 Time	Stop No. 383
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Persayo	Date 3/26/98 Time	Stop No. 403
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(5)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	

N. Veg. Shrubs

N. Veg. Grass/Forbs

Additional notes: Carbonaceous Shale

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-5										
Cr	5+										

Soil Description

No-Name Permit Area

Soil Type	Patel	Date 3/26/98 Time	Stop No. 404
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(8)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
Btn	0-8		C/Cl				Firm				
R	8+										

Soil Description

No-Name Permit Area

Soil Type	Razito	Date 4/7/98 Time	Stop No. 470
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Persayo	Date 4/13/98 Time	Stop No. 501
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(6)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
C	0-6										
R	6+		Siltstone								

Soil Description

No-Name Permit Area

Soil Type	Shiprock Variant	Date 7/8/98	Time	Stop No. 610	
Classification					BM/JH
Climate	Semi-Arid				Inches
Parent Material				Pit Depth	( )
Physiography				Bedrock	(40)
Elevation	---			Topsoil	(40)
Slope				Drainage	
Aspect				Root distrib	
Erosion				Surface Salt	
Permeability				Surface Stoniness	
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3		Sl								
Bt	3-9										
2Bt	9-20										

Soil Description

No-Name Permit Area

Soil Type	Razito	Date 8/14/98 Time	Stop No. 652
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Stumble	Date 8/20/98 Time	Stop No. 705
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Beebe	Date 8/20/98 Time	Stop No. 707
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Razito	Date 8/24/98 Time	Stop No. 735
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Benally	Date 8/24/98 Time	Stop No. 741
Classification			BM
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Razito	Date 2/17/98 Time	Stop No. 744
Classification			BM
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Huerfano	Date 2/17/98 Time	Stop No. 754
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(20)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Razito	Date 8/24/98 Time	Stop No. 756
Classification			BM
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Fruitland	Date 8/25/98 Time	Stop No. 781
Classification			BM
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Persayo	Date 8/26/98 Time	Stop No. 808
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(3)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Persayo	Date 4/21/98 Time	Stop No. 561
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(1)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-1		SCL								
	1+		Coal								

Soil Description

No-Name Permit Area

Soil Type	Badlands	Date4/22/98 Time	Stop No. 572
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Jocity	Date 8/17/98 Time	Stop No. 619
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(12)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Mayqueen	Date 8/18/98 Time	Stop No. 621
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Shiprock	Date 8/17/98 Time	Stop No. 643
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

No-Name Permit Area

Soil Type	Beebe	Date 8/18/98 Time	Stop No. 676
Classification			BM/CA
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/24/07 Time	Stop No. 1 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland – along road	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	N, NE	Root distrib	60
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Spai 2%

Additional notes: (C_2) Possibly buried Btk, has Argylic & $CaCO_3$ accum, possible old stream terrace

Sample (depth inches)

0 - 18

18 – 43

43 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL / 10	SL/15	10YR 4/3	PL	SH		SL	--	--	--
C_1	5-18	SL / 12	SL/15	10YR 4/4	MA	SH		SL	--	--	--
Btkb	18-26	gSCL / 18	SL/17.5	10YR 5/4	SBK	VH		VE	5	--	15
C_3	26-35	gLS / 8	SL/17.5	10YR 5/4	MA	SH		SL	--	--	15
C_4	35-39	SL / 16	SL/17.5	10YR 5/4	MA	HA		SL	--	--	--
C_5	39-43	gSL / 12	SL/17.5	10YR 6/4	MA	HA		ST	3	--	--
C_6	43-60	SL / 12	SL/17.5	10YR 5/4	MA	SH		SL	1	--	--
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/24/07 Time	Stop No. 2 B
Classification	Coarse loamy fluvent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	4%	Drainage	Well
Aspect	N, NE	Root distrib	60
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%, Gusa 1%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL / 10		10YR 5/4	PL	S		ST	--	--	--
C_1	6-18	SL / 12		10YR 4/3	MA	HA		ST	--	--	--
C_2	18-24	SL / 14		10YR 5/4	MA	HA		NE	--	--	--
C_3	24-28	SCL / 22		10YR 5/6	MA	VH		VE	5	--	--
C_4	28-60	SL / 18		10YR 5/6	MA	VH		ST	1	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/24/07 Time	Stop No. 3 B
Classification	fluvent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Along B road ravine	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	

N. Veg. Shrubs Chna 2%, Gusa 1%, Atca 1%, Greasewood 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 8	SL/12.5	10YR 4/4	PL	HA		SL	--	--	--
C_1	3-9	CS / 2	SL/12.5	10YR 4/4	MA	S		NE	--	--	--
C_2	9-25	SCL / 20	SL/12.5	10YR 3/4	MA	HA		SL	--	--	--
C_3	25-34	SL / 15	SL/12.5	10YR 3/4	MA	SH		SL	--	--	--
C_4	34-48	LS / 8	SL/12.5	10YR 3/4	MA	S		NE	--	--	--
C_5	48-60	SL / 16	SL/12.5	10YR 3/3	MA	S		SL	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/24/07 Time	Stop No. 4 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(22)
Physiography	Upland	Bedrock	(11)
Elevation	---	Topsoil	(11)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Spai 2%

Additional notes: $CaCO_3$ not real clear

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 12		10YR 5/4	PL	HA		ST	--	--	--
Bt	3-8	SL / 16		10YR 4/4	SBK	VH		VE	--	--	--
Btk	8-11	SCL / 20		10YR 5/6	SBK	VH		VE	--	--	--
Cr/R Sandstone	11-22										

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/22/07 Time	Stop No. 5 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	terrace	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Rapid	Surface Stoniness	

N. Veg. Shrubs Atco 3%, Gusa 1%

N. Veg. Grass/Forbs Saib 1%, OP .5%, Spai 4%

Additional notes: L is very stratified

Sample (depth inches)

0 - 11

11 - 30

30 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 9	SL/11.3	10YR 4/4	PL	SH		ST	<1	--	--
Bw	3-11	SL / 12	SL/11.3	10YR 4/4	SBK	H		SL	1	--	--
Bt	11-17	SL / 14	SL-17.5	10YR 4/3	SBK	VH		ST	1	--	--
Btk	17-30	SL / 16	SL-17.5	10YR 4/4	SBK	SH		ST	3-5	--	--
C	30-60	SL / 12	LS/8.8	10YR 4/4	MA	S		NE	2	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/22/07 Time	Stop No. 6 B
Classification	Fluvent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Arroyo bottom	Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	60
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs OP .5%, Atca 1%, Tamarisk 3%, Spai 2%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

0 – 15

15 - 28

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	SL / 15	L/18.8	10YR 5/3	PL	H		ST	--	--	--
Bw	2-15	SL / 16	L/18.8	10YR 4/3	SBK	H		ST	--	--	--
C_1	15-28	LS / 8	SL/15	10YR 5/4	MA	H		ST	--	--	--
C_2	28-60	S / 2		10YR 5/4	MA	SH		ST	--	--	--
		/									
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		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/22/07 Time	Stop No. 8 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Severe	Surface Stoniness	1%

N. Veg. Shrubs Spai 2%, Atco 1%, OP .1%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

No Samples

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 5/3	PL	S		ST	--	--	--
Btk	4-14	SL / 15		10YR 4/4	SBK	H		ST	--	--	--
C_1	14-32	LS / 6		10YR 4/4	MA	H		ST	--	--	--
Cr/R	32-60		Weathered sandstone/shale								

Soil Description

Area V Soil Survey

Soil Type	Patel overwash	Date 10/22/07	Time	Stop No.	10 B
Classification	Natrargid				
Climate	Semi-Arid				Inches
Parent Material	Alluvium		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	>60)
Elevation	---		Topsoil	(	13)
Slope	1%		Drainage	Well	
Aspect	N		Root distrib	60	
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	10%	

N. Veg. Shrubs Atco 1%, OP .5%, Saib 1.5%

N. Veg. Grass/Forbs Spai 1%

Additional notes: called patel (3-5-08) BAB based on clay subsurface

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-6	SL / 5		10YR 5/3	PL	S		SL	--	--	--
Btn	6-13	SL / 5		10YR 5/4	SBK	S		SL	--	--	--
C_1	13-60	CL / 36		10YR 5/4	MA	VH		ST	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/22/07 Time	Stop No. 14 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	30
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Gusa 2%, Atca 1%, OP .5%, Saib 3%

N. Veg. Grass/Forbs Spai 1%

Additional notes: fine loamy, no calcic, lab data from 15B

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 14		10YR 5/4	Pl	SH		ST	<1	--	--
Bt	4-11	SL 18		10YR 5/3	SBK	HA		VE	1-2	--	--
Btk	11-21	SCL 20		10YR 5/4	SBK	VH		VE	12-15	--	--
C_1(k)	21-30	SL 12		10YR 4/4	MA	VH		ST	2	--	--
Btkb	30-48	SCL 28		10YR 4/4	SBK	VH		VE	5-8	--	--
Cyb/Cb	48-60	SL 12		10YR 5/4	MA	VH		NE	<1	--	--

Soil Description

Area V Soil Survey BAB/LR

Soil Type	Doak	Date 10/26/07 Time	Stop No. 15 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	N	Root distrib	60
Erosion	Severe	Surface Salt	
Permeability	Moderate	Surface Stoniness	4%

N. Veg. Shrubs Gusa 2%, Atca 1%, OP .5%

N. Veg. Grass/Forbs Spai 1%, Orhy .1%

Additional notes:

Sample (depth inches)

0-4

4-14

14-24

24-36

36-60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 11	SL/15	10YR 5/3	GR	SH		ST	<1	<1	<1
Btk_1	4-14	SL 18	SL-SCL 20	10YR 4/3	SBK	H/MH		VE	1-2	<1	<1
Btk_2	14-24	SCL 30	CL/37.5	10YR 4/3	SBK	VH		VE	3-5	1	<1
Cy	24-36	SL 13	SL/17.5	10YR 4/3	M	MH		VS/NE	<1	1	<1
C	36-60	S 4	S-SL 10	10YR 4/4	M	SH		NE	<1	--	<1

Soil Description

Area V Soil Survey

Soil Type	Grieta	Date 10/22/07 Time	Stop No. 16 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Atca 1%, Gusa 1%, OP .3%

N. Veg. Grass/Forbs Orhy .5%, Spai .5%, Hija.5%

Additional notes:

Sample (depth inches)

0-4

4-10

10-25

25-36

36-60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LFS / 8	LS/6	10YR 5/4	PL	S		ST	<1	--	--
Bt	4-10	SL / 16	SL/15	10YR 5/4	SBK	HA		ST	1-2	--	--
Btk	10-25	SL / 18	SCL/22.5	10YR 5/4	SBK	VH		VE	12-15	--	--
Ck	25-36	SL / 15	SL/15	10YR 5/4	MA	VH		VE	5-7	--	--
C_2	36-60	S / 4	LS/10	10YR 5/4	MA	HA		NE	1	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/22/07 Time	Stop No. 19 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(43)
Physiography	Upland	Bedrock	(15)
Elevation	---	Topsoil	(15)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	43
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	5

N. Veg. Shrubs Gusa 1%, Saib 3%, Atco 2%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 8		10YR 5/4	GR	S		ST	--	--	--
Bt	5	SL / 10		10YR 5/4	SBK	VH		VE	--	--	--
Btk	15	SL / 14		10YR 5/4	SBK	VH		VE	3%	--	--
Cr/R	15-43		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 10/22/07 Time 12:35 pm Stop No.	22 B
Classification	Orthent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(12)
Physiography	Upland	Bedrock	(4)
Elevation	---	Topsoil	(4)
Slope	0-5%	Drainage	Well
Aspect	SE	Root distrib	4
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Atca 1%, OP 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 4/5	GR	S		ST	--	--	--
	4↓		weathered bedrock								

Soil Description

Area V Soil Survey JN

Soil Type	Shiprock	Date 10/22/07 Time	Stop No. 25 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai .3%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL 10		10YR 4/4	PL	HA		ST	--	--	--
Bt	5-14	SL 12		10YR 4/6	SBK	HA		SL	--	--	--
Bk	14-22	LS 5		10YR 4/4	SBK	VH		ST	--	--	--
Ck	22-43	SCL 22		10YR 4/6	MA	VH		VE	--	--	--
C	43-60	SL 16		10YR 4/6	MA	VH		ST	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Fruitland	Date 10/22/07 Time	Stop No. 26 B
Classification	Torriorthent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	3%	Drainage	Well
Aspect	N	Root distrib	60
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs OP .5%

N. Veg. Grass/Forbs Spcr .5%, Hija .5%

Additional notes:

Sample (depth inches)

0-60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 5	SL/16.3	10YR 5/4	PL	S		ST	--	--	--
C_1	3-39	LS / 8	SL/16.3	10YR 5/4	MA	SH		ST	--	--	--
C_2	39-60	S / 2	SL/16.3	10YR 5/4	MA	SH		ST	--	--	10
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/23/07 Time	Stop No. 27 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(39)
Physiography	Upland	Bedrock	(30)
Elevation	---	Topsoil	(30)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: possibly truncated Doak?

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SCL / 20		2.5YR 4/4	GR	S		ST	--	--	--
Bk	4-24	CL / 28		2.5YR 5/6	SBK	S		VE	--	--	--
Btk	24-30	CL / 30		2.5YR 6/6	SBK	S		VE	--	--	--
Sand stone	30-	/			Very weak						
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/23/07	Time	Stop No.	29 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	48)
Physiography	Upland		Bedrock	(	18)
Elevation	---		Topsoil	(	18)
Slope	0-1%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	<1%	

N. Veg. Shrubs Gusa 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: really weathered bedrock w/ carbonate

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 6		10YR 4/4	PL	S		SL	--	--	--
Bt	3-9	SCL / 18		10YR 4/4	SBK	S		ST	--	--	--
Btk	9-18	SCL / 18		10YR 4/3	MA	S		ST	--	--	--
Cr/K	18-35		Lots of $CaCO_3$								

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/23/07	Time	Stop No.	30 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	18)
Elevation	---		Topsoil	(	18)
Slope	2%		Drainage	Well	
Aspect	N		Root distrib	18	
Erosion	Severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Atca 3%

N. Veg. Grass/Forbs Spai 10%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	S / 2		10YR 5/4	PL	S		NE	--	--	--
C_1	2-18	S / 2		10YR 5/4	MA	S		NE	--	--	--
Cr Sandstone											

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/23/07 Time	Stop No. 31 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(54)
Elevation	---	Topsoil	(54)
Slope	1%	Drainage	Well
Aspect	N, NW	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 3%

N. Veg. Grass/Forbs Spai 5%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	S 3		10YR 5/4	GR	S		ST	--	--	--
C_1	4-8	S 2		10YR 4/4	MA	S		ST	--	--	--
2C	8-36	LS 9		7.5YR 5/6	MA	HA		VE	--	--	--
$2C_2$	36-54	SL 12		7.5YR 5/6	MA	SH		VE	--	--	--
Bedrock	54-60										

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 10/23/07	Time	Stop No.	34 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	30)
Physiography	Upland		Bedrock	(	17)
Elevation	---		Topsoil	(	--)
Slope	0-1%		Drainage	Well	
Aspect	S		Root distrib	9	
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	3%	

N. Veg. Shrubs OP 1%, Atca 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes: 17" to bedrock – check soil type. Very weak structure in the B horizons

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	SCL 18		2.5YR 5/3	PL	S		ST	--	--	--
Btn	2-9	SCL 18		2.5YR 5/3	SBK	S		ST	--	--	--
Bk	9-17	SCL 22		2.5YR 5/4	SBK	HA		VE	--	--	--
Btk	17-24	SCL 26		2.5YR 6/6	SBK	VH		VE	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/23/07 Time	Stop No. 36 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone/Residual	Pit Depth	(38)
Physiography	Upland	Bedrock	(17)
Elevation	---	Topsoil	(17)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Orhy 2%, Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 12		10YR 5/4	PL	S		SL	--	--	--
Bt	4-9	SCL 20		10YR 5/4	SBK	HA		ST	--	--	--
Btk	9-17	SCL 22		10YR 6/4	SBK	VH		VE	--	--	--
Cr/R											

Soil Description

Area V Soil Survey JN

Soil Type	Bacobi	Date 10/22/07 Time	Stop No. 37 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(50)
Physiography		Bedrock	(31)
Elevation	---	Topsoil	(31)
Slope	3%	Drainage	Well
Aspect	N, NW	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%, Gusa .5%, OP .4%

N. Veg. Grass/Forbs Spai .5%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS 3		10YR 5/4	GR	S		SL	--	--	--
Bt_1	3-10	SL 6		10YR 5/4	SBK	SH		SL	--	--	--
Bt_2	10-20	SL 12		10YR 4/4	MA	HA		ST	--	--	--
Bk	20-31	SCL 18		10YR 5/4	MA	HA		VE	--	--	--
Bedrock	31-		Weathered shale								

Soil Description

Area V Soil Survey JN

Soil Type	Monierco	Date 10/22/07 Time	Stop No. 38 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(50)
Physiography	Possible old floodplain	Bedrock	(20)
Elevation	---	Topsoil	(20)
Slope	2%	Drainage	Well
Aspect	N, NW	Root distrib	20
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	7%

N. Veg. Shrubs Atca 3%, Gusa 1%, OP .1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-6	SL / 8		10YR 4/4	GR	S		ST	--	--	--
Bt	6-20	SL / 12		10YR 4/4	MA	VH		VE	--	--	--
Cr/R	20-50										

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 10/22/07 Time	Stop No. 39 B
Classification			Need to visit
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(13)
Physiography	dune over bedrock	Bedrock	(13)
Elevation	---	Topsoil	(13)
Slope	4%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs Atca .5%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	LS / 4		10YR 5/2	GR	S		SL	--	--	--
C_1	2-13	LS / 4		10YR 5/3	SBK	S		SL	--	--	--
Bedrock	13-										

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/22/07 Time	Stop No. 40 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(50)
Elevation	---	Topsoil	(50)
Slope	3%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	3%

N. Veg. Shrubs OP .1%, Atca .5%

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL / 8		10YR 4/4	PL	SH		SL	--	--	--
Bw	5-9	SL / 8		10YR 4/4	MA	S		ST	--	--	--
Bt	9-22	SL / 10		10YR 4/4	MA	HA		VE	--	--	15%
Btk	22-37	SL / 18		10YR 5/3	MA	HA		VE	--	--	--
C	37-50	/		10YR 4/3	MA	VH		VE	--	--	--
Bedrock	50-60	/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/23/07 Time	Stop No. 46 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: SBK's very weak structure

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL / 8		10YR 4/4	PL	S		ST	--	--	--
Btk	5-23	SL / 12		10YR 5/6	SBK	S		ST	--	--	--
Bk	23-40	SL / 8		10YR 5/4	SBK	HA		VE	5%	--	--
C_1	40-60	LS / 5		10YR 5/4	MA	S		ST	--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 10/23/07 Time	Stop No. 47 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual ?	Pit Depth	(36)
Physiography	Upland	Bedrock	(10)
Elevation	---	Topsoil	(10)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%, Gusa 1%

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 4/4	GR	S		ST	--	--	--
C	4-10	SL / 8		10YR 4/4	SBK	S		ST	--	--	--
R											

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/23/07	Time	Stop No.	48 A
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	23)
Elevation	---		Topsoil	(	23)
Slope			Drainage	Well	
Aspect	SE		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	2%	

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Orhy 1%, Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL / 10		2.5YR 5/4	PL	SH		ST	--	--	--
Bk	5-16	SL / 12		2.5YR 5/4	SBK	HA		ST	--	--	--
Btk	16-23	SCL / 22		2.5YR 7/4	SBK	VH		ST	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/23/07 Time	Stop No. 48 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	3%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs OP 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		2.5YR 5/4	PL	S		SL	--	--	--
Bt	4-10	SL / 14		2.5YR 5/4	SBK	SH		ST	--	--	--
Btk	10-16	SL / 15		2.5YR 5/4	SBK	VH		ST	--	--	--
Cr/R											

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/23/07 Time	Stop No. 49 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(37)
Elevation	---	Topsoil	(37)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%
N. Veg. Shrubs	Atca 1%		
N. Veg. Grass/Forbs	Spai 2%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SL / 8		10YR 5/4	PL	S		SL	--	--	--
B	4-13	SL / 10		10YR 4/4	SBK	S		ST	--	--	--
Bt	13-28	SL / 12		10YR 4/3	MA	S		VE	2%	--	--
Btk	28-37	SL / 10		10YR 4/3	MA	S		ST	3%	--	--
Cr/R											

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/23/07 Time	Stop No. 50 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Hija 2%, Spai 2%

Additional notes: Grass Islands, 1st B horizon – very sticky, no $CaCO_3$ layer

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL / 18		10YR 5/4	PL	S		SL	--	--	--
Bt	6-14	SCL / 24		10YR 4/4	SBK	HA		ST	--	--	--
Btb	14-39	SL / 16		10YR 5/3	PR	VH		ST	--	--	--
C_2	39-60	SL / 12		10YR 5/3	MA	SH		ST	--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/23/07 Time	Stop No. 51 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(40)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	16
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs OP 1%, Gusa 2%, Arca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL / 12		10YR 4/4	PL	S		ST	--	--	--
Bt	5-16	SL / 10		10YR 4/4	SBK weak	S		ST	--	--	--
Cr/K	16-36								50	--	--
Cr/R			Thick $CaCO_3$ layer								

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/23/07 Time	Stop No. 52 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(48)
Elevation	---	Topsoil	(48)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 2%, Atca 1%

N. Veg. Grass/Forbs Spai 3%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SCL 24		10YR 5/4	GR	S		SL	--	--	--
Bw	3-9	SL 17		10YR 5/6	SBK	S		VE	--	--	--
Bt	9-22	SL 14		10YR 5/4	SBK	S		ST	--	--	--
Btk	22-38	SL 10		10YR 5/4	SBK	HA		ST	--	--	--
C	38-48	LS 5		10YR 5/4	MA	HA		ST	--	--	--
Cr/R	48-60										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/23/07 Time	Stop No. 53 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(23)
Physiography	Upland	Bedrock	(10)
Elevation	---	Topsoil	(10)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	10
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca 2%, Gusa 2%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 12		10YR 5/4	PL	S		ST	--	--	--
Btk	3-10	SL / 15		10YR 5/4	SBK	SH		VE	--	--	--
Cr/R	10-20		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/23/07 Time	Stop No. 54 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	60
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 2%, Hairy gold Aster

N. Veg. Grass/Forbs Spai 12%, Elel 3%

Additional notes: Prairie like setting – lots of vegetation

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	Cl / 35		10YR 4/4	PL	S		ST	--	--	--
Bt	4-24	Cl / 35		10YR 4/4	SBK	HA		SL	--	--	--
C	24-60	L / 30			MA	HA		SL	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/23/07 Time	Stop No. 55 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	3%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: No calcic, fine loamy based on lab

Sample (depth inches)

0 – 24

24 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL / 10	SL-SCL 20		PL	SH		SL	--	--	--
Bt	6-12	SL / 12	SL-SCL 20		SBK	VH		ST	--	--	--
Btk	12-24	SL / 14	SL-SCL 20		SBK	HA		VE	1	--	--
Cky	24-60	SL / 8	SL/12		MA	S		NE	1	1	--
		/									
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		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/23/07 Time	Stop No. 56 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	3%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atca 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 5%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL 12		10YR 5/4	PL	HA		SL	--	--	--
Bt	5-16	SL 16		10YR 6/4	SBK	HA		ST	--	--	--
Btk	16-23	SCL 20		10YR 6/4	SBK	VH		VE	--	--	--
Cr/R	23-60		Shale			VH					

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/23/07 Time 4:35 pm Stop No.	57 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Highland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	5%	Drainage	
Aspect	S	Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

0 – 5

5 – 16

16 – 31 Sampled on 11/7/07

31 – 48

48 – 60

Blind (60 – 72)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	CL / 20	CL/27.5	10YR 5/4	GR	S		SL	0	--	--
Bt	5-16	CL / 30	CL/31.3	10YR 5/4	Pr	HA		SL	0	--	--
Bt_2	16-31	CL / 30	Cl/31.3	10YR 5/4	SBK	VH		SL	0	--	--
C	31-48	CL / 30	CL/30	10YR 5/4	MA	EH		SL	2	--	--
C_2	48-60	CL / 30	SL/17.5	10YR 5/4	MA	VH		SL	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/24/07	Time	Stop No.	58 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian over Residual		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	>60)
Elevation	---		Topsoil	(	60)
Slope	1-2%		Drainage	Well	
Aspect	S		Root distrib	60	
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Spai 2%, Brte 1%

Additional notes:

Sample (depth inches)

0 – 51

51 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SCL / 20	SL/17.5	10YR 4/4	SBK	HA		ST	--	--	--
Bt	5-51	CL / 35	SL/17.5	10YR 5/4	SBK	VH		ST	--	--	--
C_2	51-60	SL / 16	SL/11.3	10YR 4/4	MA	SH		NE	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/24/07 Time	Stop No. 59 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(40)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	0-1%	Drainage	Well
Aspect	S, SW	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%
N. Veg. Shrubs	Atca 2%		
N. Veg. Grass/Forbs	Spai 3%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SL / 12		10YR 4/4	SBK	S		ST	--	--	--
Bt	4-9	SL / 18		10YR 5/6	SBK	HA		V	--	--	--
Btk	9-16	SCL / 20		10YR 6/6	SBK	VH		V	--	--	--
Cr/R	16-27	/									
Sandstone	27-40	/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/24/07	Time	Stop No.	60 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	40)
Physiography	Upland		Bedrock	(	21)
Elevation	---		Topsoil	(	21)
Slope	2%		Drainage	Well	
Aspect	N, NE		Root distrib	21	
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	<1%	

N. Veg. Shrubs Yucca 1%, Chna 7%, Gusa 2%, Atca 1%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	S / 4		10YR 4/4	GR	SH		SL	--	--	--
C_1	4-16	S / 4		10YR 4/4	MA	SH		ST	--	--	--
C_2	16-21	S / 4		10YR 5/4	MA	SH		V	1	--	--
Cr/R			Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Truncated Shiprock	Date 10/24/07	Time	Stop No.	61 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	40)
Physiography	Upland just above floodplain		Bedrock	(	35)
Elevation	---		Topsoil	(	35)
Slope	2%		Drainage	Well	
Aspect	E		Root distrib	35	
Erosion	Severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Chna 10%

N. Veg. Grass/Forbs Spai 1%

Additional notes: reddish soil

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	S / 3		10YR 4/4	GR	S		ST	--	--	--
Bt	4-11	SL / 12		10YR 4/4	SBK	HA		ST	1	--	--
Btk	11-19	SL / 15		10YR 4/4	SBK	HA		V	3	--	--
C_1	19-27	S / 3		10YR 4/4	MA	SH		ST	2	--	--
C_2	27-35	S / 2		10YR 5/4	MA	S		ST	1	--	--
Cr/R	35-40		Sandstone bedrock								

Soil Description

Area V Soil Survey

Soil Type	Eroded-Shiprock (mod/deep)	Date 10/24/07 Time	Stop No. 62 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(37)
Elevation	---	Topsoil	(37)
Slope	1-2%	Drainage	Well
Aspect	N,NE	Root distrib	37
Erosion	Severe	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Btk – SBK very weak

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-7	SL / 12		10YR 4/4	PL	S		ST	--	--	--
Bt	7-12	SL / 17		10YR 4/4	SBK	HA		V	--	--	--
Btk	12-26	SCL / 20		10YR 5/4	SBK	VH		ST	2	--	--
C_1	26-37	S / 4		10YR 5/4	MA	SH		V	1	--	--
Cr/R	37-60		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/25/07	Time	Stop No.	63 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	60)
Physiography			Bedrock	(	>60)
Elevation	---		Topsoil	(	60)
Slope	1%		Drainage	Well	
Aspect	SW		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Atca 1%, Gusa 1%, OP 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

0 – 17

17 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	L / 25	L/25	10YR 4/4	PL	HA		SL	--	--	--
Bt	4-11	SCL / 27	L/25	10YR 4/4	SBK	HA		ST	--	--	--
Bt	11-17	Cl / 35	L/25	10YR 4/4	SBK	VH		V	--	--	--
C_1	17-53	Cl / 35	CL/30	10YR 4/4	MA	EH		ST	--	--	--
Ck	53-60	Cl / 35	CL/30	10YR 4/4	MA	EH		V	3	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Eroded Shiprock (mod/deep)	Date 10/24/07 Time	Stop No. 64 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(40)
Physiography	Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	32
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Chna 3%, Atca 2%

N. Veg. Grass/Forbs Spai 2%

Additional notes: reddish soil – not deep enough for Shiprock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 4/4	GR	S		NE	--	--	--
Bt	4-20	SL / 14		10YR 4/4	SBK	HA		ST	--	--	--
Ck	20-32	LS / 5		10YR 5/6	MA	SH		ST	2	--	--
Cr/R	32-40		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Jocity	Date 10/25/07 Time	Stop No. 65 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	60
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Gusa 1%, Atca 1%, Greasewood 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 – 35

35 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	CL / 35	SL/18.8	10YR 5/4	PL	HA		SL	--	--	--
C_1	3-24	CL / 35	SL/18.8	10YR 4/4	MA	HA		SL	--	--	--
C_2	24-35	SCL / 28	SL/18.8	10YR 4/4	MA	SH		SL	--	--	--
C_3	35-58	CL / 42	SCL/23.8	10YR 3/4	MA	VH		ST	1	--	--
C_4	58-60	SL / 14	SCL/23.8	10YR 3/4	MA	SH		ST	1	3	10
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/25/07 Time	Stop No. 66 B
Classification	Fluvent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N, NE	Root distrib	60
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 16		10YR 5/4	PL	SH		SL	--	--	--
C_1	3-19	S / 2		10YR 5/4	MA	S		NE	--	--	--
C_2	19-36	SCL / 26		10YR 5/4	MA	HA		NE	--	--	--
C_3	36-45	gSL / 15		10YR 5/4	MA	HA		SL	--	--	15
C_4	45-51	SCL / 26		10YR 5/4	MA	VH		NE	--	--	--
C_5	51-60	gS / 4		10YR 5/4	MA	HA		NE	--	--	10
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/25/07 Time	Stop No. 67 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium over Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-.5%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs	Atca 1%, OP 3%		
N. Veg. Grass/Forbs	Spai 2%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	SCL / 26		10YR 5/4	PL	S		SL	--	--	--
Bt	2-13	CL / 33		10YR 4/4	SBK	VH		ST	--	--	--
Btk	13-25	CL / 39		10YR 4/4	SBK	VH		V	2	--	--
C_1	25-60	siSC / 50		10YR 4/4	MA	EH		ST	--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/25/07 Time	Stop No. 68 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(36)
Elevation	---	Topsoil	(36)
Slope	0-.5%	Drainage	Well
Aspect	SW	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs OP 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	CL / 30		10YR 4/3	PL	HA		ST	--	--	--
Bt	3-12	CL / 35		10YR 4/4	SBK	HA		V	--	--	--
Bt	12-36	CL / 35		10YR 4/4	SBK	HA		V	--	--	--
C/Cr	36-		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/25/07	Time	Stop No.	69 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	45)
Physiography	Upland slope		Bedrock	(	11)
Elevation	---		Topsoil	(	11)
Slope	4%		Drainage	Well	
Aspect	NE		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs Atca 2%, Gusa 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL / 10		10YR 5/4	GR	S		SL	--	--	--
Btk	5-11	SL / 15		10YR 5/4	Weak SBK	HA		ST	--	--	--
Sandstone Bedrock	11-										

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 10/25/07	Time	Stop No.	70 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	48)
Physiography	Floodplain		Bedrock	(	5)
Elevation	---		Topsoil	(	---)
Slope	2-3%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	<1%	

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Looks like wind deposited sand over bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	LS 6			PL/GR	S		SL	--	--	--
Sandstone											

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/25/07 Time	Stop No. 71 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual (buried Monierco)	Pit Depth	(50)
Physiography	Upland	Bedrock	(33)
Elevation	---	Topsoil	(33)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: shale bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL 14		10YR 4/3	PL	SH		ST	--	--	--
C_1	6-17	SL 16		10YR 5/4	MA	SH		ST	--	--	--
bBk	17-25	SCL 26		10YR 5/4	SBK	VH		V	3	--	--
bBky	25-33	SCL 22		10YR 5/4	SBK	VH		ST	1	2	--
Cr/R	33-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Fajada	Date 10/25/07 Time	Stop No. 73 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(50)
Physiography	Stream channel	Bedrock	(26)
Elevation	---	Topsoil	(7)
Slope	0-.5%	Drainage	Well
Aspect	N, NW	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	4%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-7	SL 12		10YR 4/4	GR	S		ST	--	--	--
Btn	7-12	SCL 28		10YR 4/4	SBK	HA		ST	--	--	--
Btky	12-26	CL 35		10YR 4/4	SBK	HA		ST	1	2	--
Cr/R	26-shale										

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/25/07 Time	Stop No. 74 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(46)
Slope	1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%, Hija 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 5		10YR 5/4	PL	HA		ST	--	--	--
Ck	4-10	LS / 5		10YR 5/4	MA	HA		V	3	--	--
C_2	10-46	SL / 12		10YR 5/4	MA	VH		NE	--	--	--
C_3	46-60	C / 50		2.5YR 5/3	MA	EH		ST	5	--	--
				↓							
				Buried under a Dune/ way different color, texture/clay content							

Soil Description

Area V Soil Survey

Soil Type	Hoskay	Date 10/25/07	Time	Stop No.	75 B
Classification	Natrargid				
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	60)
Physiography	Upland		Bedrock	(	>60)
Elevation	---		Topsoil	(	---)
Slope	0%		Drainage	Well	
Aspect	NE		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	5%	

N. Veg. Shrubs ---

N. Veg. Grass/Forbs ---

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	C / 45		10YR 5/4	PL	S		ST	--	--	--
Btn	3-9	C / 50		10YR 5/4	SBK	HA		ST	--	--	--
Bky	9-21	C / 50		10YR 5/4	PL	HA		V	--	--	--
C	21-60	C / 50		10YR 4/4	MA	VH		ST	--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/25/07 Time	Stop No. 76 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(40)
Physiography	Upland	Bedrock	(15)
Elevation	---	Topsoil	(15)
Slope	2-3%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%
N. Veg. Shrubs	OP 1%, Atca 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SCL 18		10YR 5/4	PL	SH		ST	--	--	--
Bt	3-7	SCL 26		10YR 5/4	SBK	HA		ST	1	--	--
Btk	7-15	CL 33		10YR 5/4	SBK	HA		V	5	--	--
Cr/R	15-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/25/07	Time	Stop No.	77 B
Classification	Haplargid				
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	11)
Elevation	---		Topsoil	(	11)
Slope	1-2%		Drainage	Well	
Aspect	N, NE		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Moderate		Surface Stoniness	1%	

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SL / 12		10YR 5/4	PL	SH		ST	--	--	--
Bw	3-7	SL / 12		10YR 5/4	SBK	SH		ST	--	--	--
Bt	7-11	SL / 14		10YR 4/4	SBK	HA		ST	--	--	--
Cr/R	11-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/25/07	Time	Stop No.	78 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian over bedrock		Pit Depth	(	60)
Physiography	Dune		Bedrock	(	19)
Elevation	---		Topsoil	(	19)
Slope	2%		Drainage	Well	
Aspect	SW		Root distrib		
Erosion	Severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness		

N. Veg. Shrubs Gusa 2%, Atca 1%

N. Veg. Grass/Forbs Spai 3%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	S / 3		10YR 5/4	GR	S		NE	--	--	--
C	4-19	S / 3		10YR 5/4	MA	S		NE	--	--	--
Cr/R	19-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 10/25/07 Time	Stop No. 80 B
Classification	(lacking structure for B)		
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(20)
Elevation	---	Topsoil	(20)
Slope	3-4%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atca 3%, Gusa 2%

N. Veg. Grass/Forbs Spai 1%, Hija 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 12		10YR 5/4	GR	S		SL	--	--	--
C_1	4-11	SL / 14		10YR 5/4	MA	SH		ST	--	--	--
C_2	11-20	SL / 16		10YR 5/4	MA	SH		V	--	--	--
Cr/R	21-		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/25/07 Time	Stop No. 81 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(40)
Elevation	---	Topsoil	(40)
Slope	0%	Drainage Well	clay content
Aspect	SW	Root distrib	
Erosion	Slight	Surface Salt 0	
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Gusa 3%, Atca 1%

N. Veg. Grass/Forbs Hairy Gold Aster 1%, Spai 1%

Additional notes:

Sample (depth inches)

0 – 8

8 – 30

30 - 40

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	SL / 16	SL/17.5	10YR 5/4	PL	SL		SL	--	--	--
Bt	8-22	CL / 40	SCL/30	10YR 4/4	SBK	HA		ST	1	--	--
Bt2	22-30	CL / 35	SCL/30	10YR 4/4	SBK	HA		V	2	--	--
C_1	30-40	SL / 16	SL/17.5	10YR 5/4	MA	SH		SL	2	1	--
Shale bedrock	40-										

Soil Description

Area V Soil Survey

Soil Type	Patel	Date 10/25/07 Time	Stop No. 82 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(50)
Physiography	Base of hill	Bedrock	(38)
Elevation	---	Topsoil	(--)
Slope	0-1%	Drainage Well	clay content
Aspect	W	Root distrib	
Erosion	Slight	Surface Salt 0	
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SCL 28		10YR 5/4	PL	S		SL	--	--	--
Btn	4-15	CL 40		10YR 4/4	SBK	HA		ST	--	--	--
Btky	15-24	CL 45		10YR 5/4	SBK	HA		ST	--	--	--
C	24-40	LS 6		10YR 4/4	MA	SH		SL	--	--	--
Sandstone Bedrock	40-										

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/30/07	Time	Stop No.	84 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material	Eolian/Residual		Pit Depth	(	60)
Physiography	Top of hill (dune like, very sandy)		Bedrock	(	12)
Elevation	---		Topsoil	(	12)
Slope	2-3%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Slight/Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs Mormon tea 2%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 6		10YR 5/4	PL	S		NE	--	--	--
C	3-12	LS / 6		10YR 5/4	MA	SH		SL	--	1	--
Cr/K	12-24		Sandstone over Shale						15		

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 85 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(20)
Physiography	Upper part of dune	Bedrock	(11)
Elevation	---	Topsoil	(11)
Slope	3-4%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs OP 1%, Gusa .5%

N. Veg. Grass/Forbs Spai 1%

Additional notes: shallow

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 5/4	GR	S		NE	--	--	--
Bt	4-11	SL / 12		10YR 5/3	SBK	SH		ST	1	1	3
Sandstone	11-										

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/30/07	Time	Stop No.	86 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	30)
Physiography	Dune		Bedrock	(	24)
Elevation	---		Topsoil	(	24)
Slope	2%		Drainage	Well	
Aspect	N, NW		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Gusa 1%, Mormon tea 1%, Yucca 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes: Very similar to 87 B

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 5		10YR 5/4	GR	S		NE	--	--	--
C_1	3-14	S / 3		10YR 5/4	MA	S		NE	--	--	--
C_2	14-20	SL / 10		10YR 5/4	MA	SH		ST	1	--	3
Ck	20-24	SL / 14		10YR 6/4	MA	SH		ST	5	--	5
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/30/07	Time	Stop No.	87 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	40)
Physiography	Sand Dune or Sand Cap		Bedrock	(	35)
Elevation	---		Topsoil	(	35)
Slope	1%		Drainage	Well	
Aspect	NW		Root distrib		
Erosion	Slight to moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Yucaa 1%, Mormon tea 2%, Gusa 1%

N. Veg. Grass/Forbs Orhy 2%

Additional notes:

Sample (depth inches)

0 – 13

13 – 27

27 - 35

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	S / 3	LS/8	10YR 5/4	GR	S		NE	--	--	--
C_1	3-13	S / 2	LS/8	10YR 5/4	MA	S		NE	1	1	--
C_2	13-27	SL / 14	SL/17.5	10YR 5/6	MA	SL		ST	1	1	3
Ck	27-35	SL / 12	LS/10	10YR 6/4	MA	SL		ST	5	--	5
Sandstone	35-										

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/30/07 Time	Stop No. 89 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(60)
Physiography	Edge of mesa or slope	Bedrock	(60)
Elevation	---	Topsoil	(30)
Slope	2-3%	Drainage	Well
Aspect	NW	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Wolf Berry 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes: red layer of soil, deep

Sample (depth inches)

0 – 24

24 - 30

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 6	LS/10	10YR 5/4	PL	S		NE	--	--	--
C_1	3-12	S / 3	LS/10	10YR 5/4	MA	S		NE	--	--	--
C_2	12-18	S / 3	LS/10	10YR 5/4	MA	SH		SL	--	1	--
C_3	18-24	LS / 6	LS/10	10YR 5/4	MA	SH		SL	--	1	--
Btkyb	24-30	SCL / 20	SCL/22.5	7.5YR 3/4	SBK	HA		ST	3	2	
Cr/R	30-60		Red clay								

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 10/30/07	Time	Stop No.	90 B
Classification	Natrargid				
Climate	Semi-Arid				Inches
Parent Material	Shale over coal		Pit Depth	(	20)
Physiography	edge of mesa, bottom of slope		Bedrock	(	12)
Elevation	---		Topsoil	(	---)
Slope	1-2%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	2%	

N. Veg. Shrubs Atco .5%

N. Veg. Grass/Forbs Spai .5%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SCL / 20		10YR 3/2	PL	SH		ST	--	--	--
BtkN	3-8	CL / 33		10YR 2/1	SBK	SH		ST	--	--	--
Bty	8-12	CL / 33		10YR 2/1	SBK	SH		NE	2	9	--
Coal Shale	12-	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07	Time	Stop No.	91 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	40)
Physiography	Edge of mesa		Bedrock	(	22)
Elevation	---		Topsoil	(	22)
Slope	1-2%		Drainage	Well	
Aspect	NW		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	3%	

N. Veg. Shrubs Gusa .5%, Mormon tea 1%

N. Veg. Grass/Forbs Orhy 1%, Spai 1%

Additional notes: shallow soil

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	S / 2		10YR 5/6	GR	S		NE	--	--	--
C	3-10	LS / 5		10YR 5/4	MA	S		SL	--	--	--
Btkb	10-22	SL / 17		10YR 5/6	SBK	HA		V	3	--	--
Sandstone	22-										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07	Time	Stop No.	92 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	60)
Physiography			Bedrock	(	33)
Elevation	---		Topsoil	(	33)
Slope	2%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs OP 1%, Atco 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

0 – 7

7 – 18

18 – 26

26 - 33

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SL / 12	SL/15	10YR 5/4	PL	S		ST	--	--	--
Bt	3-7	SL / 14	SL/15	10YR 5/4	SBK	HA		ST	--	--	--
Btk	7-18	SCL / 20	SCL/25	10YR 5/4	SBK	HA		V	2	--	--
Ck	18-26	SL / 12	SL/12.5	10YR 5/4	MA	HA		V	2	--	--
C	26-33	gL / 12	SL/12.5	10YR 5/4	MA	HA		ST	1		5
Shale	33-										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 93 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(40)
Physiography	Edge of mesa	Bedrock	(10)
Elevation	---	Topsoil	(10)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 1%, Atco 1%, Mormon tea 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: shallow

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 5		10YR 5/4	GR	S		NE	--	--	--
Bt	3-7	SL / 12		10YR 5/4	SBK	SH		SL	--	--	--
Btk	7-10	SL / 14		10YR 5/4	SBK	HA		ST	5	--	--
Sandstone	10-	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/30/07	Time	Stop No.	94 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	45)
Physiography	Mesa		Bedrock	(	12)
Elevation	---		Topsoil	(	12)
Slope	1-2%		Drainage	Well	
Aspect	NW		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs Atca 3%, Gusa 2%

N. Veg. Grass/Forbs Spai .5%

Additional notes: too sandy to be Monierco, no Bt horizon

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2.5	LS / 6		10YR 5/4	PL	S		NE	--	--	--
C_1	2.5-12	LS / 6		10YR 5/4	MA	SH		ST	--	--	--
Cr/R	12-21		Sandstone					V	15		

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 95 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(40)
Physiography	Mesa	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Gusa 1%, Atco 2%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 8		10YR 5/4	PL	S		NE	--	--	--
Bt	3-10	SL / 12		10YR 5/4	SBK	SH		ST	--	--	--
Btk	10-23	SL / 15		10YR 5/4	SBK	SH		V	3-5	--	--
Cr/R	23-	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/30/07 Time	Stop No. 96 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Mesa	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs OP 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches) No calcic, fine-loamy based on lab

0 – 4

4 – 8

8 – 18

18 – 45

45 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 12	SL/13.8	10YR 5/4	PL	S		ST	--	--	--
Bt	4-8	SL 14	SL/18.8	10YR 5/4	SBK	SH		ST	--	--	--
Btk	8-18	SCL/SL 18	SCL/22.5	10YR 4/3	SBK	HA		V	3-5	--	--
Btk	18-45	SL 18	SCL/25	10YR 4/3	SBK	HA		V	10-12	--	--
C	45-60	SL 11	SL/15	10YR 5/4	MA	SH		ST	2	1	5

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 97 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(24)
Elevation	---	Topsoil	(24)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-7	SL 12		10YR 5/4	PL	S		ST	--	--	--
Bt	7-14	SL 16		10YR 5/4	SBK	HA		V	3	--	--
Btk	14-24	SCL 22		10YR 6/6	SBK	HA		V	12	--	--
Sandstone	24-										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 98 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight/Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Atco 2%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-7	SL / 12		10YR 5/4	PL	S		ST	--	--	--
Bt	7-14	SL / 16		10YR 5/4	SBK	HA		V	2	--	--
Btk	14-23	SCL / 20		10YR 6/4	SBK	HA		V	12	--	--
Shale	23-	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 99 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(50)
Physiography	Dune	Bedrock	(26)
Elevation	---	Topsoil	(26)
Slope	0-.5%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability		Surface Stoniness	1%

N. Veg. Shrubs Atca 2%, OP 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 5/4	PL	S		NE	--	--	--
Bt	4-16	SL / 12		10YR 5/4	SBK	SH		SL	--	--	--
Btk	16-26	SL / 16		10YR 4/4	SBK	HA		ST	4	--	--
Cr/R	26-	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock (mod/deep)	Date 10/30/07	Time	Stop No.	100 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	50)
Physiography	Upland/Dune		Bedrock	(	36)
Elevation	---		Topsoil	(	36)
Slope	0-1%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Moderate - Severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	<1%	

N. Veg. Shrubs Wolf Berry 1%, Chna 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LS 6		10YR 5/4	GR	S		NE	--	--	--
Bt	6-16	SL 14		10YR 4/4	SBK	HA		ST	--	--	--
Btk	16-29	SL 18		10YR 4/4	SBK	HA		ST	4	--	--
C	29-36	LS 6		10YR 5/4	MA	SH		ST	--	--	--
Cr/R			Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/23/07	Time	Stop No.	101 B
Classification	Fluvent				
Climate	Semi-Arid				Inches
Parent Material	Alluvium		Pit Depth	(	60)
Physiography	Floodplain		Bedrock	(	46)
Elevation	---		Topsoil	(	46)
Slope	1-2%		Drainage	Well	
Aspect	E		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Moderate		Surface Stoniness	<1%	

N. Veg. Shrubs Gusa .3%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 - 46

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	LS / 9	SL/15	10YR 4/4	SBK	S		SL	--	--	--
C_1	4-19	LS / 8	SL/15	10YR 4/4	MA	S		SL	--	--	--
C_2	19-33	LS / 8	SL/15	10YR 4/4	MA	S		SL	--	--	--
C_3	33-46	S / 2	SL/15	10YR 4/4	MA	S		SL	--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Mayqueen	Date 10/23/07 Time	Stop No. 102 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain/Terrace	Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs Atca .3%, OP .3%, Gusa .1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: more on floodplain (lab data shows carbonates at 2-3%)

Sample (depth inches)

0 – 13

13 - 57

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	LS / 5	LS/6.3	10YR 5/4	SBK	S		SL	--	--	--
AB	8-13	S / 3	LS/6.3	10YR 5/4	SBK	S		SL	--	--	--
Btk	13-21	LS / 7	SL/12.5	10YR 5/4	SBK	HA		SL	3-5	--	--
C_1	21-51	S / 2	SL/12.5	10YR 4/4	MA	HA		SL-ST	--	--	--
C_2	51-57	crSL / 14	SL/12.5	10YR 4/3	MA	HA		SL-ST	--	--	--
C_3	57-60	crSL / 12	SL/12.5	10YR 5/3	MA	HA		SL-ST	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/23/07 Time	Stop No. 103 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	--
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Greasewood 1%, Gusa .2%

N. Veg. Grass/Forbs Spai .5%

Additional notes: Similar to (Blancot) C_2 – Extremely hard

Sample (depth inches)

0 – 12

12 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	CL 22	CL/32	10YR 5/4	PL	HA		SL	--	--	--
Bt	4-12	CL 28	CL/32	10YR 4/4	SBK	VH		SL	--	--	--
C_1	12-36	SCL 15	CL/33	10YR 4/4	MA	EH		SL	--	--	--
C_2	36-60	CL 25	CL/33	10YR 5/4	MA	EH		ST	2	--	--

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/23/07 Time	Stop No. 104 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	.1%
N. Veg. Shrubs	Greasewood .70%, Atca .3%		
N. Veg. Grass/Forbs	Spai .5%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS 3		10YR 4/4	PL	S		V	--	--	--
C_1	5-14	SL 5		10YR 4/4	SBK	S		V	--	--	--
C_2	14-24	SL 10		10YR 4/4	MA	HA		V	--	--	--
C_3	24-57	LS 5		10YR 5/4	MA	S		V	--	--	5
C_4	57-62	S 2		10YR 4/4	MA	HA		V	--	--	--
C_5	62-70	SC 20		10YR 4/4	MA	HA		SL	--	--	15
	70-		Clay layer								

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 10/23/07 Time	Stop No. 105 B
Classification	Fluvent		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Greasewood 3%, Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: layered sand/clay

Sample (depth inches)

0 – 19

19 – 37

37 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SCL / 20	SCL/25	10YR 5/4	PL	S		ST	--	--	--
Bt	4-8	CL / 30	SCL/25	10YR 4/4	SBK	VH		SL	--	--	--
Bt_2	8-19	SCL / 22	SCL/25	10YR 5/4	SBK	VH		SL	--	--	--
Bt_3	19-37	CL / 30	CL/37.5	10YR 4/4	SBK	VH		SL	--	--	--
C_1	37-53	SL / 8	SL/17.5	10YR 5/4	MA	SH		NE	--	--	--
C_2	53-56	S / 2	SL/17.5	10YR 4/4	MA	S		NE	--	--	20
C_3	56-60	SL / 8	SL/17.5	10YR 4/4	MA	SH		NE	--	--	--
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 10/23/07 Time	Stop No. 106 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	1-2%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs At?? 1%, Gusa .5%

N. Veg. Grass/Forbs Spai .5%

Additional notes: on top of old stream terrace

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 6/4	Pl	SH		ST	--	--	--
B	4-20	SL / 12		10YR 6/4	SBK	HA		ST	weak structure	--	--
Btk	20-30	SL / 15		10YR 5/3	SBK	VH		V	weak structure	--	--
C_1	30-45	cS / 2		10YR 6/3	MA	VH		NE	--	--	5
C_2	45-60	cS / 2		10YR 5/3	MA	S		NE	--	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Gilco	Date 10/23/07 Time	Stop No. 107 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 5%, Atca 1%, Greasewood 1%

N. Veg. Grass/Forbs Spai 1%, Hija 1%

Additional notes: $C_5 – C_6$ extremely compacted

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 8		10YR 4/3	PL	S		ST	--	--	--
C_1	3-5	GS / 2		10YR 4/3	MA	S		ST	--	--	40
C_2	5-8	SL / 10		10YR 4/3	MA	S		ST	--	--	--
C_3	8-13	cS / 2		10YR 4/3	MA	S		SL	--	--	40
C_4	13-21	SL / 12		10YR 4/3	MA	HA		NE	--	--	--
C_5	21-43	SL / 15		10YR 4/3	MA	VH		SL	--	--	--
C_6	43-60	SCL / 20		10YR 4/3	MA	VH		ST	2	1	--
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/23/07 Time	Stop No. 108 B
Classification	Torripsamments		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 8		10YR 5/3	PL	S		SL	--	--	--
C_1	3-21	LS / 5		10YR 4/4	MA	H		V	--	--	--
C_2	21-34	S / 3		10YR 4/6	MA	S		V	--	--	--
C_3	34-49	S / 3		10YR 4/3	MA	S		SL	--	--	--
C_4	49-60	S / 2		10YR 5/4	MA	S		SL	--	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/23/07	Time	Stop No.	109 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	48)
Physiography	Upland		Bedrock	(	26)
Elevation	---		Topsoil	(	26)
Slope	2-3%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	2%	

N. Veg. Shrubs Atca 3%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Horizon Btk – Structure – very little structure

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-9	LS / 5		10YR 4/4	PL	HA		ST	--	--	--
Btk	9-19	SCL / 18		10YR 4/4	SBK	HA		V	5	--	--
Bt	19-26	SCL / 22		10YR 3/4	SBK	HA		ST	3	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 10/29/07 Time	Stop No. 110 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(66)
Physiography		Bedrock	(53)
Elevation	---	Topsoil	(53)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs OP 1%, Atco 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Calcitic horizon (Bk)

Sample (depth inches)

0 – 4 First pit opened at 8:20 am

4 – 24

24 – 36

36 - 53

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 12	SL/10	2.5YR 5/4	PL	SH		ST	--	--	--
Bt_1	4-12	SL 14	SL/15	2.5YR 5/4	SBK	SH		V	--	--	--
Btk	12-24	SL 16	SL/15	2.5YR 5/4	SBK	HA		V	--	--	--
Bk	24-36	SCL 28	L/22.5	2.5YR 6/4	SBK	SH		V	12	--	--
C	36-53	SL 12	SCL/25	2.5YR 5/4	MA	HA		ST	--	--	--
Cr/R	53--										

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 11/7/07 Time	Stop No. 114 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(40)
Physiography	Lowland	Bedrock	(40)
Elevation	---	Topsoil	(12)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atco 1%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 – 12

12 – 24

24 - 40

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
C	0-12	SL 16	SL/12.5	10YR 5/4	MA	HA		SL	<1	<1	--
2Btkb	12-24	SCL 23	SCL/ 21.3	10YR 5/4	SBK	VH		ST	1-3	1	--
2Btky	24-40	CL 28	SCL/ 24.2	10YR 6/4	SBK	EH		ST	3-5	2	--
2Crky	40-										

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 11/7/07 Time	Stop No. 115 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland dune	Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Gusa 1%, Chna 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 – 7

7 – 20

20 – 36

36 - 60 Blind sample dup of 36-60 (60-76)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-7	SL 15	LS/10	10YR 5/4	GR	SH		ST	<1	--	--
Bt_1	7-20	SCL 18	SL/12.5	10YR 5/4	SBK	HA		ST	<1	--	--
Bt_2	20-36	SCL 25	SL/SCL 20	10YR 5/3	PR	VH		ST	<1	--	--
C	36-60	SL 16	SL/12	10YR 5/4	MA	VH		SL	<1	--	--
Blind	60-76		A blind of 36” – 60”						Sand	Silt	Clay
									55 50-55	20	25 23-27

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 11/7/07	Time	Stop No.	116 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Alluvium		Pit Depth	(	50)
Physiography	Upland		Bedrock	(	39)
Elevation	---		Topsoil	(	39)
Slope	0-1%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Wolf berry 1%, Gusa 1%, Atco 1%

N. Veg. Grass/Forbs Spai 2%, Orhy 1%, Brte 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-7	SL 12		10YR 5/4	PL/GR	SH		ST	<1	--	--
Bt_1	7-18	SL 18		10YR 5/4	SBK	MH		SL	<1	--	--
Bt_2	18-30	SCL 24		10YR 5/4	SBK	VH		SL	<1	--	--
C	30-39	SL 10		10YR 5/4	MA	VH		NE	<1	--	--
2Crky	39-48								5-8	2	--
Shale											

Soil Description

Area V Soil Survey BAB

Soil Type	Shiprock eroded (mod/deep)	Date 10/29/07	Time 8:35 Stop No. 118 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(27)
Elevation	---	Topsoil	(27)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atco 1%, OP 2%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Shiprock w/ 12" – 24" erosion

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	SL 12		10YR 5/4	PL	SH		V	<1	--	<1
Btk	2-17	SL 16		10YR 5/4	SBK	HA		V	2-3	--	<1
C	17-27	LS 8		10YR 5/4	MA	HA		V	1-2	--	2
2Crk	27		Shale						15	1	--
2R			Shale								

Soil Description

Area V Soil Survey

Soil Type	Fajada (coarse loamy)	Date 11/7/07	Time	Stop No.	121 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian/Alluvium		Pit Depth	(	55)
Physiography	Upland/dune		Bedrock	(	55)
Elevation	---		Topsoil	(	6)
Slope	2-3%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

0 – 6

6 – 32

32 - 55

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
Btn	0-6	SL / 10	SL/16.3	10YR 5/4	SBK	VH		ST	1	--	--
Btky	6-32	SL / 12	SL/15	10YR 5/4	SBK	MH		ST	1-2	1-2	--
Crk/R	32-55	LS / 4	S/5	10YR 6/4	MA	SH		NE	--	--	--
Sandstone											

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 10/24/07 Time	Stop No. 122 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(42)
Elevation	---	Topsoil	(0)
Slope	0-.5%%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability		Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Sand cap possible over Natrargid

Sample (depth inches)

0 – 22

22 - 42

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	SCL 26	SCL/ 21.3	10YR 4/4	PL	HA		ST	--	--	--
Btn	2-9	CL 33	SCL/ 21.3	10YR 4/3	SBK	HA		ST	--	--	--
Btnk	9-22	CL 35	SCL/ 21.3	10YR 4/4	SBK	VH		V	1	--	--
Btny	22-42	CL 40	SiL/6.3	10YR 3/1	SBK	VH		ST	1	3	--
Bedrock	42-										

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 10/29/07 Time	Stop No. 123 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(41)
Elevation	---	Topsoil	(0)
Slope	0-.5%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%
N. Veg. Shrubs	Atca 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:	sand cap possibly over Natrargid		
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SCL 26		10YR 5/4	SBK	HA		ST	--	--	--
Btn	4-20	CL 30		10YR 5/4	SBK	VH		ST	--	--	--
Btnky	20-37	CL 34		10YR 5/6	SBK	VH		V	3	1	--
C/Cr	37-41										
Bedrock Shale	41-										

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/24/07 Time	Stop No. 125 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Dune	Bedrock	(>60)
Elevation	---	Topsoil	(30)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Yucca 1%, OP 1%

N. Veg. Grass/Forbs Orhy 3%

Additional notes: Reduce topsoil depth based on 126 lab data (high SAR)

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	S / 4		10YR 4/4	PL	S		ST	--	--	--
C_1	6-30	S / 4		10YR 4/4	MA	SH		SL	--	--	--
C_2	30-60	S / 4		10YR 5/4	MA	VH		SL	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/24/07 Time	Stop No. 126 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(>60)
Elevation	---	Topsoil	(41)
Slope	0-.5%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%,

N. Veg. Grass/Forbs Orhy 1%, Spai 1%

Additional notes: Reduce topsoil depth based on lab data high SAR

Sample (depth inches)

0 – 41

41 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	S / 4	SL/15	10YR 5/4	GR	S		ST	--	--	--
C_1	3-17	S / 4	SL/15	10YR 5/4	MA	SH		ST	--	--	--
C_2	17-41	LS / 6	SL/15	10YR 4/4	MA	HA		ST	--	--	--
C_3	41-60	LS / 8	SL/15	10YR 4/4	MA	VH		ST	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 10/24/07 Time	Stop No. 127 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(52)
Elevation	---	Topsoil	(0)
Slope	0%	Drainage	Well
Aspect		Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 2%, OP 1%

N. Veg. Grass/Forbs Spai 2%, Hordium 3%

Additional notes: C horizon cracked – sand filled in

Sample (depth inches)

0 – 12

12 - 52

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SL 14	SCL/ 28.8	10YR 5/4	PL	HA		SL	--	--	--
Btn	3-12	SCL 32	SCL/ 28.8	10YR 4/4	SBK	VH		ST	--	--	--
Ck	12-52	SCL 28	SCL/ 27.5	10YR 4/4	MA	VH		ST	1	--	--
Shale bedrock	52-										

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 10/24/07 Time	Stop No. 128 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(40)
Physiography	Flat	Bedrock	(18)
Elevation	---	Topsoil	(---)
Slope	0%	Drainage	Well
Aspect	--	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs

Additional notes: Bedrock very fractured & filled in with sand

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SCL 26		10YR 5/4	SBK	HA		ST	--	--	--
Bt	4-8	SCL 32		10YR 4/4	SBK	VH		ST	--	--	--
Btnk	8-18	SCL 30		10YR 5/6	SBK	VH		V	2	--	--
Bedrock	18-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/7/07	Time	Stop No.	130 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Alluvium/Residual		Pit Depth	(	40)
Physiography	Floodplain possible		Bedrock	(	36)
Elevation	---		Topsoil	(	--)
Slope	0-1%		Drainage	Well	
Aspect	E		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	

N. Veg. Shrubs Atco 1%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-1	FSL 14		10YR 5/4	PL	SH		ST	<1	<1	--
Btn	1-4	SCL 27		10YR 6/4	SBK	HA		ST	1	<1	--
Btky	4-10	CL 32		10YR 7/4	SBK	HA		SL	15	3	--
Crky	10-36								5	3	--
Cr/R	36-										

Soil Description

Area V Soil Survey

Soil Type	Fajada	Date 11/7/07 Time	Stop No. 134 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian – Alluvium/Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(36)
Elevation	---	Topsoil	(--)
Slope	1-2%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight - Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spair 1%

Additional notes:

Sample (depth inches)

0 – 2

2 – 15

15 - 27

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	SCL 23	SL/18.8	10YR 5/3	PL	MH		ST	<1	<1	--
Btn	2-15	SCL 18	SCL/ 21.3	10YR 5/3	SBK	HA/VH		ST	<1	<1	--
Btky	15-27	CL 30	SiL/ 12.5	10YR 6/3	SBK	EH		ST	2-5	1	--
Crky	27-36								2-3	2	--
Cr/R	36-										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 136 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland/Dune	Bedrock	(10)
Elevation	---	Topsoil	(10)
Slope	3%	Drainage	Well
Aspect	N	Root distrib	20
Erosion	Slight - Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1
N. Veg. Shrubs	Atco 1%		
N. Veg. Grass/Forbs	Orhy 1%, Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SL 12		10YR 5/4	PL	S		NE	--	--	--
Btk	4-10	SL 14		10YR 5/4	SBK	HA		ST	1	--	--
Cry	10-20									4	--
Cr/R	20-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 11/7/07 Time	Stop No. 138 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Outwash – Floodplain (Upper)	Bedrock	(48)
Elevation	---	Topsoil	(--)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate - Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs OP .5%, Atco 1%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

0-4

4-12

12-24

24-48

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 15	SL/17.5	10YR 5/3	PL/SBK	HA		ST	<1	<1	5
Btn	4-12	SCL 22	SL/17.5	10YR 5/3	PR	VH		ST	<1	<1	2
Btk	12-17	SCL 22	SCL/30	10YR 5/3	SBK	EH		ST	2	<1	2
Btky	17-24	SCL 22	SCL/30	10YR 5/3	SBK	EH		ST	2	1	2
C	24-48	gSL 15	SCL/ 33.8	10YR 5/4	MA	EH		SL	1	1	20
Cr/R	48-60										

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 11/7/07 Time	Stop No. 139 B
Classification	Natrargid		On Road
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upper Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(--)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Road	Surface Stoniness	5%

N. Veg. Shrubs ---

N. Veg. Grass/Forbs ---

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	SCL		10YR 5/4	CO	HA		ST	<1	<1	<1
Btn	2-8	CL		10YR 5/4	SBK/PR	VH		ST	1	<1	<1
$Btky_1$	8-18	CL		10YR 5/4	SBK	VH		ST	2-3	1-2	<1
$Btky_2$	18-32	CL		10YR 5/4	SBK	EH		ST	2-3	1	<1
C	32-60	CL/C		10YR 5/4	MA	EH		SL	1	<1	<1

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 11/7/07 Time	Stop No. 140 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upper floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(8)
Slope	1-2%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Moderate – Rapid Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-6	SL 8		10YR 5/4	PL	S		ST	<1	<1	--
Btn	6-10	CL		10YR 5/4	SBK	MH		ST	1	<1	--
Btky	10-19	CL		10YR 5/4	SBK	VH		ST	2-3	2	--
Ck	19-60	CL/C		10YR 5/4	MA	EH		ST	1-2	1	--

Soil Description

Area V Soil Survey

Soil Type	Benally	Date 11/7/07 Time	Stop No. 141 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(>60)
Elevation	---	Topsoil	(15)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	0

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai 3%

Additional notes: Samples at lower level of Pit 138 accumulation of C above 138 profile

Sample (depth inches)

0-15

15-24

24-60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-1	SCL 24	SL-SCL 20	10YR 4/3	PL	HA		ST	<1	<1	--
C	1-15	SCL 20	SL-SCL 20	10YR 5/4	MA	HA		ST	<1	<1	--
Btnkb	15-24	gSL 18	SCL/ 27.5	10YR 5/3	SBK	VH		ST	1-2	<1	--
Cb	24-60	gSL 17	SCL/ 25		MA	EH		ST	1-2	<1	--

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/7/07 Time	Stop No. 142 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(50)
Physiography	Dune (shallow)	Bedrock	(17)
Elevation	---	Topsoil	(17)
Slope	3-4%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%, Atco 1% Gusa 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-10	S / 4		10YR 5/4	GR	S		SL	<1	--	--
Bt	1-17	SL/SCL / 18		10YR 5/4	SBK	MH		ST	1-2	--	--
Crk	17-36				MA			VE	2-3	--	--

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/7/07 Time	Stop No. 143 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Floodplain	Bedrock	(16)
Elevation	---	Topsoil	(0)
Slope	0-1%	Drainage	0
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0-3

3-16

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	FSL 17	SL/17	10YR 5/3	PL	SH		ST	<1	<1	--
Btn	3-16	SCL 19	SL/17	10YR 5/4	SBK	HA		ST	<1	<1	--
Cr Brown shale	16-30				MA			ST	<1	<1	--
Crky	30-46				MA				2-3	1-2	--
			Grey shale								

Soil Description

Area V Soil Survey

Soil Type	Razito (mod/deep)	Date 11/6/07 Time	Stop No. 149 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(35)
Elevation	---	Topsoil	(35)
Slope	3-4%	Drainage	Well
Aspect	S	Root distrib	35”
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs OP 1%, Atco 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-9	SL / 10		10YR 5/4	PL	S		ST	<1	--	<1
C_1	9-16	LS / 8		10YR 5/4	MA	SH		ST	1	--	2
C_2	16-35	LS / 8		10YR 5/4	MA	HA		ST	3	--	4
Crk	35-	/	Shale								
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	truncated Shiprock	Date 11/6/07 Time	Stop No. 150 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(35)
Elevation	---	Topsoil	(35)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 1%, Atco 1%, Winterfat 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

0-2

2-9

9-19

19-35

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	SL 10	SL/10	10YR 5/3	PL	S		SL	<1	--	--
Bt	2-9	SL 12	SL/12.3	10YR 5/3	SBK	HA		ST	<1	--	--
C	9-19	LS 6	LS/11.3	10YR 5/3	MA	HA		ST	1	--	--
Ck	19-35	SL 10	SL/11.3	10YR 5/4	MA	HA		VE	5	--	5
Cr/R	35-		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 11/6/07 Time	Stop No. 151 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	< 1%

N. Veg. Shrubs Atca 1%,

N. Veg. Grass/Forbs Spai 2%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 10		10YR 5/4	PL	S		ST	< 1	--	--
Bw	4-13	SL / 12		10YR 5/4	SBK	HA		SL	<1	--	--
Bt	13-23	SL / 16		10YR 5/4	SBK	VH		ST	1	--	--
Btk	23-34	SL / 18		10YR 6/3	SBK	VH		VE	10	--	--
Ck	34-42	SL / 16		10YR 6/4	MA	HA		VE	20	--	--
C	42-60	SL / 12		10YR 5/4	MA	HA		ST	3	--	--
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Hoskay	Date 10/25/07 Time	Stop No. 152 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography		Bedrock	(>60)
Elevation	---	Topsoil	(-)
Slope	0 -1%	Drainage	Well
Aspect	SW	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	0%

N. Veg. Shrubs Atca 1%, Greasewood 1%

N. Veg. Grass/Forbs Spai 2%, Spcr 2%

Additional notes:

Sample (depth inches)	SAR	EC
5-16	6.6	.59
16-39	10.1	1.25

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SCL 38.8	C/38.8	10YR 4/4	PL	S		ST	--	--	--
Btn	5-16	C 38.8	C/38.8	10YR 4/4	ABK	VH		ST	--	--	--
Bt_2	16-25	C 37.5	C/37.5	10YR 4/4	SBK	VH		ST	--	--	--
Bky	25-39	CL 37.5	C/37.5	10YR 4/4	SBK	VH		ST	2	1	--
C_2	39-60	LS 6		10YR 5/4	MA	SH		NE	2	2	--

Soil Description

Area V Soil Survey

Soil Type	Fajada	Date 10/25/07 Time	Stop No. 153 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(50)
Physiography		Bedrock	(28)
Elevation	---	Topsoil	(-)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SCL 27		10YR 4/4	PL	SH		ST	--	--	--
Btn	3-20	CL 33		10R 5/4	SBK	VH		ST	1	--	--
Btk	20-28	CL 35		10R 5/4	SBK	VH		VE	3	--	--
Cr/R	28-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Monerico	Date 10/25/07 Time	Stop No. 154 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(17)
Elevation	---	Topsoil	(17)
Slope	4%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 1%, Spcr 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL 12		10YR 4/3	PL	S		ST	--	--	--
Bt	3-11	SL 16		10YR 4/3	SBK	HA		ST	--	--	--
Btk	11-17	SCL 24		10YR 5/4	SBK	HA		VE	--	--	--
Cr/R	17-60		Shale						--	--	--

Soil Description

Area V Soil Survey

Soil Type	Fruitvale	Date 10/26/07 Time	Stop No. 155 B
Classification	Argigypsids		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(44)
Elevation	---	Topsoil	(44)
Slope	3%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Weathered coal

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 12	SL/12.5	10YR 4/4	PL	SH		ST	<1	<1	--
Bt	4-10	SL 14	SL-SCL/ 20	10YR 4/4	SBK	HA		VE	1	<1	--
Btky	10-18	SL 18	SCL/ 22.5	10YR 3/3	SBK	VH		VE	1-2	1	--
Cky	18-27	SL 18	SCL 21.3	10YR 3/2	MA	VH		VE	1-2	1	--
Cky	27-44	SL 16	SL/17.5	7.5YR 4/4	MA	VH		SL/VS	1-2	1	--
Cr/R	44-60										

Soil Description

Area V Soil Survey BAB

Soil Type	Fajada	Date 10/29/07 Time 8:47 am Stop No.	156 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(66)
Physiography	Upland – Bedrock Controlled	Bedrock	(22)
Elevation	---	Topsoil	(-)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs Atca 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Eolian over shale (Residual)

0 - 5

5 - 12

12 - 22

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2.5	SCL 24	SL/12	10YR 5/4	PL	HA		ST	--	--	--
AC	2.5-5	gSCL 18	SL/12	10YR 5/4	MA	VH		SL	--	--	--
2Btnky	5-12	CL	SiL/12.5	10YR 5/4	SBK	VH		SL	--	--	--
2Btky	12-22	CL	SL-SCL/ 20	10YR 5/4	SBK	VH		SL	--	--	--
Cr	22-32		Shale								
R	32-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/7/07	Time	Stop No.	167 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual			Pit Depth	(40)
Physiography	Upland			Bedrock	(12)
Elevation	---			Topsoil	(-)
Slope	1-2%			Drainage	Well
Aspect	N			Root distrib	
Erosion	Moderate			Surface Salt	0
Permeability	Rapid			Surface Stoniness	2%
N. Veg. Shrubs	Atco 1%, Atcu 1%				
N. Veg. Grass/Forbs	Spai 1%				
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-2	SCL		10YR 5/4	PL	MH		ST	<1	<1	--
Btn	2-7	CL		10YR 5/4	SBK	VH		ST	1-2	1	--
Btky	7-12	CL		10YR 4/3	SBK	VH		ST	2-3	2-3	--
Crky	12-18								2	2	--
Cr/R	18-36		Shale								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time 9:30am	Stop No.	173 B
Classification	Typic coarse loamy Haplargid				
Climate	Semi-Arid				Inches
Parent Material	Dune over Natrargid		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	13)
Elevation	---		Topsoil	(	13)
Slope	5-10%		Drainage	Well	
Aspect	N		Root distrib	13	
Erosion	Moderate		Surface Salt		
Permeability	Moderate		Surface Stoniness		
N. Veg. Shrubs	Atca				
N. Veg. Grass/Forbs	Spai, Hija,				
Additional notes:	Shale bedrock				
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-6	LS / 6		10YR 5/4	GR	S		NE	--	--	1
Bt	6-13	SL / 14		10YR 5/4	SBK	HA		S	1	--	1
Crk	13-19								3	--	--
R	19+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 11/5/07	Time 10:05am Stop No. 175 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material	SS	Pit Depth	(50)
Physiography	Dune Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	5-8%	Drainage	
Aspect	SW	Root distrib	32
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atco

N. Veg. Grass/Forbs Orhy, Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-6	S / 2		10YR 5/4	GR	S		NE	--	--	--
C_1	6-22	LS / 6		10YR 5/4	MA	SH		NE	--	--	--
C_2	22-32	SL / 12		10YR 4/4	MA	HA		SL	1	--	--
Cr											

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/5/07	Time 10:15am Stop No. 176 B
Classification	Typic Coarse Loamy Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Dune Upland	Bedrock	(60+)
Elevation	---	Topsoil	(60)
Slope	5-10%	Drainage	
Aspect	SE	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	5%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Hija, Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	LS / 8		10YR 5/4	PL	S		NE	<1	--	--
Bt	5-13	SL / 12		10YR 5/4	SBK	SH		SL	<1	--	--
Btk	13-24	SL / 14		10YR 5/4	SBK	VH		ST	2	--	--
C_1	24-47	LS / 6		10YR 5/4	MA	H		ST	1	--	--
Ck	47-60	SL / 12		10YR 5/4	MA	SH		VE	5	--	3
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 11/5/07 Time 10:50am Stop No.	178 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	SS	Pit Depth	(12)
Physiography		Bedrock	(4)
Elevation	---	Topsoil	(4)
Slope	5-10%	Drainage	Well
Aspect	SW	Root distrib	4
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	
N. Veg. Shrubs	Atca		
N. Veg. Grass/Forbs	Spin		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
-	-		-	-	-	-	-	-	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 11/6/07 Time	Stop No. 180 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(24)
Elevation	---	Topsoil	(24)
Slope	4%	Drainage	Well
Aspect	N	Root distrib	24
Erosion	Slight - Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Edtr 1%, Atco 1%, Atca 1%, Winterfat 1%, Gusa 1%, OP 1%

N. Veg. Grass/Forbs Spai 1% Orhy 1%, Aster 1%

Additional notes:

Sample (depth inches)

0 - 4

4 - 16

16 - 24

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 5/4	PL	SH		SL	<1	--	--
C_1	4-16	LS / 8		10YR 5/4	MA	HA		ST	<1	--	--
Ck	16-24	SL / 10		10YR 5/4	MA	VH		VE	5	--	10
Cr/R	24+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 181 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	1-2%	Drainage	Well
Aspect	SW	Root distrib	13
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Large cracks filled with sand, subsurface looks Natrargid

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS 8		10YR 5/3	PL	S		NE	<1	--	--
C	5-9	LS 6		10YR 5/3	MA	SH		SL	<1	--	--
Btb	9-13	SL 14		10YR 5/4	SBK	HA		ST	1	--	--
Btkb	13-16	SL 12		10YR 5/4	SBK	HA		VE	5	--	5
Crk	16+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 11/7/07 Time	Stop No. 182 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian-Alluvium/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(39)
Elevation	---	Topsoil	(39)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%
N. Veg. Shrubs	Atco 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:	Calcic Horizon		
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LFS 4		10YR 5/4	PL/GR	S		ST	--	--	--
Bt	6-12	SL 14		10YR 5/4	SBK	HA		VE	--	--	--
Btk_1	12-21	SL 17		10YR 5/3	SBK	HA		VE	3-4	--	5
Btk_2	21-32	SL 18		10YR 5/3	SBK	VH		VE	5-8	--	--
C_1	32-39	FSL 14		10YR 4/2	MA	VH		ST			
Cr	39-48										
Cr/R	48-60		Weathered coal								

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 11/6/07 Time	Stop No. 184 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(42)
Elevation	---	Topsoil	(42)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: gravel is Alluvium

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	S 3		10YR 5/4	PL	S		NE	<1	--	--
Bt	5-11	LS 8		10YR 5/4	SBK	HA		ST	<1	--	--
Btk	11-26	gSL 14		10YR 6/4	SBK	VH		VE	10-12	--	15
C	26-42	gSL 12		10YR 5/3	MA	HA		ST	10-12	--	20
Cr/R	42+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/6/07 Time	Stop No. 185 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	1-2%	Drainage	Well
Aspect	E	Root distrib	23
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atco 1%, OP 1%, Atca 1%, Winterfat 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 8		10YR 5/3	GR	S		NE	<1	--	--
Bt	4-15	SL / 12		10YR 5/4	SBK	SH		ST	1	--	--
Btk	15-23	SL / 14		10YR 5/4	SBK	HA		VE	5	--	--
Cr	23-60										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/6/07 Time	Stop No. 188 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(34)
Elevation	---	Topsoil	(34)
Slope	2-3%	Drainage	Well
Aspect	E, SE	Root distrib	34
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Gusa 1%, Atca 1%

N. Veg. Grass/Forbs Spai 2%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	S / 2		10YR 5/4	PL	S		NE	<1	--	--
Bt	5-22	LS / 8		10YR 5/4	SBK	SH		ST	<1	--	--
Btk	22-34	SL / 12		10YR 6/4	SBK	HA		VE	10	--	--
Crk	34+	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 189 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(15)
Elevation	---	Topsoil	(15)
Slope	1-2%	Drainage	Well
Aspect	E	Root distrib	15
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 8		10YR 5/4	PL	S		SL	<1	--	--
Bt	3-10	SL / 12		10YR 5/4	SBK	SH		SL	<1	--	--
Btk	10-15	SL / 16		10YR 6/4	SBK	HA		VE	7-10	--	--
Crk	15-30								20	--	--
Cr/R	30+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/6/07 Time	Stop No. 190 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	2%	Drainage	Well
Aspect	E	Root distrib	23
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Gusa 2%, Atco 1%, Atca 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
						Dry	Moist				
A	0-4	LS / 6		10YR 4/4	GR	S		SL	<1	--	--
C	4-7	LS / 8		10YR 4/4	MA	SH		SL	<1	--	--
Btb	7-15	SL / 12		10YR 4/4	SBK	SH		ST	1	--	--
Btkb	15-23	SL / 14		10YR 5/4	SBK	HA		VE	5	--	--
Crk	23-30										
Cr/R	30+										

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/6/07	Time	Stop No.	191 B
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	60)
Physiography			Bedrock	(	4)
Elevation	---		Topsoil	(	--)
Slope	3%		Drainage	Well	
Aspect	W		Root distrib	4%	
Erosion	Severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	7%	

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
						Dry	Moist				
A	0-4	-- / -	--	--	--	--	--	--	--	--	--
		/									
		/									
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/6/07 Time	Stop No. 193 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(40)
Physiography	Upland	Bedrock	(9)
Elevation	---	Topsoil	(-)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	9”
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	4%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A	0-2	SCL 22		5/6	PR	HA		ST	--	--	--
Btkn	2-9	SCL 26		5/4	SBK	HA		ST	--	--	--
Cr	9+		Shale								

Soil Description

Area V Soil Survey BAB

Soil Type	Huerfano	Date 10/29/07	Time 9:05am	Stop No.	198 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	48)
Physiography	Upland - ridge		Bedrock	(	9)
Elevation	---		Topsoil	(	0)
Slope	1-2%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Severe		Surface Salt	0	
Permeability	Moderate		Surface Stoniness	5%	

N. Veg. Shrubs Atco 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

No samples

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A (C)	0-2	LS / 8		10YR 5/4	GR	S		ST	--	--	--
2Btn	2-5	CL / 40		10YR 4/4	SBK	HA		ST	--	--	--
2Btky	5-9	CL / 45		10YR 4/4	SBK	HA		VE	--	--	--
2Cr	9-24		Shale						--	--	--

Soil Description

Area V Soil Survey

Soil Type	Farb	Date 11/5/07	Time 9:55 am	Stop No.	201 B
Classification	Loamy Typic Orthent				
Climate	Semi-Arid				Inches
Parent Material	Sandstone		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	4)
Elevation	---		Topsoil	(	4)
Slope	5%		Drainage		
Aspect	N		Root distrib		
Erosion	Moderate		Surface Salt		
Permeability			Surface Stoniness	25%	
N. Veg. Shrubs	Atca				
N. Veg. Grass/Forbs	Spai				
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
--	--		--	--	--	--	--	--	---	--	--

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/5/07	Time 9:40 am	Stop No.	202 B
Classification	Fine Loamy Typic Natrargid				
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	60)
Physiography	Upland		Bedrock	(	17)
Elevation	---		Topsoil	(	-)
Slope	2-5%		Drainage	Well	
Aspect	NE		Root distrib		
Erosion	Moderate		Surface Salt		
Permeability	Moderate		Surface Stoniness	25%	

N. Veg. Shrubs Atob

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

0-4

4-10

10-17

Lab data

Not accurate

Due to EC/SAR

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SCL 20	SCL/ 30	2.5YR 5/4	PR	HA		S	--	--	--
Btnky	4-10	SCL 24	SL/5	2.5YR 6/3	SBK	SH		S	3	5	--
Btn	10-17	CL 30	SL/5	2.5YR 6/4	SBK	HA		SL	2	1	--
Cr/R	17+				MA						

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time 9:15am Stop No. 206 B
Classification	Typic Coarse Loamy Haplargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland fan	Bedrock	(17)
Elevation	---	Topsoil	(17)
Slope	0-5%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	

N. Veg. Shrubs Atob

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 8		10YR 5/4	PL	S		NE	--	--	--
Bt	3-11	SL / 12		10YR 5/4	SBK	SH		S	--	--	1
Btk	11-17	SL / 14		10YR 5/4	SBK	VH		VE	4	--	--
R	17+	/			MA				--	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time 9:05am Stop No. 207 B
Classification	Typic Coarse Loamy Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Upland fan	Pit Depth	(40)
Physiography	Dune	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	0-5%	Drainage	
Aspect	SE	Root distrib	18
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	0-1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Orhy, Arrow Leaf grass

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 6		10YR 5/4	GR	S		SL	<1	--	--
Bt	3-11	SL / 12		10YR 5/4	SBK	SH		ST	1	--	--
Btk	11-18	SL / 14		10YR 5/4	SBK	HA		VE	3	--	--
Cr	18-25	/			MA						
R	25-40	/			MA						
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey FLR/JRN

Soil Type	Razito	Date 11/5/07 Time 8:48am Stop No.	209 B
Classification	Torripsamment		
Climate	Semi-Arid		Inches
Parent Material	Upland fan	Pit Depth	(60)
Physiography	Dune	Bedrock	(52)
Elevation	---	Topsoil	(52)
Slope	5-6%	Drainage	Well
Aspect	SE	Root distrib	60
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	1-2%

N. Veg. Shrubs Saka, Atca

N. Veg. Grass/Forbs Orhy, Spai

Additional notes: Shale Bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	S / 2		10YR 5/4	GR	S		NE	<1	--	--
C_1	3-33	S / 2		10YR 5/4	MA	SLH		NE	<1	--	--
C_2	33-40	SL / 14		10YR 5/3	MA	HA		ST	<1	--	--
Ck	40-52	/			MA				7	--	--
R	52-60	/			MA						
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time11:00am Stop No. 211 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	5-10%	Drainage	Well
Aspect	N	Root distrib	12
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1%
N. Veg. Shrubs	Atca, Atob		
N. Veg. Grass/Forbs	Spai		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 8		10YR 5/4	PL	S		NE	--	--	--
Bt	3-10	SL / 12		10YR 5/4	SBK	SH		SL	1	--	--
Btk	10-16	SL / 12		10YR 5/4	SBK	HA		VE	5	--	--
R	16+	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/5/07	Time10:55am Stop No. 212 B
Classification	Coarse loamy Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Upland	Pit Depth	(50)
Physiography	Dune	Bedrock	(22)
Elevation	---	Topsoil	(22)
Slope	5-10%	Drainage	Well
Aspect	SW	Root distrib	25
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	LS / 8		10YR 5/4	PL	S		NE	--	--	--
Bt	5-12	SL / 12		10YR 5/4	SBK	SH		SL	1	--	--
Btk	12-22	SL / 14		10YR 5/4	SBK	HA		V	5	--	--
R	22+	/			MA						
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/7/07	Time	Stop No.	213 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	60)
Physiography			Bedrock	(	>60)
Elevation	---		Topsoil	(	60)
Slope	0-1%		Drainage	Well	
Aspect	S		Root distrib		
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai 1%, Aster 1%

Additional notes: Ck questionable CR

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	FSL 4		10YR 5/4	GR	S		NE	<1	--	--
Bt	8-17	SL 11		10YR 5/4	SBK	SH		SL	<1	--	--
Bt_2	17-25	SL 16		10YR 5/4	SBK	HA		ST	<1	--	--
Btk	25-36	SL 18		10YR 4/2	PR	VH		ST	2-3	--	--
C	26-48	SL 15		10YR 4/3	MA	VH		SL	2	--	--
Ck	48-60	CL 33		10YR 4/1	MA	EH		ST	5	--	--

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 214 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	2-3%	Drainage	Well
Aspect	N, NW	Root distrib	18
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs OP 1%, Atco 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 5/4	PL	S		NE	<1	--	--
Bt	4-9	SL / 12		10YR 5/4	SBK	SH		ST	1	--	--
Btk	9-18	SL / 16		10YR 5/4	SBK	HA		VE	5	--	--
		/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/6/07 Time	Stop No. 215 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(30)
Physiography	Upland	Bedrock	(7)
Elevation	---	Topsoil	(--)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Small sand cap on surface supporting veg

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2		--	--	--	--	--	--	--	--	--
Btn	2-7										
C/Cr	7-11										
R	11+		Shale/Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/6/07 Time	Stop No. 216 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(25)
Elevation	---	Topsoil	(25)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	25
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 – 6

6 - 16

16 - 25

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LS / 10	LS/6.3	10YR 5/4	PL	S		SL	<1	--	--
Bt	6-16	SL / 14	SL/12.5	10YR 5/4	SBK	HA		ST	1	--	--
BtK	16-25	SL / 16	SL/15	10YR 5/4	SBK	VH		VE	4	--	--
Cr/R	25+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 218 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(28)
Elevation	---	Topsoil	(20)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	21
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atco 1%, Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A	0-4	SL 10		10YR 5/3	PL	S		NE	<1	--	--
Bt	4-13	SL 16		10YR 5/3	SBK	HA		SL	<1	--	--
Btk	13-20	SL 18		10YR 5/3	SBK	VH		ST	3	--	--
C/Cr	20-28										
R	28+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 219 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	16
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A	0-4	LS / 6		10YR 5/4	GR	S		NE	<1	--	--
Bt	4-10	SL / 12		10YR 5/4	SBK	HA		SL	<1	--	--
Btk	10-16	SL / 12		10YR 5/4	SBK	VH		ST	3	--	--
Cr/R	16+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/6/07 Time	Stop No. 220 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(35)
Physiography	Upland	Bedrock	(24)
Elevation	---	Topsoil	(24)
Slope	2-3%	Drainage	Well
Aspect	W	Root distrib	24
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs OP 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A	0-4	LS / 8		10YR 5/4	GR	S		NE	<1	--	--
Bw	4-10	SL / 10		10YR 5/4	SBK	SH		SL	<1	--	--
Bt	10-18	SL / 14		10YR 5/4	SBK	HA		ST	<1	--	--
Btk	18-24	SL / 14		10YR 4/4	SBK	VH		ST	3	--	--
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 11/2/07	Time 12:57pm Stop No. 221 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material	Eolian/alluvium/residual	Pit Depth	(60)
Physiography	front of dune/Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	3%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Wolfberry

N. Veg. Grass/Forbs Erigeron, Orhy, Saib, Borage, Mentzelia

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
A	0- 6	S 2		10YR 6/4	GR	S		NE	--	--	--
C_1	6-18	S 2		10YR 6/4	MA	S		NE	--	--	--
C_2	18-24	SL 12		10YR 5/4	MA	HA		ST	1	--	10
Btb	24-32	SCL 20		10YR 5/4	SBK	VH		ST	2	--	--
Cr	32-40							VE	--	--	--
R	40+										

Soil Description

Area V Soil Survey

Soil Type	Mayqueen	Date 11/2/07 Time 12:45pm Stop No.	222 B
Classification	Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Dune	Bedrock	(43)
Elevation	---	Topsoil	(43)
Slope	2-3%	Drainage	somewhat excessive
Aspect	E	Root distrib	55
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs	Wolfberry		
N. Veg. Grass/Forbs	Orhy, Saib, Mentzelia, Erigeron		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field % Gravel
						Dry	Moist				
A	0-14	S / 3		10YR 5/4	PL	S		NE	<1	<1	<1
Bw	14-31	LS / 5		10YR 5/4	SBK	SH		NE	<1	<1	<1
Bt	31-43	SL / 15		10YR 4/4	SBK	HA		ST	1-2	<1	<1
Crk	43-55								15-20	<1	<1
R	55+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/2/07	Time 1:17pm Stop No. 224 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(40)
Physiography	Dune	Bedrock	(32)
Elevation	---	Topsoil	(22)
Slope	2-3%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	2%

N. Veg. Shrubs Atco

N. Veg. Grass/Forbs Spai, Saib, Erigeron

Additional notes:

Sample (depth inches)

0 - 12

12 - 22

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 5	LS/10	10YR 5/4	GR	S		NE	--	--	1
C	4-12	LS / 8	LS/10	10YR 5/4	MA	S		SL	--	--	2
Btb	12-22	CL / 30	SCL/SC 35	10YR 4/2	SBK	HA		ST	1	--	1
CrKy	22-32								20	2	--
Cr/R	32-40										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/6/07 Time	Stop No. 225 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(14)
Elevation	---	Topsoil	(14)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	14
Erosion	Slight/Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Atca 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 8		10YR 5/3	GR	S		NE	<1	--	--
Bt	4-10	SL / 10		10YR 5/3	SBK	HA		ST	<1	--	--
Btk	10-14	SL / 14		10YR 5/4	SBK	VH		VE	5	--	--
Cr/R	14+		Shale								

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 11/6/07 Time	Stop No. 226 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight- Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atco 3%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Possible shiprock over buried blancot

Sample (depth inches)

0 - 5

5 - 14

14 - 29

29 - 56

56 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 8	LS/12.5	10YR 5/4	GR	S		NE	<1	--	--
Bw	5-14	SL / 14	SL/15	10YR 5/4	MA	SH		SL	<1	--	--
Bt_1b	14-29	SL / 20	SCL/ 22.5	10YR 5/4	SBK	HA		ST	<1	--	--
Bt_2b	29-56	SCL / 28	SCL/SC 35	10YR 4/4	SBK	VH		ST	2	--	--
C	56-60	SL / 18	SL/ 17.5	10YR 5/4	MA	VH		ST	<1	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 11/6/07 Time	Stop No. 228 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(48)
Elevation	---	Topsoil	(48)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	33
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Gusa 1%, Chna 1%, Atco 1%

N. Veg. Grass/Forbs Orhy 1%, Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LS / 6		10YR 5/4	PL	S		NE	<1	--	--
Bw	6-13	SL / 10		10YR 5/4	SBK	S		ST	<1	--	--
Bt	13-23	SL / 14		10YR 5/4	SBK	HA		ST	<1	--	--
Btk	23-33	SL / 18		10YR 5/3	SBK	VH		VE	5	--	--
C	33-41	SL / 14		10YR 5/4	MA	HA		ST	2	--	--
Cr/R	48+	/	Shale								
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 11/6/07 Time	Stop No. 229 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(20)
Elevation	---	Topsoil	(0)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	20
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Atco 1%, OP 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Vegetated due to sand cap

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL 14		10YR 5/4	PL	SH		SL	<1	--	--
Btn	6-12	SCL 20		10YR 5/4	SBK	hA		ST	1	--	--
Btky	12-20	SCL 26		10YR 6/4	SBK	VH		ST	2	3	--

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/6/07	Time	Stop No.	230 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	43)
Elevation	---		Topsoil	(	43)
Slope	0-1%		Drainage	Well	
Aspect	N, NE		Root distrib	32	
Erosion	Slight		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	<1%	

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL 12		10YR 5/4	PL	S		NE	<1	--	--
Bt	5-17	SL 16		10YR 5/4	SBK	HA		ST	1	--	--
Btk	17-32	SCL 20		10YR 5/3	SBK	VH		ST	3	--	--
C	32-43	SL 14		10YR 5/4	MA	HA		ST	1	--	--
Crk	43+										

Soil Description

Area V Soil Survey

Soil Type	Truncated Shiprock (Eroded)	Date 11/6/07 Time	Stop No. 231 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

0 - 3

3 - 16

16 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 12	SL/15	10YR 5/4	PL	S		ST	<1	--	1
Bt	3-16	SL / 16	SL/15	10YR 5/4	SBK	HA		ST	1	--	3
Ck	16-48	SL / 12	SL/15	10YR 5/4	MA	HA		SL	5	--	2
C_1	48-60	gSL / 12	SL/15	10YR 5/4	MA	SH		NE	1	--	15

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 11/2/07	Time 1:34pm Stop No. 233 B
Classification	Fine Loamy Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Dune	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs OP, Yucca, Atco, Cela

N. Veg. Grass/Forbs Orhy, Erigeron, Saib, Borage, Hija

Additional notes: mapped as inclusion with Shiprock soils

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A_1	0-3	LS 6		10YR 5/4	PL	S		SL	--	--	--
A_2	3-9	LS 8		10YR 5/4	PL	SH		ST	--	--	--
Bt_1	9-21	SCL 20		10YR 4/4	SBK	HA		ST	1	--	--
Bt_2	21-31	SCL 22		10YR 4/4	SBK	VH		ST	2	--	--
Bt_1b	31-40	SCL 22		10YR 4/4	SBK	VH		ST	1	--	--
Bt_2b	40-60	SCL 24		10YR 4/4	SBK	VH		ST	1	--	--

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/2/07	Time 1:50pm Stop No. 234 B
Classification	Typic fine loamy Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(48)
Physiography	Upland	Bedrock	(21)
Elevation	---	Topsoil	(21)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco

N. Veg. Grass/Forbs Borage, Saib, Orhy, Hija, Erigeron

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A_1	0-3	SL 12		10YR 5/4	PL	S		ST	--	--	1
A_2	3-7	SL 12		10YR 5/4	GR	S		ST	--	--	1
Bt	7-14	SL 15		10YR 5/4	SBK	HA		ST	--	--	1-2
Btk	14-21	SL 16			SBK	VH		VE	3-4	--	--
Crky	21-36										
Cr/R	36-48										

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 11/2/07	Time 2:01pm Stop No. 235 B
Classification	Typic coarse loamy Calciargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Dune	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Spco, Gusa, Cela

N. Veg. Grass/Forbs Spai, Orhy, Saib, Erigeron, Borage

Additional notes: Calic horizon at Btk_2

Sample (depth inches)

0 - 5

5 - 12

12 - 23

23 - 36

36 - 52

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	LS / 8	LS/7.5	10YR 5/4	PL	S		ST	<1	--	1-2
Bw	5-12	SL / 10	SL/11.3	10YR 5/4	SBK	SH		ST	1	--	1-2
Bt	12-23	SL / 16	SL/12.5	10YR 5/4	SBK	HA		VE	3-5	--	2
Btk_1	23-36	SL / 18	SL/16.3	10YR 6/4	SBK	VH		VE	12	--	2
C_1	36-52	S / 2	LS/10	10YR 6/4	MA	HA		ST	2-3	--	1-2
C_2	52+	LS / 4	LS/10	10YR 4/3	MA	HA		ST	1-2	--	1-2
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 11/2/07	Time 2:17pm Stop No. 237 B
Classification	Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	3-4%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca, Gusa, OP, Atco, Epvi

N. Veg. Grass/Forbs Erigeron, Borage, Mentzelia, Saib, Orhy, Hija

Additional notes:

Sample (depth inches)

0 - 6

6 - 17

17 - 24

24 - 31

31 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LS / 5	LS/8.8	10YR 5/4	PL/GR	S		SL	<1	<1	1
Bw	6-17	SL / 8	LS/7.5	10YR 5/4	SBK	SH		ST	<1	<1	1
Bt	17-24	SL / 11	LS/11.3	10YR 5/4	SBK	MH		ST	1	<1	1
Btk	24-31	SL / 15	SL/18.8	7.5YR 4/4	SBK	HA		ST	2-4	<1	1
C_1	31-40	LS / 3	LS/7.5	7.5YR 5/4	MA	SH		ST	1	<1	<1
C_2	40-50	LS /	LS/7.5	7.5YR 5/4	MA	SH		ST	1	<1	<1
C_3	50-60	LS /	LS/7.5	7.5YR 4/4	MA	MH		ST	1-2	<1	2-3
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/2/07	Time 2:37pm Stop No. 242 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(46)
Elevation	---	Topsoil	(46)
Slope	3-4%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Gusa, Epri		
N. Veg. Grass/Forbs	Saib, Mentzelia, Orhy, Hija		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-7	LFS 4		10YR 5/4	PL/GR	S		ST	<1	<1	1-2
Btk	7-20	FSL 8		10YR 5/4	SBK	SH		VE	2-3	<1	2-3
Btk_2	20-28	SL 12		10YR 5/4	SBK	MH		VE	3-5	<1	3
C	28-46	SL 8		10YR 5/4	MA	MH		ST	1-2	<1	2
Crky	46-56			10YR 5/4	MA				15	<1	--
Cr/R	56-60			10YR 5/4	MA				--	<1	--

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/31/07 Time	Stop No. 246 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium	Pit Depth	(60)
Physiography	Down slope of Dune	Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Edtr 1%, Gusa 1%

N. Veg. Grass/Forbs Spai 1%, Hairy Gold Aster 1%, Orhy 1%

Additional notes: Razito over truncated Shiprock

Sample (depth inches)

0 - 12

12 - 21

21 - 34

34 - 60

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS 6	LS/8.8	10YR 4/4	PL	S		NE	--	--	--
2Cb	3-12	LS 6	LS/8.8	10YR 3/1	MA	S		SL	--	--	--
2Cb	12-21	SL 16	SL-SCL 20	10YR 4/4	MA	HA		SL	--	--	--
3Btkb	21-34	SCL 20	CL/28.8	10YR 4/3	ABK	VH		V	7	--	--
3Cb	34-60	SL 12	SL/16.3	10YR 4/3	MA	SH		ST	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/31/07	Time	Stop No.	247 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	50)
Physiography			Bedrock	(	42)
Elevation	---		Topsoil	(	42)
Slope	2-3%		Drainage	Well	
Aspect	S		Root distrib		
Erosion	Slight-Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	0	

N. Veg. Shrubs Edtr 2%, Atca 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%, Aster 1%

Additional notes: Extremely weathered coal - Bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	S 2		10YR 5/4	GR	S		NE	--	--	--
C_1	4-30	S 2		10YR 5/4	MA	S		NE	--	--	--
C_2	30-42	LS 8		10YR 3/4	MA	SH		SL	--	--	--
Cr/R	42-50										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/31/07 Time	Stop No. 248 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography		Bedrock	(31)
Elevation	---	Topsoil	(22)
Slope	2-3%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs	Edtr 2%		
N. Veg. Grass/Forbs	Spai 1%, Orhy 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-11	LS / 5		10YR 4/4	GR	S		NE	<1	--	--
Btk	11-22	SL / 16		10YR	SBK	HA		VE	3-5	--	--
Crk	22-31										
Cr/R	31+										

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/31/07	Time	Stop No.	249 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material	Eolian		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	50)
Elevation	---		Topsoil	(	50)
Slope	8%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Severe		Surface Salt		
Permeability	Rapid		Surface Stoniness		
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	LS 6		5/4	GR	S		NE	--	--	--
C	8-50	LS 5		5/4	MA	S		SL	--	--	--
Cr	50-60										

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/31/07 Time	Stop No. 250 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Dune	Bedrock	(40)
Elevation	---	Topsoil	(40)
Slope	2%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Edtr 1%

N. Veg. Grass/Forbs Orhy 2%, Spai 1%

Additional notes: Razito over truncated Shiprock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	S 2		10YR 5/4	GR	S		NE	<1	--	--
C	8-32	S 2		10YR 5/4	MA	S		ST	1	--	--
2Btky	32-40	CL 33		10YR 3/4	SBK	HA		ST	1	--	--
2Cr/R	40-60								15	--	--

Soil Description

Area V Soil Survey

Soil Type	Razito	Date 10/31/07 Time	Stop No. 251 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(51)
Elevation	---	Topsoil	(51)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	51
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Aster 1%, Orhy 1%, hairy Gold Aster 1%

Additional notes: Razito over buried Blancot

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-10	S 2		10YR 5/4	GR	S		NE	--	--	--
C	10-36	LS 6		10YR 5/4	MA	S		NE	--	--	--
2Btb	36-51	CL 33		10YR 3/2	SBK	HA		ST	--	--	--
3Cr/R	51-60		Black Coaly/Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/31/07 Time	Stop No. 252 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	0-1%%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Atca 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%, Orhy !%

Additional notes:

Sample (depth inches)

0 - 7

7 - 16

16 - 23

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-7	LS 6	SL/10	10YR 5/4	PL	S		ST	<1	--	--
Bt	7-16	SCL 19	SCL/ 28.8	10YR 5/3	SBK	VH		VE	1-2	--	--
Btk	16-23	SCL 24	CL/37.5	10YR 6/3	SBK	VH		VE	8-10	--	--
Crk	23-36								5-8	--	--
Cr/R	36-48										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/2/07	Time 8:00am Stop No. 253 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian - Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	1-2%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate - Severe	Surface Salt	
Permeability	Rapid	Surface Stoniness	

N. Veg. Shrubs Chna 6%, Epto 2%

N. Veg. Grass/Forbs Orhy 7%, Hija 2%, Aster 1%

Additional notes:

Sample (depth inches)

0 - 8

8 - 20

20 - 32

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	FSL 8	S/5	2.5YR 5/4	GR	S		NE	--	--	--
Bt	8-20	SCL 22	SL/16.3	2.5YR 5/4	SBK			ST	--	--	--
Btk	20-32	SCL 22	L/18.8	2.5YR 6/4	SBK			VE	--	--	--
Crk	32-48		Shale					VE	--	--	--
Cr/R	48-60		Shale								

Soil Description

Area V Soil Survey BAB

Soil Type	Mayqueen – mod deep	Date 11/2/07	Time 9:45am Stop No. 257 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual shale	Pit Depth	(60)
Physiography	Dune	Bedrock	(35)
Elevation	---	Topsoil	(35)
Slope	2-3%	Drainage	Well
Aspect	E	Root distrib	35
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs Ephedra, Atca

N. Veg. Grass/Forbs Spai, Hija

Additional notes: Type for Mayqueen moderately deep

Sample (depth inches)

0-14

14-21

21-35

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-14	LS / 6	S/7.5	10YR 5/4	GR	S		NE	<1	--	--
Bt (w)	14-21	LS/SL	LS/12.5	10YR 5/4	SBK	SH		NE	<1	--	--
Bt	21-35	SL / 10	LS/8.8	10YR 5/4	SBK	HA		ST	1-2	--	--
Crk	35-51	--		10YR 6/3	SBK	VH		-	12-15	1	--
Cr/R	51-60	--						-	--	--	--

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/2/07	Time 10:00am Stop No. 258 B
Classification	Haplargid coarse loamy typic		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	2-3%	Drainage	Well
Aspect	E	Root distrib	60
Erosion	Slight	Surface Salt	
Permeability	Rapid	Surface Stoniness	

N. Veg. Shrubs Atca 4%

N. Veg. Grass/Forbs Aster 1%, annual forbs 2%, OP 2%, Hija 2%

Additional notes: Perfect Shiprock, picture taken for cover of report

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-8	FLS 6		10YR 5/4	GR	S		NE	<1	<1	--
Bw	8-16	SL 8		10YR 5/4	SBK	SH		NE	<1	<1	--
Bt	16-30	SL 14		10YR 5/4	SBK	HA		ST	1-2	<1	--
Btk	30-45	SL 18		10YR 4/4	SBK	HA		ST	3-4	<1	--
C	45-60	LS 6		10YR 5/4	MA	HA		SL	1	<1	--

Soil Description

Area V Soil Survey BAB/JV

Soil Type	Monierco	Date 11/2/07 Time 12:25pm Stop No.	260 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Upland fan/dune	Bedrock	(14)
Elevation	---	Topsoil	(14)
Slope	3-5%%	Drainage	Well
Aspect	SW	Root distrib	30
Erosion	Moderate	Surface Salt	0
Permeability		Surface Stoniness	<1

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Orhy, Erigeron

Additional notes: Soil is LS/SL over Shale

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 8		10YR 4/4	GR	S		NE	<1	<1	<1
Bw	3-8	SL / 10		10YR 5/4	SBK	MH		SL	<1	<1	<1
Bt	8-14	SL / 18		10YR 5/4	SBK	HA		ST	1-2	<1	<1
Crky	14-30								10-12	2	
Cr/R	30-48										

Soil Description

Area V Soil Survey

Soil Type	Brown Shiprock	Date 11/7/07 Time	Stop No. 263 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(45)
Elevation	---	Topsoil	(45)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs			
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LFS / 4		10YR 5/4	GR	S		NE	<1	--	--
Bw	4-10	SL / 12		10YR 5/4	SBK	HA		SL	<1	--	--
Bt	10-19	SL / 14		10YR 5/4	SBK	MH		ST	<1	--	--
Btk	19-36	SL / 17		10YR 5/4	SBK	VH		ST	3	--	--
Btk_2	36-45	SCL / 20		10YR 4/3	SBK	EH		ST	3	--	--
Cr/R	45-60	- /									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/7/07	Time	Stop No.	265 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Alluvium/Residual		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	22)
Elevation	---		Topsoil	(	22)
Slope	0-1%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	2%	

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 12		10YR 5/4	PL	S		ST	<1	--	--
Bt	4-8	SL / 18		10YR 5/4	SBK	HA		ST	<1	--	--
Btk	8-22	SCL / 22		10YR 5/3	SBK	VH		VE	2-4	--	--
Crky	22-40	- /			MA	VH			3-5	2	--
Cr/R	40-60	- /	Shale								
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 11/5/07 Time 11:15am Stop No.	266 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(39)
Elevation	---	Topsoil	(39)
Slope	0-5%	Drainage	Well
Aspect	N	Root distrib	40
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	1-5%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Saka

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL 18		10YR 5/3	PL	HA		ST	<1	--	--
Bt_1	6-19	SCL 22		10YR 5/4	SBK	VH		ST	<1	--	--
Bt_2	19-28	CL 30		10YR 5/3	SBK	VH		ST	<1	--	--
C	28-39	SCL 26		10YR 5/3	MA	HA		ST	2	--	--
R	39+										

Soil Description

Area V Soil Survey BAB/FLR

Soil Type	Doak	Date 11/2/07 Time 10:45am Stop No.	269 B
Classification	fine loamy Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Swale - Broad H_20 Acc.	Bedrock	(54)
Elevation	---	Topsoil	(54)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	60
Erosion	Slight/Moderate	Surface Salt	0
Permeability	Slow	Surface Stoniness	0

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai, Saib, Pltn

Additional notes:

Sample (depth inches)

0 - 4

4 - 12

12 - 32

32 - 39

39 - 54

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	L/SCL 25	SL/16.3	10YR 4/3	PL	SH		ST	<1	--	--
Bt_1	4-12	CL 27	CL/33.8	10YR 4/3	SBK	HA		ST	<1	--	--
Bt_2	12-32	CL 33	CL/36.3	10YR 4/3	SBK	VH		ST	<1	--	--
Btk	32-39		CL/31.3	10YR 4/3	SBK	VH		ST	1-2	--	--
C	39-54		SL/15	10YR 5/3	MA	HA		ST	1	--	--
Crk	54-60		Shale						8-10	--	--

Soil Description

Area V Soil Survey BAB/LR

Soil Type	Monierco	Date 11/2/07 Time 11:15am Stop No.	270 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	40
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai, Hija

Additional notes: Calcic

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL 12		10YR 5/3	GR	SH		ST	<1	--	--
Bt	6-11	SL 18		10YR 5/3	SBK	HA		ST	<1	--	--
Btk	11-16	SCL 22		10YR 5/4	SBK	HA		VE	8-12	--	--
Crky	16-40								12-15	1-2	--
Cr/R	40-60										

Soil Description

Area V Soil Survey BAB/LR

Soil Type	Monierco	Date 11/2/07 Time 11:30am Stop No.	271 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Sandstone	Pit Depth	(30)
Physiography	Upland terrace	Bedrock	(19)
Elevation	---	Topsoil	(19)
Slope	1-2%	Drainage	Well
Aspect	SE	Root distrib	30
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1-2%

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai, Hija, Aster

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS 6		10YR 4/3	GR/PL	S		SL	<1	--	1-2
Bt	3-12	SL 14		10YR 5/4	SBK	SH		ST	1-2	--	1-2
Btk	12-19	SCL 20		10YR 6/4	SBK	HA		VE	8-12	--	1-2
Crk	19-30		Sandstone						15-20	--	--
R	30+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time 10:35am Stop No. 273 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(40)
Physiography	Upland Dune	Bedrock	(11)
Elevation	---	Topsoil	(11)
Slope	5-10%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%
N. Veg. Shrubs	Atca		
N. Veg. Grass/Forbs	Spai		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 8		10YR 5/4	PL	SH		NE	--	--	--
Bt	3-7	SL / 12		10YR 5/4	SBK	HA		ST	--	--	--
Btk	7-11	SL / 14		10YR 5/4	SBK	HA		VE	3	--	--
R	11+	- /									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 11/5/07	Time 11:30am Stop No. 274 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(43)
Elevation	---	Topsoil	(43)
Slope	5-10%%	Drainage	Well
Aspect	E	Root distrib	40
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Purple Aster

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	LS / 8		10YR 4/3	PL	SH		NE	--	--	--
Bw	4-13	SL / 10		10YR 5/4	SBK	SH		SL	<1	--	--
Bt	13-22	SL / 12		10YR 5/4	SBK	HA		ST	1	--	--
Btk	22-30	SL / 14		10YR 5/4	SBK	VH		VE	3	--	--
C	30-43	LS / 6		10YR 4/4	MA	HA		ST	1	--	--
Crk	43+										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/5/07	Time 11:45am Stop No. 275 B
Classification	coarse loamy Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Dune	Bedrock	(29)
Elevation	---	Topsoil	(29)
Slope	0-5%	Drainage	Well
Aspect	SE	Root distrib	30
Erosion	Moderate	Surface Salt	0
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Chna, Atca

N. Veg. Grass/Forbs Brtec, Hija

Additional notes: sand cap over truncated Monierco/Bacobi

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	S / 2		10YR 5/4	GR	S		NE	<1	--	--
C	5-21	S / 2		10YR 5/4	MA	S		NE	<1	--	--
Btb	21-29	SL / 18		10YR 5/4	SBK	HA		ST	1	--	1
Crk	29-40								5	--	--
R	40+										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/5/07	Time 12:10pm Stop No. 276 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	0-5%	Drainage	Well
Aspect	W	Root distrib	24
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	S / 2		10YR 5/4	PL	S		NE	--	--	--
Bt	4-13	LS / 8		10YR 5/4	SBK	SH		ST	1	--	--
Btk	13-18	SL / 12		10YR 5/4	SBK	HA		VE	5	--	--
Crk	18-40										
R	40+										

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 11/5/07	Time 12:45pm Stop No. 277 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-5%	Drainage	Well
Aspect	N	Root distrib	35
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Hija

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 4/4	PL	S		SL	<1	--	--
Bw	4-10	SL / 10		10YR 4/4	SBK	SH		SL	<1	--	--
Bt	10-16	SL / 14		10YR 5/4	SBK	HA		ST	1	--	--
Btk	16-25	SL / 16		10YR 5/4	SBK	VH		VE	3	--	--
C_1	25-45	LS / 8		10YR 5/6	MA	HA		ST	3	--	--
Ck	45-60	SL / 12		10YR 6/4	MA	HA		VE	7	--	--
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 11/5/07	Time 1:15pm	Stop No.	278 B
Classification	Psamment				
Climate	Semi-Arid				Inches
Parent Material	sandstone		Pit Depth	(	50)
Physiography	Upland		Bedrock	(	24)
Elevation	---		Topsoil	(	24)
Slope	0-5%		Drainage	Well	
Aspect	NW		Root distrib	35	
Erosion	Slight		Surface Salt		
Permeability	Moderate		Surface Stoniness	1-2%	

N. Veg. Shrubs Atca, Chna, Gusa

N. Veg. Grass/Forbs Spca, Orhy

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	S / 3		10YR 5/4	GR	S		NE	<1	--	--
C_1	4-12	LS / 6		10YR 5/4	MA	SH		NE	<1	--	--
C_2	12-24	SL / 10		10YR 6/4	MA	HA		ST	1	--	10
Crk	24-32										
R	32+										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/5/07	Time 1:00pm Stop No. 279 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(26)
Elevation	---	Topsoil	(26)
Slope	0-5%%	Drainage	Well
Aspect	SW	Root distrib	30
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	S 2		10YR 5/4	GR	S		NE	--	--	--
C	3-12	S 3		10YR 5/4	MA	SH		NE	--	--	--
Btb	12-20	SL 10		10YR 5/4	SBK	HA		SL	1	--	--
Btkb	20-26	SL 10		10YR 5/4	SBK	HA		VE	3	--	--
R	26+	-							--	--	--

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/5/07	Time 1:25pm Stop No. 281 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(28)
Elevation	---	Topsoil	(28)
Slope	0-2%	Drainage	Well
Aspect	SW	Root distrib	20
Erosion	Slight	Surface Salt	
Permeability	Moderate	Surface Stoniness	

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai, Purple Aster

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-7	SL 12		2.5YR 5/4	PL	SH		ST	1	--	--
Bt	7-19	SCL 20		2.5YR 5/4	HA	SBK		VE	2	--	--
Btk	19-28	SCL 22		2.5YR 5/4	VH	SBK		VE	7	--	--
Crk	28-44										
R	44+										

Soil Description

Area V Soil Survey FLR/JRN

Soil Type	Monierco	Date 11/5/07 Time 1:35pm Stop No. 282 B	
Classification			
Climate	Semi-Arid		Inches
Parent Material	Sandstone	Pit Depth	(60)
Physiography	Upland	Bedrock	(12)
Elevation	---	Topsoil	(12)
Slope	0-2%	Drainage	Well
Aspect	SE	Root distrib	24
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Aster, Spai

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 12		10YR 4/4	GR	S		NE	<1	--	--
Bt	3-8	SL / 16		10YR 5/4	SBK	HA		ST	1	--	--
Btk	8-12	SL / 16		10YR 5/4	SBK	HA		VE	3	--	--
Cr	12+	/									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/31/07	Time	Stop No.	283 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Residual		Pit Depth	(	30)
Physiography	Upland		Bedrock	(	9)
Elevation	---		Topsoil	(	9)
Slope	0-1%		Drainage	Well	
Aspect	N, NE		Root distrib		
Erosion	Moderate-severe		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	3%	

N. Veg. Shrubs Gusa 1%, Atco 1%, OP 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SL 14		10YR 5/4	PL	S		SL	--	--	--
Bt	3-9	SCL 20		10YR 5/4	SBK	HA		ST	--	--	--
Cr/R	9+										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/31/07 Time	Stop No. 284 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Upland	Bedrock	(36)
Elevation	---	Topsoil	(22)
Slope	0-1%	Drainage	Well
Aspect	S, SW	Root distrib	12
Erosion	Moderate to Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%
N. Veg. Shrubs	Atco 1%, Atca 1%		
N. Veg. Grass/Forbs	Spai 1%, Orhy 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 10		10YR 4/4	PL	S		SL	<1	--	4
Bt	4-12	SL / 14		10YR 4/3	SBK	S		ST	<1	--	5
Btk	12-22	SL / 17		10YR 6/3	SBK	HA		VE	25	--	5
Crk	22-36	/									
Cr/R	36+	/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 288 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(48)
Physiography	Upland	Bedrock	(15)
Elevation	---	Topsoil	(15)
Slope	0-1%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%
N. Veg. Shrubs	Atco 3%, Gusa 1%		
N. Veg. Grass/Forbs	Spai 2%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 8		10YR 5/4	SBK	S		ST	<1	<1	<1
Bt	5-15	SL / 12		10YR 5/4	SBK	HA		VE	2	<1	<1
Crk_1	15-24	- /	Sandstone					VE	12	25	<1
Crk_2	24-48	- /									
		/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 290 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography		Bedrock	(13)
Elevation	---	Topsoil	(13)
Slope	1-2%	Drainage	Well
Aspect	NE	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atco 1%, Edtr 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: sandstone bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LS / 6		10YR 4/4	GR	S		ST	<1	--	5
Bt	4-13	SL / 12		10YR 5/4	SBK	SH		VE	<1	--	8
Crk	13-26	SCL / 22		10YR 6/4	SBK	HA		VE	5-8	--	--
Cr	26-48	/						VE	25	--	--
R	48-60	/							12	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Sogzie	Date 10/30/07 Time	Stop No. 291 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Upland	Bedrock	(50)
Elevation	---	Topsoil	(29)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Gusa 1%, Edtr 3%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes: Inclusion in Monierco unit. Coarse loamy (17.8 % clay) and calcic

Sample (depth inches)

0 - 6

6 - 17

17 - 29

29 - 50

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	S / 3	LS/10	10YR 5/4	PL	S		NE	<1	--	--
Btk_1	6-17	SL / 12	SL/15	10YR 5/4	SBK	HA		ST	2-4	--	--
Btk_2	17-29	CL / 28	L/21.3	10YR 6/4	SBK	HA		VE	12	--	--
Ck	29-50	CL / 33	Sil/7.5	10YR 6/4	MA	HA		VE	30-35	--	--
Cr/R	50-60										

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 292 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(30)
Physiography	Upland	Bedrock	(19)
Elevation	---	Topsoil	(19)
Slope	1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability		Surface Stoniness	1%
N. Veg. Shrubs	Atco 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-10	LS / 5			PL/GR	S		SL	<1	--	1
Bt	10-19	SL / 17			SBK	MH		ST	2	--	3
Cr/K	19-24							VE	25	--	--
R	24-30								--	--	--

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 293 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(29)
Elevation	---	Topsoil	(29)
Slope	0-1%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Atca 3%, Gusa 1%		
N. Veg. Grass/Forbs	Spai 1%, Orhy 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 8		10YR 5/4	GR	S		SL	--	--	--
Bt	3-13	SL / 12		10YR 5/4	SBK	S		SL	1	--	--
Btkb	13-29	SL / 14		10YR 5/3	SBK	HA		VE	5	--	10
Cr/k	29-60		Sandstone						--	--	--

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 294 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Dune like Upland	Bedrock	(37)
Elevation	---	Topsoil	(37)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs	Atca 2%, Gusa 1%		
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
Ac	0-16	LS 6		10YR 4/4	GR	S		SL	--	--	--
Btkb	16-25	SCL 20		10YR 5/4	SBK	HA		ST	5	--	--
Cb	25-37	SL 17		10YR 6/6	MA	HA		VE	--	--	--
Cr/R	37-48		Shale								

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 295 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(48)
Physiography	Upland – bottom of dune	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%

N. Veg. Shrubs Edtr 3%, OP 1%, Gusa .5%, Chna .5%

N. Veg. Grass/Forbs Orhy 1%

Additional notes: Has Calcic horizon

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL 12		10YR 5/4	PL	S		ST	<1	--	--
Btk	3-18	SCL 19		10YR 6/4	SBK	HA		VE	15	--	--
Crk	18-40										
Cr/R	40-48										

Soil Description

Area V Soil Survey

Soil Type	Mayqueen	Date 10/30/07 Time	Stop No. 296 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium	Pit Depth	(60)
Physiography	Upland / Dune like	Bedrock	(47)
Elevation	---	Topsoil	(47)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs			
N. Veg. Grass/Forbs	Orhy 1%		
Additional notes:	Definite Calcic Horizon		
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A_1	0-5	LS / 6		10YR 5/4	PL	S		NE	<1	<1	--
A_2	5-12	LS / 6		10YR 5/4	PL	S		NE	<1	<1	--
Bw	12-20	LS / 6		10YR 5/4	SBK	SH		SL	1	<1	--
Bt	20-38	LS / 10		10YR 5/4	SBK	HA		ST	2	<1	--
Btk	38-42	SL / 18		10YR 6/4	SBK	HA		VE	20	<1	--
Cky/Cr	42-47	SCL / 22		10YR 6/6	MA	HA		VE	15	2	--
Crky	47-54	/						VE	12	1	--
Cr/R	54-60	/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 297 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Upland	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	3-4%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%
N. Veg. Shrubs	Atco 1%, Gusa 1%		
N. Veg. Grass/Forbs	Spai%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	SL / 8		10YR 5/4	PL	S		ST	<1	--	--
Bt	4-11	LS / 6		10YR 5/4	SBK	HA		VE	<1	--	--
Btk	11-18	SL / 15		10YR 6/4	SBK	HA		VE	15	--	--
Crk	18-32	/							35	--	--
Cr/R	32-48	/									
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Shiprock (red)	Date 10/30/07 Time	Stop No. 298 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(54)
Elevation	---	Topsoil	(54)
Slope	2-3%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs Atco 2%, Chna .5%, OP1%, Gusa 1%

N. Veg. Grass/Forbs Spai 1%, Orhy 1%

Additional notes:

Sample (depth inches)

0 - 11

11 - 24

24 - 54

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS / 10	SL/12.5	10YR 4/3	GR	S		SL	<1	--	--
Bw	3-11	LS / 10	SL/12.5	10YR 4/3	SBK	SH		ST	<1	--	--
Btk	11-24	SL / 15	SL-SCL 20	10YR 5/4	SBK	HA		VE	1	--	--
C	24-54	LS / 10	SL/12.5	10YR 5/3	MA	HA		VE	3	--	--
Ck	54-60										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 299 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Dune	Bedrock	(22)
Elevation	---	Topsoil	(22)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Edtr 2%, Gusa 1%, Atco 1%		
N. Veg. Grass/Forbs	Spai 1%, Orhy 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-8	LS / 6		10YR 4/4	PL	S		ST	--	--	--
Btk	8-22	SL / 10		10YR 5/4	SBK	HA		ST	--	--	--
Crk	22-38							VE	--	--	--
Cr/R	38-60										

Soil Description

Area V Soil Survey

Soil Type	Mayqueen	Date 10/30/07 Time	Stop No. 300 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(60)
Physiography	Dune	Bedrock	(55)
Elevation	---	Topsoil	(55)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Deposition	Surface Salt	0
Permeability		Surface Stoniness	0
N. Veg. Shrubs	Atca 2%		
N. Veg. Grass/Forbs	Orhy 2%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist 10YR	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
AC	0-36	LS / 3		10YR 5/4	MA	S		NE	--	--	--
Btkb	36-45	SL / 10		7.5YR 4/6	SBK	SH		ST	--	--	--
Cb	45-55	LS / 8		10YR 5/4	MA	SH		ST	--	--	--
Crk	55+	/							30	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 10/30/07 Time	Stop No. 301 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(48)
Physiography	Upland Dune	Bedrock	(16)
Elevation	---	Topsoil	(16)
Slope	2-3%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight-Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	4%
N. Veg. Shrubs	Chna 4%		
N. Veg. Grass/Forbs	Orhy 1%, Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	LS / 6		10YR 5/4	PL	S		SL	--	--	--
Bt	3-10	SL / 10		10YR 5/4	SBK	HA		ST	--	--	--
Btk	10-16	SL / 12		10YR 6/4	SBK	HA		VE	25	--	--
Crk	16-30	/							30	--	--
Cr/R	30-48	/							--	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/30/07 Time	Stop No. 302 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(45)
Physiography	Dune Upland	Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Deposition	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0
N. Veg. Shrubs	Atca 3%		
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 6		10YR 5/4	GR	S		NE	--	--	1
AC	5-21	LS / 6		10YR 5/4	MA	S		SL	--	--	1-2
Btkb	21-32	SL / 14		10YR 5/4	SBK	SH		VE	3-5	--	2-3
Crk	32-45		Sandstone						25	--	--
R	45+										

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/30/07 Time	Stop No. 303 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(45)
Elevation	---	Topsoil	(45)
Slope	0-1%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	4%

N. Veg. Shrubs Gusa 1%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

0 - 6

6 - 13

13 - 28

28 - 45

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	SL 16	SCL/21.3	10YR 4/3	PL	S		ST	--	--	<1
Bt_1	6-13	SCL 22	SCL/22.5	10YR 4/3	SBK	HA		ST	--	--	<1
Btk	13-21	SCL 26	CL/33.8	10YR 5/3	SBK	VH		ST	--	--	1
Btk_2	21-28	SCL 24	CL/33.8	7.5YR 4/6	SBK	VH		VE	--	--	1
C	28-45	SCL 17	SL/15	7.5YR 4/4	MA	HA		VE	--	--	17
Cr/R	45-60		Shale								

Soil Description

Area V Soil Survey BAB

Soil Type	Monierco	Date 10/29/07 Time 11:25am Stop No.	304 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Residual	Pit Depth	(60)
Physiography	Upland slope	Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope	2-3%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Slight-moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%
N. Veg. Shrubs	Atco 1%		
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	LFS 7		7.5YR	GR	SH		SL	<1	--	1-2
Bt	4-11	SL 18		10YR 5/4	SBK	MH		ST	<1	--	1-2
Btk	11-18	SCL 21		10YR 6/4	SBK	HA		VE	2-3	--	2-3
Crk	18-28							VE	15	--	--
Cr	28-40										
R	40+		Sandstone Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/29/07 Time	Stop No. 305 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(31)
Elevation	---	Topsoil	(31)
Slope	1-2%	Drainage	Well
Aspect	S, SW	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	1%

N. Veg. Shrubs OP: 1%, Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	FSL 15		10YR 4/4	PL	SH		SL	--	--	--
Bt	4-9	SCL 20		7.5YR 5/6	SBK	HA		ST	--	--	--
Btk	9-17	SCL 22		7.5YR 5/6	SBK	VH		VE	--	--	--
Bk	17-31	CL 30		10YR 7/4	SBK	VH		VE	25	--	--
Crk	31-55										
R	55+										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/29/07 Time 12:15 pm Stop No. 306 B	
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian/Alluvium/Residual	Pit Depth	(32)
Physiography	Upland	Bedrock	(21)
Elevation	---	Topsoil	(21)
Slope	1-2%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Slight-moderate	Surface Salt	0
Permeability		Surface Stoniness	<1%
N. Veg. Shrubs	Atco 1%, OP 1%		
N. Veg. Grass/Forbs	Spai 1%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 8		10YR 4/4	PL	S		SL	<1	--	<1
Bt_1	5-12	SL / 12		10YR 5/4	SBK	SH		ST	1-2	--	1-2
Bt_2	12-21	SL / 14		10YR 5/4	SBK	SH		V	1-2	--	10-12
Crk	21-32	/			MA				15-20	--	30+
R	32+	/	Sandstone								
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey BAB

Soil Type Bacobi Date 10/29/07 Time 12:30pm Stop No. 309 B

Classification

Climate Semi-Arid Inches

Parent Material Eolian/Alluvium/residual Pit Depth (48)

Physiography Dune Bedrock (21)

Elevation --- Topsoil (21)

Slope 2% Drainage Well

Aspect S Root distrib

Erosion Slight to Moderate Surface Salt 0

Permeability Rapid Surface Stoniness 0

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai 4%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-12	SL 14		10YR 5/4	GR/MA	S		NE	<1	--	--
Bt	12-21	SL 16		10YR 4/4	SBK	HA		ST	1-2	--	10
Crk	21-36	SCL 26		10YR 4/6	MA	HA		VE	15	--	--
R	36+									1	--

Soil Description

Area V Soil Survey BAB

Soil Type	Razito	Date 10/29/07 Time 12:37pm Stop No.	310 B
Classification	Psamment		
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(46)
Physiography	Dune	Bedrock	(46)
Elevation	---	Topsoil	(46)
Slope	1-2%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate-Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	0

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Spai 3%

Additional notes: No cambic because of sandy texture

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	LS 6		10YR 5/4	GR	S		NE	--	--	--
Bw	6-20	LS 5		10YR 5/4	MA	S		NE	--	--	--
C	20-46	SL 10		10YR 5/4	MA	SH		ST	--	--	--
R	46+		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/29/07 Time	Stop No. 311 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian	Pit Depth	(48)
Physiography	Dune	Bedrock	(48)
Elevation	---	Topsoil	(30)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Slight to Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%
N. Veg. Shrubs	Gusa .5%		
N. Veg. Grass/Forbs	Spai 2%		
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	LS / 6		10YR 4/4	SBK	S		NE	<1	--	<1
Bt	5-13	SL / 12		10YR 5/4	SBK	HA		SL	<1	--	1
Btk	13-30	SL / 18		10YR 4/4	SBK	HA		ST	3-5	--	1-2
Crk	30-48	/							10-15	--	--
R	48+	/	Shale								
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey BAB

Soil Type Bacobi Date 10/29/07 Time 12:52 pm Stop No. 312 B

Classification

Climate Semi-Arid Inches

Parent Material Eolian/Alluvium/Residual Pit Depth (48)

Physiography Upland Bedrock (48)

Elevation --- Topsoil (23)

Slope 0-1% Drainage Well

Aspect N Root distrib

Erosion Slight/Moderate Surface Salt 0

Permeability Rapid Surface Stoniness <1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	LS / 6		10YR 5/4	GR	S		SL	<1	--	--
Bt	5-12	SL / 12		10YR 5/4	SBK	S		ST	<1	--	--
Btk	12-23	SL / 17		10YR 5/4	SBK	HA		ST	2-3	--	--
Crk	23-48								15+		
R	48-										

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/29/07 Time	Stop No. 313 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(52)
Elevation	---	Topsoil	(32)
Slope	0-1%	Drainage	Well
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%
N. Veg. Shrubs	Atco 1%		
N. Veg. Grass/Forbs	Spai 1%	Back hoe quit – won't start	
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL 12			PL	SH		ST	<1	--	1
Bt	5-10	SL 17			SBK	HA		ST	<1	--	2
Btk	10-32	SCL 20			SBK	HA/ VH		V	1-2	--	5
Crk	32-52								10-12		
R	52-										

Soil Description

Area V Soil Survey

Soil Type	Razito (Mod/Deep)	Date 10/29/07	Time	Stop No.	318 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian over Bedrock		Pit Depth	(	50)
Physiography	Upland slope / Ridge		Bedrock	(	24)
Elevation	---		Topsoil	(	24)
Slope	4%		Drainage	Well	
Aspect	N		Root distrib		
Erosion	Moderate		Surface Salt	0	
Permeability	Rapid		Surface Stoniness	1%	
N. Veg. Shrubs	Atco 1%				
N. Veg. Grass/Forbs	Spai 1%				
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL 14		10YR 5/4	GR	S		SL	--	--	--
C	5-24	SL 12		10YR 5/4	MA	S		ST	--	--	--
C/Crk	24-44				MA				12-15		
Shale											

Soil Description

Area V Soil Survey BAB

Soil Type	Fajada	Date 10/29/07 Time 9:21 am Stop No. 320 B	
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(48)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(12)
Slope	3-4%	Drainage Well	
Aspect	S,SW	Root distrib	
Erosion	Slight/Moderate	Surface Salt 0	
Permeability	Moderate	Surface Stoniness 1%	

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1% Hagl 3

Additional notes:

Sample (depth inches) (1)

0 - 12

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SL 16	SL-SCL 20	10YR 4/4	PL	SH		S	<1	--	2
Bt	5-12	SCL 24	SL-SCL 20	10YR 5/4	SBK	SH		V	1	--	2
2Btky	12-23	CL		10YR 6/4	SBK	SH		V	6-8	1	--
2Crk	23-40		Shale		M				10+	2	--
R	40-		Shale		M						

Soil Description

Area V Soil Survey BAB

Soil Type	Patel	Date 10/29/07 Time 9:10 am Stop No.	321 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(60)
Physiography	Upland Slope	Bedrock	(36)
Elevation	---	Topsoil	(0)
Slope	1-2%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate/Severe	Surface Salt	0
Permeability	Slow	Surface Stoniness	3%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches) (4)

0 – 5

5 – 12

12 – 18

18 - 36

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	SCL 28	SCL 2	10YR 5/6	PL	SH		ST	<1	--	--
Bt	5-12	CL 40	SCL-SC 35	10YR 5/6	SBK	VH		V	<1	--	--
Btk_1	12-18	C 50	CL-37.5	10YR 5/4	SBK	VH		V	2	--	--
Btk_2	18-36	C 52	CL-C 40	10YR 5/3	PR/ABK	VH		V	5-8	1	--
Cr	36-48									2	
R											

Soil Description

Area V Soil Survey

Soil Type	Hoskay	Date 10/2907	Time 9:40 am Stop No. 324 B
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(0)
Slope	1-2%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs Atco .5%

N. Veg. Grass/Forbs

Additional notes: Little to no vegetation / wind erosion

Sample (depth inches)

0 – 8

8 – 21

21 - 32

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	L/FSL 10	SCL/ 27.5	10YR 4/3	GR	SH		ST	--	--	--
Bt	3-8	SCL 23	SCL/ 27.5	10YR 4/3	SBK	VHA		V	--	--	--
Btkn	8-15	CL	CL-SC 37.5	10YR 4/4	SBK				--	--	--
2Btk	15-21	CL 27	CL-SC 37.5	10YR 4/4	SBK	VH		V	--	--	--
C	21-32	SCL 20	SCL 25	10YR 4/6	MA	EH		V	--	--	--
1Btkb	32-48	CL 40			SBK	EH		V	--	--	--
2Btkb	48-60	CL/C 38			SBK	EH		V	--	--	--
C--	64				MA	EH		V	--	--	--

Soil Description

Area V Soil Survey BAB

Soil Type	Shiprock	Date 10/29/07 Time 10:15 am Stop No.	325 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(36)
Elevation	---	Topsoil	(36)
Slope	0-1%	Drainage	Well
Aspect	N, NE	Root distrib	
Erosion	Severe	Surface Salt	0
Permeability	Moderate	Surface Stoniness	1%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Better veg

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL 12		7.5YR 5/4	PL	SH		SL	--	--	--
Bt	4-16	SL 16		7.5YR 4/4	SBK	SH		ST	--	--	--
Btk	16-26	SL 18		10YR 6/4	SBK	HA		V	--	--	--
C	26-36	SL 14		10YR 6/4	MA	HA		V	--	--	--
2Crk	36-48		Shale								
R	48-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/29/07 Time 10:30 am Stop No.	326 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Alluvium/Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(27)
Elevation	---	Topsoil	(27)
Slope	2-3%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	<1%

N. Veg. Shrubs

N. Veg. Grass/Forbs Spai 2%

Additional notes:

Sample (depth inches)

0 – 5

5 – 15

15 - 27

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-5	SL 12	SL/13.8	10YR 5/4	GR	S		ST	--	--	--
Bt	5-15	SL 17+	SL/15	10YR 5/4	SBK	HA		V	--	--	--
Btk	15-27	SL/SCL 18+	SCL/ 25	10YR 5/4	SBK	HA		V	--	--	--
Crk	27-40										
R	40-										

Soil Description

Area V Soil Survey

Soil Type	Doak	Date 10/29/07 Time 10:45 am Stop No.	327 B
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(27)
Slope	0-1%	Drainage	Well
Aspect	S,SW	Root distrib	
Erosion	Moderate/Severe	Surface Salt	0
Permeability	Rapid	Surface Stoniness	3%
N. Veg. Shrubs	Gusa 2%		
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			
0 - 27			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SCL / 28	CL/35	10YR 5/4	PL	SH		ST	--	--	--
Btn	4-12	CL / 33	CL/35	10YR 5/4	SBK	HA		ST	--	--	--
Btk	12-27	CL / 35	CL/35	10YR 5/4	SBK	VH		ST	--	--	--
Ck_1	27-48	C / 40		10YR 6/4	MA	EH		ST	--	--	--
Ck_2	48-60	C / 44		10YR 6/4	MA	EH		ST	--	--	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey BAB

Soil Type	Monierco	Date 10/29/07 Time 10:55 am Stop No.	328 B
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	(48)
Physiography	Upland ridge	Bedrock	(12)
Elevation	---	Topsoil	(12)
Slope	2-3%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate/Severe	Surface Salt	0
Permeability		Surface Stoniness	3%
N. Veg. Shrubs	Atco 2%		
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL 16		10YR 5/6	PL	SH		ST	<1	--	1-2
Bt	3-12	SCL 26		10YR 5/6	SBK	HA		V	1	--	1-2
Crk	12-24		Shale/Sandstone						10-15	1-2	--
R	24-		Sandstone Rock								

Soil Description

Area V Soil Survey BAB

Soil Type	Benally	Date 10/29/07 Time 11:05 am Stop No. 329 B	
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(16)
Slope	0%	Drainage	Well
Aspect	W	Root distrib	36”
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	4%

N. Veg. Shrubs Atco 1%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Model for area

Sample (depth inches)

0 – 9

9 - 16

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-3	SL / 17	SCL/ 30	10YR 5/4	PL	S		ST	--	--	--
Bt	3-9	SCL / 24	SCL/ 30	10YR 4/4	SBK	HA		V	--	--	--
Btk Not calcitic	9-16	SCL / 26	SCL/ 32.5	10YR 5/4	SBK	VH		ST	--	--	--
Btkyb	16-36	CL/SCL		10YR 5/4	SBK	VH		V	15	2	--
Ck	36-42	CL						V			
Crk	42-60	CL									

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/25/07 Time	Stop No. 333 B
Classification			
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual	Pit Depth	(50)
Physiography	Upland	Bedrock	(13)
Elevation	---	Topsoil	(13)
Slope	3%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	0
Permeability	Rapid	Surface Stoniness	2%

N. Veg. Shrubs Atca 1%

N. Veg. Grass/Forbs Spai 2%

Additional notes: Sand cap over shale bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL / 12		10YR 5/4	GR	S		SL	--	--	--
C_1	3-9	SL / 14		10YR 4/4	MA	SH		ST	1	--	--
C_2	9-13	SL / 15		10YR 5/4	MA	HA		ST	2	--	--
Cr/R	13-		Shale								

Soil Description

Area V Soil Survey

Soil Type	Razito Mod/Deep	Date 10/25/07	Time	Stop No.	335 B
Classification					
Climate	Semi-Arid				Inches
Parent Material	Eolian/Residual			Pit Depth	(50)
Physiography	Upland			Bedrock	(17)
Elevation	---			Topsoil	(17)
Slope	3%			Drainage	Well
Aspect	E			Root distrib	
Erosion	Slight			Surface Salt	0
Permeability	Rapid			Surface Stoniness	0%

N. Veg. Shrubs Atca 2%

N. Veg. Grass/Forbs Spai 1%

Additional notes: Sandcap over Bedrock

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	SL 14		10YR 4/4	GR	S		SL	--	--	--
C_1	3-11	SL 12		10YR 4/4	MA	SH		ST	--	--	--
C_2	11-17	SL 8		10YR 4/4	MA	HA		V	3	--	--
C/Cr	17-		Bedrock shale								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/5/07	Time 12:00 pm Stop No. 336 B
Classification	Coarse loamy Typic Haplargid		
Climate	Semi-Arid		Inches
Parent Material	SS/Eolian	Pit Depth	(60)
Physiography		Bedrock	(22)
Elevation	---	Topsoil	(22)
Slope	0-5%	Drainage	Well
Aspect	N	Root distrib	20
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	<1%

N. Veg. Shrubs Atca

N. Veg. Grass/Forbs Spai

Additional notes: Sandcap over truncated Bacobi

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
A	0-4	S / 2		10YR 5/4	G	S		NE	--	--	--
C	4-17	S / 3		10YR 5/4	MA	S		NE	--	--	--
Btb	17-22	SL / 18		10YR 6/4	SBK	H		S	2	--	--
Cr	22-33	/			MA						
C	33-	/			MA						
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 9/28/07 Time 1:30 pm Stop No.	A5-1
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium over Residual Sandstone	Pit Depth	(40)
Physiography	Upland	Bedrock	(23)
Elevation	---	Topsoil	(23)
Slope	3%	Drainage	Well
Aspect	E	Root distrib	
Erosion	Moderate	Surface Salt	--
Permeability	Fast	Surface Stoniness	--

N. Veg. Shrubs

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A_1	0-4	FSL / 10	SL/15	10YR 5/4	PL	SH	SO/ PO	VE	<1	<1	5
A_2	4-9	SL / 10	SL/13.8	10YR 6/4	GR	SH	SO/ PO	VE	<1	<1	5
Bt	9-16	SL / 17	SL/16.3	10YR 6/4	SBK	MH	SS/ SP	VE	1	<1	5
Bk	16-23	SL / 18	SL/18.8	10YR 6/4	SBK	HA	SS/ MP	VE	5	<1	5
Crk	23-33										
R	33-40										

Soil Description

Area V Soil Survey

Soil Type	Fajada	Date 9/28/07 Time 7:45am Stop No.	A5-2
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Shale Residual	Pit Depth	(30)
Physiography	Upland	Bedrock	(22)
Elevation	---	Topsoil	(0)
Slope	3%	Drainage	Well
Aspect	W	Root distrib	30”
Erosion	Moderate	Surface Salt	--
Permeability	Slow	Surface Stoniness	--
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:	Wet A B C		
Sample (depth inches)	SO/PO MS/MP MS/MP		
0 – 3			
3 – 13			
13 - 22			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Moist	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	LS	SL/16.3	10YR 4/4	GR	S	VFR	VS	<1	<1	2
Btkn	3-13	CL 35	C/46.3	10YR 5/4	PR	MH	VFI	SL/ ST	4	1	--
Cy	13-22	CL 37	SiC/ 48.8	10YR 5/4	MA	MH	FI	SL	2	1	2
Cr/R	22-30										

Soil Description

Area V Soil Survey

Soil Type	Mayqueen	Date 10/1/07 Time 11:00am Stop No.	A5-3
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual Shale	Pit Depth	(60)
Physiography	Upland	Bedrock	(45)
Elevation	---	Topsoil	(45)
Slope	1-2%	Drainage	
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-12	LFS 5	LS/ 11.3	10YR 5/4	GR	S	SO/ OP	NE	<1	<1	--
Btk	12-28	SCL/SL 20	SCL/ 21.3	10YR 6/4	SBK	HA	SS/ MP	ST	2	<1	1
2Btk	28-45	CL 27	C/46.3	10YR 6/6	SBK	VH	SS/ MP	VE	20	<1	1
Cr	45-60										

Soil Description

Area V Soil Survey

Soil Type	Fajada w/sandcap	Date 9/28/07	Time 12:30pm	Stop No.	A5-4
Classification	Natrargid				
Climate	Semi-Arid				Inches
Parent Material	Eolian over Residual shale		Pit Depth	(	40)
Physiography	Upland		Bedrock	(	22)
Elevation	---		Topsoil	(	4)
Slope	0-1%		Drainage	Well	
Aspect	S		Root distrib		
Erosion	Moderate		Surface Salt		
Permeability	Slow		Surface Stoniness		
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					
Lab textures					
Wrong					
Due to					
EC & SAR					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-4	SL / 15	SL/18.8	10YR 4/4	GR	SH	SO/ SP	ST	<1	<1	1
Btnky	4-14	CL / 35	SiL/ 11.3	10YR 5/3	SBK	HA	SS/ P	VE	1	2	--
C	14-22	CL / 35	SiL/11.3	10YR 6/4	MA	VH	SS/ P	ST	1	<1	--
Cr	22-29	/						ST			
R	29-40	/						ST			
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Blancot	Date 9/28/07	Time 9:00am	Stop No.	A5-5
Classification	Haplargid				
Climate	Semi-Arid				Inches
Parent Material	Alluvium		Pit Depth	(	60)
Physiography	Upland		Bedrock	(	>60)
Elevation	---		Topsoil	(	60)
Slope	0-1%		Drainage	Well	
Aspect	W		Root distrib		
Erosion	Moderate		Surface Salt		
Permeability	Moderate to Slow		Surface Stoniness		

N. Veg. Shrubs

N. Veg. Grass/Forbs

Additional notes:

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-3	CL / 36	33.8	10YR 5/4	GR/ SBK	MH	SS/ MP	SL	<1	<1	--
Bt	3-10	SCL / 35	CL/ 38.8	10YR 5/4	SBK	VH	MS/ MP	ST	<1	<1	--
Btk	10-21	CL / 35	C/41.3	10YR 5/4	SBK	EH	MP/ MP	ST	4	<1	--
Ck	21-46	CL / 35	SCL/ 33.8	10YR 5/4	MA	EH	SL/ P	ST	2	<1	--
C	46-60	CL / 33	SCL/ 26.3	10YR 5/4	MA	EH	SL/ P	ST	1	<1	--
		/									
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 10/1/07 Time 10:15am Stop No.	A5-6
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(50)
Elevation	---	Topsoil	(26)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	

N. Veg. Shrubs 3 Atco

N. Veg. Grass/Forbs 5 Spai 2 Sppa

Additional notes: Shale on top of sandstone

Sample (depth inches)

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-6	FSL 8	SL/ 13.8	10YR 5/3	PL	S	SO/ OP	ST	1	<1	1
Bt	6-12	SCL 20	SCL/ 21.3	10YR 5/4	SBK	MH	SO/ MP	VE	1	<1	2
Btk	12-26	CL 27	CL/ 28.8	10YR 6/6	SBK	HA	S/ P	VE	18	<1	2
2Cr	26-50		Shale								
3Cr	50-60		Sandstone								

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 9/28/07 Time 2:15 pm Stop No.	A5-7
Classification	Haplargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(36)
Physiography	Ancient stream terrace	Bedrock	(24)
Elevation	---	Topsoil	(24)
Slope	0-1%	Drainage	Well
Aspect	W	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:	Calcic horizon		
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Wet				
A_1	0-4	FSL / 10	SL/ 16.3	10YR 5/4	PL	S	SO/ SP	VE	<1	<1	5
Bt	4-13	SL / 12	SCL/ 21.3	10YR 5/6	SBK	MH	SO/ SP	VE	2	<1	1
Btk	13-24	SL / 18	L/21.3	10YR 6/4	SBK	HA	SS/ P	VE	10	<1	<1
Cr	24-29										
R	29-36										

Soil Description

Area V Soil Survey

Soil Type	Grieta	Date 10/1/07 Time 9:00am Stop No. A5-8	
Classification	Calciargid		
Climate	Semi-Arid		Inches
Parent Material	Alluvium	Pit Depth	(60)
Physiography	Upland	Bedrock	(>60)
Elevation	---	Topsoil	(60)
Slope	0-1%	Drainage Well	
Aspect	N	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Moderate	Surface Stoniness	

N. Veg. Shrubs

N. Veg. Grass/Forbs 3% Spai

Additional notes:

Sample (depth inches) Shale bedrock @ 70+ inches

Calcic horizon @Btk_2

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-5	FSL / 8	SL/ 13.8	10YR 5/4	PL	S	SO/ OP	ST	<1	<1	1
Bt	5-15	SL / 15	SL/ 18.8	10YR 5/3	SBK	SH	SS/ SP	VE	1	<1	2
Btk_1	15-26	SCL / 20	SCL/ 21.3	10YR 5/4	SBK	HA	SS/ MP	VE	3	<1	2
Btk_2	26-40	CL / 29	C-CL/ 33.8	10YR 5/6	SBK	VH	MS/ MP	VE	15	<1	2
2Bk	40-56	CL / 30	CL/ 38.8	10YR 5/4	SBK	VH	S/ P	VE	20	<1	<1
2C	56-60	CL / 35	C/ 51.3	10YR 3/2	MA	HA	S/ P	NE	<1	<1	<1
		/									
		/									
		/									

Soil Description

Area V Soil Survey

Soil Type	Fajada	Date 9/28/07 Time 10:30pm Stop No.	A5-9
Classification	Natrargid		
Climate	Semi-Arid		Inches
Parent Material	Eolian over Residual shale	Pit Depth	(36)
Physiography	Upland	Bedrock	(21)
Elevation	---	Topsoil	(0)
Slope	0-1%	Drainage	Well
Aspect	S	Root distrib	
Erosion	Moderate	Surface Salt	
Permeability	Slow	Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			
0-2			
2-7			
7-12			
12-21			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence Dry	Consistence Wet	Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
A	0-2	SCL/ 20	SCL/ 26.3	10YR 5/4	GR	SH	Ss/ MP	SL	<1	<1	--
Btn	2-7	CL/ 30	SCL/ 33.8	10YR 5/4	SBK/pr	MH	S/ P	ST	1	<1	--
Btky	7-12	CL/ 30	L/ 11.3	10YR 5/4	SBK	MH	S/ P	SL	1	5	--
B/C	12-21	CL/ 30	L/ 11.3	10YR 5/4	Gr/SBK	MH	S/ P	SL	1	2	--
Cr/R	21-36							VS/NE			

Soil Description

Area V Soil Survey

Soil Type	Fruitland	Date 12/7/07 Time	Stop No. 7A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Jocity	Date 12/7/07 Time	Stop No. 9A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	( )
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/7/07	Time	Stop No. 17A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/7/07	Time	Stop No. 18A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 12/7/07 Time	Stop No. 20A
Classification			
Climate			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(18)
Elevation ---		Topsoil	(18)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 12/7/07 Time	Stop No. 21A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(14)
Elevation	---	Topsoil	(14)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 12/7/07 Time	Stop No. 23A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(18)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 12/7/07 Time	Stop No. 24A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(24)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 12/7/07 Time	Stop No. 28A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(26)
Elevation	---	Topsoil	(26)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Razito moderately deep	Date 12/13/07	Time	Stop No. 32A	
Classification					
Climate	Semi-Arid				Inches
Parent Material				Pit Depth	( )
Physiography				Bedrock	(32)
Elevation	---			Topsoil	(32)
Slope				Drainage	
Aspect				Root distrib	
Erosion				Surface Salt	
Permeability				Surface Stoniness	
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Razito moderately deep	Date 12/7/07 Time	Stop No. 33A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(34)
Elevation	---	Topsoil	(34)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/707	Time	Stop No. 35A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(5)
Elevation ---		Topsoil	(5)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/7/07	Time	Stop No. 58A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 12/7/07 Time	Stop No. 59A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(18)
Elevation	---	Topsoil	(18)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/7/07	Time	Stop No. 45A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(12)
Elevation ---		Topsoil	(12)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/7/07	Time	Stop No. 44A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(8)
Elevation ---		Topsoil	(8)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 12/7/07 Time	Stop No. 43A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Jocity	Date 12/7/07 Time	Stop No. 42A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(60)
Elevation	---	Topsoil	(60)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Shiprock	Date 12/7/07 Time	Stop No. 41A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(54)
Elevation	---	Topsoil	(54)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Bacobi	Date 12/7/07	Time	Stop No. 63A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(25)
Elevation ---		Topsoil	(25)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 12/7/07 Time	Stop No. 109A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(14)
Elevation	---	Topsoil	(14)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Huerfano	Date 12/7/07 Time	Stop No. 110A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 12/7/07 Time	Stop No. 111A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(29)
Elevation	---	Topsoil	(29)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 12/7/07 Time	Stop No. 112A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 12/7/07 Time	Stop No. 113A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Herufano	Date 12/7/07	Time	Stop No.	117A
Classification					
Climate	Semi-Arid				Inches
Parent Material			Pit Depth	(	)
Physiography			Bedrock	(0	)
Elevation	---		Topsoil	(0	)
Slope			Drainage		
Aspect			Root distrib		
Erosion			Surface Salt		
Permeability			Surface Stoniness		
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 12/13/07 Time	Stop No. 64A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(32)
Elevation	---	Topsoil	(32)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 12/13/07 Time	Stop No. 68A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(28)
Elevation	---	Topsoil	(28)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 12/13/07 Time	Stop No. 69A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(26)
Elevation	---	Topsoil	(26)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Razito moderately deep	Date 12/13/07	Time	Stop No. 78A
Classification				
Climate	Semi-Arid			Inches
Parent Material			Pit Depth	( )
Physiography			Bedrock	(22)
Elevation	---		Topsoil	(22)
Slope			Drainage	
Aspect			Root distrib	
Erosion			Surface Salt	
Permeability			Surface Stoniness	
N. Veg. Shrubs				
N. Veg. Grass/Forbs				
Additional notes:				
Sample (depth inches)				

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 12/13/07 Time	Stop No. 67A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Shiprock	Date 12/13/07	Time	Stop No. 66A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(15)
Elevation ---		Topsoil	(15)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/12/07 Time	Stop No. 51A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(15)
Elevation	---	Topsoil	(15)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 11/12/07 Time	Stop No. 57A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(22)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 11/12/07 Time	Stop No. 56A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(31)
Elevation	---	Topsoil	(12)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:	Sandcap 12in deep		
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/12/07 Time	Stop No. 55A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(7)
Elevation	---	Topsoil	(7)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Monierco	Date 11/12/07 Time	Stop No. 54A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(7)
Elevation	---	Topsoil	(7)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 11/12/07	Time	Stop No. 53A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 11/12/07	Time	Stop No. 79A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 11/12/07 Time	Stop No. 315A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(21)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type Farb	Date 12/13/07	Time	Stop No. 154A
Classification			
Climate Semi-Arid			Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(4)
Elevation ---		Topsoil	(4)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Bacobi	Date 11/12/07 Time	Stop No. 83A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(22)
Elevation	---	Topsoil	(22)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natragid	Date 12/13/07 Time	Stop No. 314A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(0)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area V Soil Survey

Soil Type	Natrargid	Date 11/12/07 Time	Stop No. 85A
Classification			
Climate	Semi-Arid		Inches
Parent Material		Pit Depth	( )
Physiography		Bedrock	(12)
Elevation	---	Topsoil	(0)
Slope		Drainage	
Aspect		Root distrib	
Erosion		Surface Salt	
Permeability		Surface Stoniness	
N. Veg. Shrubs			
N. Veg. Grass/Forbs			
Additional notes:			
Sample (depth inches)			

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				

Soil Description

Area No Name Permit Area

Soil Type	Persayo- eroded	Date 3/11/98	Time	Stop No.	377
Classification				BM/CA	
Climate					Inches
Parent Material	Residuum			Pit Depth	(20)
Physiography	Plain			Bedrock	(5)
Elevation				Topsoil	(0)
Slope				Drainage	
Aspect				Root distrib	
Erosion				Surface Salt	
Permeability				Surface Stoniness	
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-5	C									
Cr	5-20		Shale/ Siltstone								
R	20+		Shale/ Siltstone								

Soil Description

Area No Name Permit Area

Soil Type	Persayo- eroded	Date 3/11/98	Time	Stop No.	378
Classification				BM/CA	
Climate					Inches
Parent Material	Residuum			Pit Depth	(40)
Physiography	Plain			Bedrock	(17)
Elevation				Topsoil	(0)
Slope				Drainage	
Aspect				Root distrib	
Erosion				Surface Salt	
Permeability				Surface Stoniness	
N. Veg. Shrubs					
N. Veg. Grass/Forbs					
Additional notes:					
Sample (depth inches)					

Horizon	Depth inches	Field Texture	Lab Texture	Color Moist	Structure	Consistence		Reaction	Field % Carbonate	Field % Gypsum	Field% Gravel
						Dry	Moist				
C	0-8	Cl									
Cy	8-17	C									
R	17-40		Lime stone								

Soil Description

Soil Type Fruitvale – deep File No.

Area No-Name Permit Area Date 5/13/98 Stop No. # 347

Classification

Location

N. veg. (or crop) Climate

Parent Material

Physiography

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-13	7.2	3.45	4	49	35	4.5	S
13-34	7.4	6.18	13	43	38	4.3	S
34-54	7.5	9.81	25	73	18	3.3	U

inches

Pit Depth (54)

Bedrock (54)

Topsoil (34)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0/5			cl	m pl		fr			sle		
Bt1	5/13			cl	w sbk/m		sfr			sle		
Bt2	13/22			c'l/c	m sbk	h				sle		
Ck	22/34			cl	m	h				sle		
C1	34/47			scl	m	h				wsc		
C2	47/59			scl	m	vfh				[illegible]		
C1	59+	[illegible]		[illegible]	[illegible]							

Soil Description

Soil Type Jocity — File No.

Area No-Name Permit Area — Date 3/11/98 — Stop No. #362

Classification Fine Loamy Typic Torrifluvent

Location — CA

N. veg. (or crop) Spai, H.j's, Atob — Climate

Parent Material Alluvium

Physiography Drainage

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
0-17	7.3	1.88	3	50	29	4.5	S
17-36	7.2	3.04	3	58	26	4.3	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (36)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5		10yr 4-2	SCl	wpl		Fi				es	
C1	5-17		10yr 4-3	SCl	m		SFi				es	
C2	17-36	10yr 4-4	10yr 5-2	SCl	m	sh					es	
Btkb	36-49	10yr 3-2	10yr 4-3	C	SABK	vh/eh					es	Unsu. t. c%
CK	49-60	10yr 4-3	10yr 4-4	Cl	m	eh					es	Unsu. t c%

Soil Description

Soil Type Chipeta rocky — File No.

Area No-Name Permit Area — Date 3/11/98 — Stop No. #363

Classification Fine Lithic Torriorthent (Sodic, Saline)

Location

N. veg. (or crop) Atob, Atca — Climate

Parent Material Res. duum

Physiography Knoll Top Near Mesa Edge

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 2% — Moisture

Aspect S — Root distrib.

Erosion Severe

Permeability

Additional notes:

samples (depth inches) 90% cf on surface, Adjacent to Rock outcrops

inches

Pit Depth (40)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-6			cl	m		fi			vs le		
Cy	6-12			c	m	vh				eo		
Cr	12-40	Carbonaceous Shale										

Soil Description

Soil Type Shipock Variant Overlawn — File No.

Area No-Name Permit Area — Date 3/5/98 — Stop No. #322

Classification — BIM/CA

Location

N. veg. (or crop) Atri, spai, Atcon Gusa — Climate

Parent Material Eolian / Alluvium

Physiography Edge of Mesa Top

Relief — Drainage — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3% — Moisture

Aspect S — Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

See 3Cx from previous sampling

		pH	EC	SAR	S	C	K%	
calcic?	21-32	8.2	1.07	13	60	20	14	5

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-3			ls	wgr		vfr			es		
C	3-10			ls	m		vfr			sle		
2Btk	10-21			scl	msbk	h				es/ev		
2Bk	21-32			scl	wsbk	h				ev		
2Ck	32-41			scl	m	h				sle	3-5% k	
3Cx	41-60			scl	m	h				sle		

Soil Description

Soil Type Shiprock Ilcly Loam File No.

Area No-Name Permit Area Date 3/4/98 Stop No. #298

Classification Coarse loamy over sandy or sandy skeletal, mixed, mesic Fluvic Haplargid BM/CA

Location

N. veg. (or crop) Atsc, Atca, Gusa Climate

Parent Material Alluvium

Physiography Mesa Top

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope Moisture

Aspect Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Nodular Carbonates

	pH	EC	SAR	S	C	KQ3	
11-22	7.8	6.09	7.6	73	10	12	5
22-45	7.9	1.96	30	80	15	4.6	4
45-62	7.9	2.03	27	60	20	6.2	4

inches

Pit Depth (62)

Bedrock (62+)

Topsoil (22)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary (Ef)		
A	0-4		10yr 5/3	fsl	wgr		sfr			cv	Suitable	
AB	4-11		10yr 4/3	ls	wgr/m		vfr			cs	Suitable	
2Btk	11-22	10yr 5/4	10yr 5/4	gscl	wpr/m	h				cv	20-25% G	
2Bk	22-34	10yr 5/6	10yr 5/4	sl	m	vh				cs		
2Ck	34-45	10yr 5/6	10yr 5/4	ls	m	vh				sle		
3Ck	45-62	2.5y 6/6	2.5y 5/4	scl	m	h				sle		

Soil Description

Soil Type Chipeta - eroded File No.

Area No-Name Permit Area Date 3/11/96 Stop No. #299

Classification For the Intermountain Semi-Desert

Location

N. veg. (or crop) Atriplex Spp. Climate

Parent Material Residuum

Physiography Trough between Rock outcrops / Hill Breaks

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 2% Moisture

Aspect S Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) Located in Middle Area

inches

Pit Depth (12)

Bedrock (12)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Cy	0/12			C	M		VFI					
Cr	12/20	Coarse	aceous	Shale								

Soil Description

Soil Type Patel - Overwash File No. Phase I Drill Location

Area No-Name Permit Area Date 3/18/98 Stop No. DH - F

Classification Fine loamy mixed frigid typic Natrargid Bin

Location

N. veg. (or crop) Sparse Mixed Grass / Alfalfa Climate Semi arid

Parent Material Colluvium

Physiography Concave Alluvium

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 1-2% Moisture

Aspect E Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches)

^ Discontinuous layer of limey siltstone

* 8" depth -	pH	EC	Sat	SAR	Cl%	text	kg.
Sample: 0-7	7.8	.7	22	7	15	SL	1.7 5
7-12	8.0	.8	34	7	26	SCL	4.1 5
12-22	7.9	2.8	53	25	38	Cl	3.5 4
22-32	7.7	8.3	55	18	35	Cl	1.7 4

inches

Pit Depth (53)

Bedrock (32)

Topsoil (12)

Horizon	Depth	Color Dry	Moist	Texture	Structure	Consistence Dry	Moist	Wet	Reaction	Boundary		
AC	0-7	10YR 4/4 cr		SL/18	1pl f M		sfi			vsle		
2Bt(N)	7-12	10YR 5/4 cr		SCL/22	2sbk		fi			vsle		*
2Btkn	12-22	2.5Y 5/4 cr	10YR 5/6 p	CL/33	2pr	h				sle		
2Cky	22-32	2.5Y 5/4 cr	2.5Y 5/4 cr	SiC/42	m	vh				vsle		
2Cr	32-44		mudstone			h				-		
3Cr	44-53		Carbonaceous shale									

Soil Description

Soil Type Fruitland File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #364

Classification Coarse loamy Typic Torrifluvent CH

Location

N. veg. (or crop) Hija, Spai Climate

Parent Material Alluvium

Physiography Midslope

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope 6% Moisture

Aspect S Root distrib.

Erosion

Permeability

Additional notes:

samples (depth inches) 15% of on surface - Old stream terrace

	pH	EC	SAR	S	C	K%	
8-27	7.4	5.53	12	80	15	7.5	S
27-60	7.5	7.97	18	65	18	6.4	S

inches

Pit Depth (60)

Bedrock (60+)

Topsoil (60+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0-8	10yr 6-6	10yr 5-4	ls	wgr	sh				es		
BKy	8-27	10yr 5-6	10yr 5-4	sl	wSBK	sh				sle		
Ck1	27-40	10yr 6-8	10yr 6-4	sl	m	h				sle		
Ck2	40-60		10yr 4-4	sl	m	vh				vsle	course grained	+ Fine material

Soil Description

Soil Type Patel File No.

Area No-Name Permit Area Date 3/18/98 Stop No. #365

Classification fine typic Haplaquoll

Location

N. veg. (or crop) Climate

Parent Material alluvium / loess

Physiography Trench

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (40)

Bedrock (40)

Topsoil (0)

Horizon	Depth	Color		Texture	Structure	Consistence			Reaction	Boundary		
		Dry	Moist			Dry	Moist	Wet				

Soil Description

Soil Type Benally -Eroded File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #366

Classification Fine Loamy, Haplic Natrargid CA

Location

N. veg. (or crop) Atob, Spai Climate

Parent Material Alluvium

Physiography Knoll Top

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1-2%	Moisture	
Aspect S	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 60% cf on surface – Old stream terrace
Nodular carbonates

- Highly eroded version of pits consisting of alluvium that have been seen on the southern edge of Mesa Top.

inches
Pit Depth (63)
Bedrock (46)
Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
Btn	0-4			scl	wcl		fi			ev		
Btkm	4-19			gscl	wsbk	sh				ev	15-20%k 30%g	Unsuitable
Cy	19-46			gsl	m	sh				sle	20%g	
2Cr	46-63	Carbonaceous Shale										

Soil Description

Soil Type Benally overwash | File No.

Area No-Name Permit Area | Date 3/12/18 | Stop No. 367

Classification Bm/cA

Location

N. veg. (or crop) Sal Atr | Climate

Parent Material Alluvium

Physiography Terrace / drainage between Shiprock Mesa & Hogback

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	

Erosion

Permeability | Pit dug 25' East of Shiprock

Additional notes:

samples (depth inches) see 392 for suitability

	inches
Pit Depth	(62)
Bedrock	(43)
Topsoil	(31)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-5			cl			vfi				sle	
C	5-16			scl			sfi				sle/leo	
Btkb(n)	16-31			cl		h					sle	
C	31-43			cl		vh					usle	
ZCr	43-62	lignite										

Soil Description

Soil Type Shirrock d/ers (Lvfsl) File No.

Area No-Name Permit Area Date 2/19/98 Stop No. # 368

Classification 12m

Location

N. veg. (or crop) Atas Sparse Climate

Parent Material alluvium

Physiography Stream terrace

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 5%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

inches

Pit Depth (48)

Bedrock (45)

Topsoil (~~0~~)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	co. fragments	
Bk1	0-3			scl	1sbk		sfi			cs		5-6% k
Bk2	3-16			vgscl	1sbk		h			cs	50-60%	8-10% k
C1	16-24			cgscl	m		h			sle	65-70%	
C2	24-33			scl	m		vh			vsle		
2C	33-45			cl	m		h			eo		
2Cr	45+/-		silt	stone								

Soil Description

Soil Type Benally - overwashed File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #369

Classification Fine Loamy Typic Natrargid CIA

Location

N. veg. (or crop) Spai, Atob, Hija Climate

Parent Material Alluvium / Residuum

Physiography Low Trough

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect SE	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches) Adjacent to drainage.

inches

Pit Depth (56)

Bedrock (29)

Topsoil (17)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-9			scl	m		sfi			es	See #367 for suitability	
Btnb	9-17			cl	scl	vh				sle		
2Cy	17-29			cl	m	vh				sle		
2Cr	29-55	Shale										
2R	55+	Shale										

Soil Description

Soil Type Chipeta - eroded File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #370

Classification Fine Lithic Torriorthent (Sodic & Saline) CA

Location

N. veg. (or crop) Atpo, Atob Climate

Parent Material Residuum

Physiography mid slope

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 3%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 25% of on surface

	inches
Pit Depth	(41)
Bedrock	(15)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	~~Boundary~~		
C	0-6			cl	m		fi			sle		
Cky	6-15			c	m	h				sle		
Cr	15-41	Coal										

Soil Description

Soil Type Chipeta - rocky | File No.

Area No-Name Permit Area | Date 3/11/98 | Stop No. #371

Classification Fine Lithic Torriorthent (Sodic Saline) CA

Location

N. veg. (or crop) Spai, Atob | Climate

Parent Material Residuum

Physiography Base of Rock Outcrop

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect SW	Root distrib.	
Erosion Sever		
Permeability		

Additional notes:

samples (depth inches) 75% cf on surface

inches

Pit Depth (6)

Bedrock (6)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
C	0-6			cl	m		fi			sle		
R	6+	Shale/Siltstone										

Soil Description

Soil Type Brally — File No.

Area No-Name Permit Area — Date 3/11/98 — Stop No. #372

Classification Fine Typic Natrargid — CA

Location

N. veg. (or crop) Atpo, Atob — Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 20%	Moisture	
Aspect SW	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches)

	inches
Pit Depth	(45)
Bedrock	(45)
Topsoil	(0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btn	0-6			cl/c	wcl		vfi			sle		
Btkyn	6-17			cl	msbk	h				es		
Cy	17-45			c	m	vh				vsle		
2Cr	45+	Coal										

Soil Description

Soil Type Razito - Clayey Substratum (moderately deep) File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #373

Classification Coarse Loamy Mixed Mesic Typic Haplargid CA

Location

N. veg. (or crop) Spai, Hija, Atcon Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 0-1%	Moisture	
Aspect SW	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)

	pH	EC	SAR	S	C	K%	
2-21	7.5	0.4	2	75	15	2.9	S
21-34	7.6	0.5	8	80	13	2.6	S

inches

Pit Depth (55)

Bedrock (55+)

Topsoil (34)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff ~~Boundary~~		
A	0-2	10yr 6/4	10yr 4/4	ls	wgr					sle	Suitable	
BC	2-21	10yr 5/6	10yr 5/4	ls/sl	wsbk					es		
C	21-34	10yr 5/6	10yr 5/4	ls	wsbk					es		
2Cky	34-55			c	m	vh				ev	Unsuitable Contact	Clay

Soil Description

Soil Type Razito - Moderately deep File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #374

Classification Coarse Loamy Typic Haplargid CA

Location

N. veg. (or crop) Atcon, Spai, Hija, Gusa Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	

Erosion

Permeability

Additional notes:

samples (depth inches) Eroded version of #373

See #373 for suitability

inches

Pit Depth (60)

Bedrock (40)

Topsoil (40)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
A	0 - 6			ls						es		
RC	6 - 20			ls/sl						ev		
2Bk	20 - 40			scl						ev	15-20% Calcic.	*
3Cr	40 - 60	Carbonaceous Shale										

Soil Description

Soil Type Shirrock Brown = Over Blan — File No.

Area No-Name Permit Area — Date 3/18/98 — Stop No. 3747

Classification Coarse-loamy Typic Haplargid, (mixed mesic) — RM

Location

N. veg. (or crop) SPAI/ATCON/HIJA/GUSA — Climate

Parent Material Eolian over alluvium

Physiography Stream Terrace, shoulder slope

Relief — Drainage well (somewhat) — Salt or Alkali

Elevation — Gr. Water — Stoniness

Slope 3-4% — Moisture

Aspect S — Root distrib.

Erosion Moderate

Permeability

Additional notes:

samples (depth inches)

	inches
Pit Depth	(67)
Bedrock	(67+)
Topsoil	(67+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
A	0-3		10YR 5/4 CRUSH	SL/18	1gr		fr			vsle		
Bw	3-8		10YR 5/4 CR	SL/16	1sbk		sfr			sle		
C	8-12	10YR 5/6 CR	10YR 5/6 CR	LS/6	m	so				sle	intermittant horizon	
2Btk	12-22	10YR 5/6 CR	10YR 5/6	SL/8	2sbk	h				cw/vsle	10	% K
2Ck	22-30	10YR 5.5/6		SL/8	m	h/vh				cw/vsle	8	% K
2Ck2	30-54	10YR 5/4	10YR 4/4	COS/4	m	sh				co		
3C	54-67	10YR 5/4	10YR 4/4	SCL/22	m	vh				co		

Soil Description

Soil Type Razito — File No.

Area No-Name Permit Area — Date 3/11/98 — Stop No. #375

Classification Mixed Mesic Typic Torripsamment — CA

Location

N. veg. (or crop) Atcon, spar, Hija Gusa — Climate

Parent Material Eolian

Physiography Dune

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 2%	Moisture	
Aspect S	Root distrib.	
Erosion		
Permeability		

Additional notes:

samples (depth inches)	pH	EC	SAR	S	C	K%	
0-18	7.4	.31	1	85	10	2.3	5
18-42	7.9	.55	6	88	8	2.3	5
42-61	8.1	.79	5	93	5	1.2	5

inches

Pit Depth (61)

Bedrock (61+)

Topsoil (61+)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary	eff	
A	0-8		10yr 5-4	ls	wgr		sfi				sle	
Bw	8-18		10yr 5-6	ls	wSBK		Fi				es	
Ck1	18-30	10yr 4-6	10yr 4-6	ls	m	sh					es	
Ck2	30-42	10yr 6-6	10yr 5-6	ls	m	sh					ev	
C	42-61	10yr 6-8	10yr 4-3	s	m	lo					eo	

Soil Description

Soil Type Huerfano File No.

Area No-Name Permit Area Date 3/18/98 Stop No. 375A

Classification fine-loamy Typic Natrargid

Location

N. veg. (or crop) Atri[illegible] Climate

Parent Material [illegible]

Physiography Terrace

Relief Drainage Salt or Alkali

Elevation Gr. Water Stoniness

Slope ~2% Moisture

Aspect SW Root distrib.

Erosion severe

Permeability

Additional notes:

samples (depth inches)

40-50% coarse frags on surface

Subsoil has vertic properties

inches

Pit Depth (36)

Bedrock (32)

Topsoil (-0-)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Boundary		
Btkn	0-5			scl	3co		fi			sle		
Bky	5-15			scl	1sbk	h				vs le		
2Cssky	15-32			sc	m	eh				vsle	interfingering of sandstone pedfaces	
2Cr	32-36	mudstone								vsle		

Soil Description

Soil Type Persayo - eroded File No.

Area No-Name Permit Area Date 3/11/98 Stop No. #376

Classification Fine Loamy Lithic Torriorthent (Sodic Saline) CA

Location

N. veg. (or crop) A to b, Climate

Parent Material Residuum

Physiography Plain

Relief	Drainage	Salt or Alkali
Elevation	Gr. Water	Stoniness
Slope 1%	Moisture	
Aspect S	Root distrib.	
Erosion Severe		
Permeability		

Additional notes:

samples (depth inches) 60% cf on Surface

Same as #376 #377 - 0-5 C c

5-20 Cr Shale/Siltstone

20+ R " "

Same as 376 #378 0-8 C cl

8-17 Cy c

17-40 Cr Limestone

inches

Pit Depth (40)

Bedrock (4)

Topsoil (0)

Horizon	Depth	Color Dry	Color Moist	Texture	Structure	Consistence Dry	Consistence Moist	Consistence Wet	Reaction	Eff Boundary		
C	0-4			cl	m		sfi			es		
Cr	4->16	Shale										
R	16+	Shale										

Appendix C

Sample Locations with Topdressing
and Depth to Bedrock

Appendix C Northing, Easting, Soil Series, Soil Symbol, Depth of Topdressing, and Depth to Bedrock for Each Site Located in Area 4 South

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
1	1,994,713	297,647	Beebe	22	64
3	1,993,815	297,390	Mayqueen	53	60
4	1,993,277	297,454	Tsaya	26	26
5	1,992,899	297,520	Monierco	23	23
6	1,992,420	297,579	Monierco	15	15
7	1,991,912	297,331	Persayo	0	24
8	1,991,561	297,173	Patel Overwashed	13	44
9	1,991,298	297,074	Persayo	0	2
10	1,990,778	296,897	Persayo	0	5
11	1,990,309	296,992	Shiprock	28	28
12	1,989,921	297,020	Bacobi	27	40
13	1,989,450	297,074	Mayqueen	29	29
14	1,988,545	297,549	Bacobi	36	36
15	1,988,082	297,558	Doak	46	46
16	1,987,283	297,524	Persayo	0	3
17	1,986,827	297,509	Doak	60	62
18	1,986,374	297,494	Monierco	16	16
19	1,985,803	297,472	Doak	60	60
20	1,985,199	297,446	Benally	0	52
21	1,984,685	297,474	Monierco	19	43
22	1,984,077	297,468	Huerfano	0	19
23	1,983,561	297,477	Bacobi	23	34
24	1,982,927	297,463	Benally	0	58
25	1,982,771	297,642	Bacobi	21	32
26	1,982,156	297,610	Benally	0	60
27	1,981,476	297,513	Patel	0	14
28	1,981,122	297,559	Huerfano	0	13
29	1,980,386	297,609	Patel	0	22
30	1,979,978	297,701	Patel	0	21
31	1,979,316	297,626	Patel	0	39
32	1,978,688	297,698	Badlands	0	3
33	1,977,721	297,805	Doak	60	60
35	1,982,852	300,173	Patel	0	41
36	1,983,105	299,947	Patel	0	49
37	1,983,582	299,623	Benally	0	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
38	1,984,060	299,311	Fruitvale	24	60
39	1,984,579	298,941	Grieta	27	35
40	1,985,232	298,498	Monierco	16	16
41	1,985,551	298,278	Fruitvale	34	60
42	1,985,879	298,056	Grieta	11	49
43	1,986,366	297,706	Bacobi	19	32
44	1,987,172	297,113	Persayo	0	5
45	1,987,448	296,928	Bacobi	26	37
46	1,987,919	296,567	Bacobi	26	26
47	1,988,257	296,159	Benally	8	41
48	1,988,621	295,724	Mayqueen	18	55
49	1,988,985	295,294	Mayqueen	34	34
50	1,989,385	294,824	Mayqueen	17	17
52	1,981,180	306,412	Beebe	55	55
53	1,981,285	306,231	Beebe	60	60
54	1,981,139	306,040	Beebe	0	60
55	1,981,202	305,541	Jocity	60	60
56	1,981,457	305,117	Fruitland	24	55
57	1,981,674	304,608	Persayo	0	6
58	1,981,868	304,003	Jocity	0	60
59	1,982,065	303,425	Hoskay	0	70
60	1,982,408	302,821	Hoskay	0	60
61	1,982,432	301,932	Jocity	0	29
62	1,982,111	301,481	Badlands	0	60
65	1,989,316	294,272	Fruitvale	29	52
66	1,988,862	294,154	Bacobi	10	31
67	1,988,455	294,045	Persayo	0	2
68	1,988,310	294,483	Persayo	0	18
69	1,988,736	294,613	Persayo	0	5
70	1,989,038	294,707	Shiprock	55	63
71	1,989,836	294,889	Doak	36	51
72	1,990,289	294,967	Bacobi	26	26
74	1,989,119	295,204	Doak	60	62
75	1,989,565	295,324	Shiprock	46	57
76	1,990,015	295,440	Monierco	18	18
77	1,990,447	295,563	Bacobi	32	32

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
78	1,990,884	295,679	Monierco	11	11
79	1,991,277	296,182	Monierco	19	28
80	1,990,834	296,113	Bacobi	14	48
81	1,990,583	296,083	Monierco	11	18
82	1,990,216	296,033	Shiprock	38	38
83	1,989,858	295,981	Razito Moderately Deep	32	32
84	1,989,434	295,918	Bacobi	21	39
85	1,989,026	295,846	Bacobi	34	34
86	1,988,656	296,298	Muff	10	30
87	1,989,185	296,344	Fruitland	42	42
88	1,989,629	296,397	Monierco	14	23
89	1,990,205	296,488	Monierco	16	16
90	1,990,756	296,593	Farb	6	6
91	1,991,325	296,645	Monierco	11	20
92	1,988,404	296,716	Doak	36	61
93	1,988,895	296,766	Bacobi	23	51
94	1,988,584	295,032	Monierco	8	8
95	1,988,059	294,872	Bacobi	11	33
96	1,987,534	294,716	Bacobi	16	50
97	1,987,007	294,554	Grieta	48	48
98	1,986,518	294,400	Huerfano	0	4
99	1,986,038	294,240	Chipeta	0	15
101	1,984,728	294,554	Benally	0	65
102	1,985,304	294,694	Benally	19	43
103	1,985,860	294,829	Tsaya	0	5
104	1,986,308	294,958	Patel	0	15
105	1,986,902	295,123	Grieta	45	45
106	1,987,396	295,259	Grieta	17	55
107	1,987,702	295,339	Huerfano	0	25
108	1,988,207	295,474	Muff	7	32
109	1,987,699	296,100	Farb	0	3
110	1,987,343	295,996	Grieta	20	40
111	1,986,792	295,800	Doak	27	50
112	1,986,288	295,617	Razito Moderately Deep	36	36
113	1,985,649	295,402	Chipeta	0	36
114	1,985,148	295,210	Chipeta	0	3

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
115	1,984,569	294,999	Patel	0	31
116	1,983,967	294,768	Persayo	0	4
117	1,983,987	295,389	Hoskay	0	35
118	1,984,459	295,497	Hoskay	0	60
119	1,984,927	295,632	Badlands	0	0
120	1,985,469	295,833	Chipeta	0	8
121	1,986,059	296,012	Patel	0	19
122	1,986,516	296,156	Bacobi	36	38
123	1,987,175	296,335	Persayo	0	4
124	1,987,500	296,452	Bacobi	32	32
125	1,989,808	296,412	Bacobi	49	49
126	1,987,653	294,331	Persayo	0	21
127	1,987,204	294,257	Tsaya	0	2
128	1,986,795	294,064	Tsaya	0	3
129	1,986,335	293,932	Chipeta	0	10
130	1,986,656	296,929	Bacobi	28	40
131	1,986,094	296,750	Bacobi	29	41
132	1,985,527	296,553	Huerfano	0	17
133	1,984,672	296,317	Patel	0	10
134	1,984,208	296,122	Huerfano	0	5
135	1,983,789	295,981	Fruitvale	44	61
136	1,983,245	295,787	Chipeta	0	7
137	1,982,579	295,532	Chipeta	0	4
142	1,981,613	295,929	Huerfano	6	15
143	1,982,141	296,072	Huerfano	6	12
144	1,982,740	296,199	Huerfano	6	15
145	1,983,282	296,404	Huerfano	0	8
146	1,983,856	296,553	Badlands	0	0
147	1,984,513	296,994	Huerfano	21	41
148	1,985,146	297,111	Huerfano	18	45
149	1,983,241	297,152	Patel	0	7
150	1,982,694	296,950	Benally	7	60
151	1,982,022	296,775	Benally	6	55
152	1,981,327	296,599	Huerfano	0	14
153	1,980,721	296,352	Bacobi	35	35
154	1,980,171	296,146	Tsaya	0	4

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
155	1,978,730	296,502	Tsaya	0	8
156	1,978,169	296,476	Tsaya	8	8
157	1,977,813	297,309	Patel	0	39
158	1,978,347	297,361	Badlands	0	3
159	1,978,138	297,966	Jocity	60	60
160	1,978,684	298,105	Patel	0	4
161	1,979,268	298,277	Chipeta	0	2
162	1,980,002	298,451	Huerfano	0	22
163	1,980,718	298,594	Huerfano	0	20
164	1,981,355	298,722	Chipeta	0	20
165	1,982,056	298,863	Patel	0	30
166	1,982,698	298,996	Benally	6	39
167	1,983,444	299,140	Rock Outcrop	0	0
168	1,982,774	299,756	Patel Overwashed	10	39
169	1,982,021	299,569	Chipeta	0	20
170	1,981,386	299,475	Chipeta	0	55
171	1,980,648	299,337	Chipeta	0	15
172	1,979,835	299,222	Chipeta	0	12
173	1,983,848	298,950	Fruitvale	28	42
174	1,983,197	298,786	Fruitvale	35	55
175	1,982,658	298,606	Benally	6	60
176	1,982,053	298,257	Huerfano	0	19
177	1,981,334	298,168	Rock Outcrop	0	0
178	1,984,060	297,775	Bacobi	39	39
179	1,984,485	297,897	Huerfano	0	13
180	1,984,985	298,093	Bacobi	26	26
181	1,989,300	297,546	Bacobi	23	23
182	1,989,945	297,699	Persayo	0	5
183	1,990,530	297,817	Persayo	0	2
184	1,990,914	297,946	Huerfano	0	6
185	1,983,966	298,365	Bacobi	24	24
186	1,983,236	298,197	Patel Overwashed	7	49
187	1,981,306	297,015	Patel	0	10
188	1,980,568	296,823	Huerfano	13	20
189	1,979,462	297,057	Huerfano	0	5
190	1,978,522	296,992	Huerfano	0	20

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
191	1,979,466	295,939	Rock Outcrop	0	0
192	1,978,937	295,859	Persayo	0	3
193	1,991,823	298,114	Rock Outcrop	0	0
194	1,992,587	298,037	Bacobi	35	35
195	1,992,971	297,999	Rock Outcrop	0	0
196	1,993,403	298,019	Persayo	0	3
197	1,993,720	298,094	Persayo	0	4
198	1,994,196	297,960	Benally	26	65
199	1,994,690	298,131	Fruitland	60	64
200	1,994,979	298,371	Gilco	60	60
201	1,991,085	298,472	Monierco	6	6
202	1,990,561	298,456	Persayo	0	3
203	1,989,967	298,381	Tsaya	0	12
204	1,989,372	298,218	Persayo	0	22
205	1,988,862	298,045	Grieta	42	42
206	1,988,418	298,007	Grieta	13	42
207	1,987,973	298,084	Grieta	16	35
208	1,986,935	298,090	Bacobi	33	39
209	1,986,379	298,103	Bacobi	20	32
210	1,985,032	298,834	Monierco	6	6
211	1,985,398	298,816	Doak	60	60
212	1,985,794	298,817	Tsaya	0	26
213	1,986,389	298,793	Shiprock	48	60
214	1,987,007	298,792	Bacobi	19	32
215	1,987,586	298,799	Bacobi	26	50
216	1,988,077	298,804	Fruitland	17	32
217	1,988,015	299,318	Razito	60	63
218	1,987,569	299,303	Bacobi	12	27
219	1,987,026	299,254	Bacobi	19	19
220	1,986,446	299,219	Razito	60	60
221	1,985,844	299,216	Chipeta	0	19
222	1,985,427	299,191	Doak	57	57
223	1,984,909	299,250	Monierco	9	9
224	1,983,601	299,972	Huerfano	0	34
226	1,984,891	300,068	Monierco	6	6
227	1,985,385	300,077	Doak	60	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
228	1,986,087	300,031	Bacobi	33	33
229	1,986,549	299,973	Doak	59	72
230	1,987,171	299,893	Persayo	8	17
231	1,987,724	299,839	Monierco	10	10
232	1,988,264	299,840	Razito Moderately Deep	22	61
233	1,988,937	299,877	Persayo	0	6
234	1,989,558	299,868	Persayo	7	16
235	1,990,186	299,920	Persayo	0	3
236	1,990,797	299,910	Huerfano	0	27
237	1,991,123	299,492	Fruitland	22	22
238	1,990,542	299,536	Huerfano	0	13
239	1,989,635	300,445	Patel	0	18
240	1,989,055	300,411	Patel	0	29
241	1,988,450	300,415	Benally	0	40
242	1,987,812	300,416	Fruitland	42	42
243	1,987,260	300,356	Monierco	13	13
244	1,986,581	300,396	Razito Moderately Deep	19	60
245	1,986,070	300,399	Fruitland	38	60
246	1,988,889	297,735	Grieta	26	26
247	1,988,732	299,973	Shiprock	40	72
248	1,987,883	299,278	Razito	60	64
249	1,987,824	298,968	Monierco	12	12
250	1,988,125	299,328	Fruitland	60	62
251	1,988,402	299,295	Persayo	0	5
252	1,988,933	299,269	Benally	0	52
253	1,989,152	298,942	Persayo	20	20
254	1,988,955	298,512	Fruitland	51	63
255	1,989,167	298,428	Razito	43	60
256	1,989,529	298,798	Fruitland	60	60
257	1,989,903	299,086	Razito	48	62
258	1,990,322	298,752	Benally	0	60
259	1,990,909	298,894	Persayo	0	3
260	1,988,031	300,980	Monierco	23	23
261	1,987,590	300,976	Persayo	0	4
262	1,987,228	300,929	Jocity	60	60
263	1,986,681	300,855	Huerfano	7	30

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
264	1,986,122	300,841	Huerfano	0	23
266	1,984,847	300,541	Bacobi	28	28
267	1,984,310	300,636	Benally	0	40
269	1,985,741	301,247	Farb	11	11
270	1,986,713	301,237	Persayo	0	2
271	1,987,032	301,499	Jocity	13	25
272	1,986,695	298,329	Monierco	9	20
273	1,986,719	298,980	Doak	49	63
274	1,982,201	300,561	Patel	0	31
275	1,981,591	300,321	Fruitland	48	63
276	1,980,997	300,246	Patel	0	6
277	1,980,563	300,088	Benally	0	60
278	1,979,929	299,756	Benally	0	53
279	1,979,270	299,412	Huerfano	0	17
280	1,978,593	299,101	Huerfano	0	7
281	1,978,027	298,788	Patel	0	29
282	1,977,799	299,395	Patel	0	15
283	1,978,286	299,605	Patel	0	25
284	1,978,950	299,884	Patel	0	20
285	1,979,675	300,174	Hoskay	0	45
286	1,980,340	300,445	Patel	0	16
287	1,980,907	300,695	Patel Overwashed	19	55
288	1,981,420	300,933	Badlands	0	0
289	1,981,063	301,527	Patel	0	12
290	1,980,501	301,268	Patel	0	12
291	1,980,004	301,017	Patel	0	3
292	1,979,402	300,672	Patel	0	15
293	1,978,806	300,374	Chipeta	0	5
294	1,978,267	300,133	Patel	0	12
295	1,977,454	299,814	Chipeta	8	41
296	1,976,996	299,413	Doak	60	60
297	1,976,747	299,515	Benally	0	52
300	1,976,664	300,290	Shiprock	60	65
301	1,977,143	300,479	Patel Overwashed	0	29
302	1,977,907	300,791	Patel	0	16
303	1,978,426	301,033	Rock Outcrop	0	0

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
304	1,979,068	301,298	Huerfano	0	7
305	1,979,706	301,571	Huerfano	0	7
306	1,980,313	301,827	Huerfano	0	18
307	1,981,022	302,124	Huerfano	0	16
308	1,981,687	302,404	Huerfano	0	6
309	1,982,269	302,646	Huerfano	0	24
310	1,982,321	302,076	Benally	0	50
311	1,981,745	301,899	Huerfano	0	15
312	1,981,740	301,154	Badlands	0	53
313	1,981,528	303,221	Badlands	0	0
314	1,981,094	302,993	Patel	0	32
315	1,980,535	302,731	Huerfano	0	10
316	1,979,927	302,432	Huerfano	0	17
317	1,979,275	302,093	Chipeta	0	4
318	1,978,708	301,777	Patel	6	6
319	1,977,794	301,342	Patel	6	6
320	1,977,285	301,066	Patel	0	17
321	1,976,742	300,860	Patel	0	0
323	1,977,091	301,762	Razito	44	60
324	1,977,699	301,919	Badlands	0	0
325	1,978,440	302,469	Patel	0	12
326	1,979,039	302,604	Patel	0	12
327	1,979,758	302,917	Huerfano	0	8
328	1,980,349	303,181	Huerfano	0	16
329	1,981,029	303,535	Tsaya	0	7
330	1,981,481	303,776	Jocity	18	44
331	1,981,112	304,447	Patel	0	27
332	1,980,518	304,122	Patel	0	20
333	1,980,019	303,844	Persayo	0	9
334	1,979,434	303,522	Rock Outcrop	0	0
335	1,982,905	300,929	Badlands	0	0
336	1,983,508	301,164	Benally	12	45
337	1,983,148	301,848	Huerfano	0	27
338	1,983,735	302,190	Patel	0	33
339	1,984,237	302,491	Patel	0	60
340	1,982,649	302,478	Patel	0	47

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
341	1,983,342	302,817	Patel	0	20
342	1,983,876	303,083	Patel	0	20
343	1,982,911	303,294	Patel	0	29
344	1,983,461	303,535	Patel	0	25
345	1,982,560	303,866	Patel	0	60
346	1,983,039	304,140	Jocity	60	63
347	1,982,207	304,390	Benally	0	60
348	1,982,611	304,708	Jocity	21	60
349	1,981,814	304,934	Patel	0	12
350	1,984,123	301,524	Benally	15	47
351	1,984,531	301,765	Persayo	6	6
352	1,984,410	302,106	Benally	0	48
353	1,984,705	302,855	Jocity	0	60
354	1,985,014	302,450	Patel	0	2
355	1,981,032	305,049	Huerfano	0	40
356	1,980,426	304,833	Patel	0	24
357	1,979,870	304,630	Patel	0	8
358	1,980,207	305,265	Benally	0	60
359	1,980,827	305,522	Razito Moderately Deep	13	60
360	1,978,864	299,023	Razito Moderately Deep	30	60
361	1,977,333	298,671	Jocity	17	40
379	1,979,510	305,830	Patel	0	39
380	1,979,653	305,097	Patel	0	24
381	1,979,575	304,215	Patel	0	12
382	1,979,011	304,054	Badlands	0	0
383	1,978,916	303,336	Badlands	0	0
384	1,978,973	305,986	Fruitland	43	43
385	1,978,818	306,894	Jocity	16	60
386	1,977,886	306,932	Jocity	13	65
387	1,977,497	306,594	Fruitland	35	35
388	1,977,044	306,890	Jocity	15	72
389	1,978,882	306,418	Tsaya	0	41
390	1,987,219	296,826	Bacobi	15	39
391	1,977,377	298,284	Doak	49	65
393	1,985,754	302,776	Beebe	50	69
394	1,986,008	302,315	Jocity	16	65

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
395	1,985,833	301,938	Doak	46	65
396	1,986,586	302,101	Beebe	40	64
397	1,995,178	302,796	Patel	0	24
398	1,994,800	303,479	Razito Moderately Deep	24	24
399	1,994,927	304,613	Doak	60	65
400	1,995,230	304,514	Shiprock Very Hard	22	60
401	1,995,099	305,126	Shiprock Very Hard	30	42
402	1,995,199	305,459	Persayo	0	8
403	1,995,151	306,040	Persayo	0	5
404	1,994,923	306,632	Patel	0	8
406	1,994,717	305,098	Razito	60	60
407	1,995,146	304,004	Razito	60	73
408	1,995,150	303,492	Razito	60	70
409	1,994,811	302,755	Razito Moderately Deep	27	38
410	1,994,473	303,366	Fruitland	0	48
411	1,994,548	304,603	Razito	46	68
412	1,994,375	305,063	Razito Moderately Deep	31	59
413	1,994,421	305,623	Fruitland	50	65
415	1,993,866	305,100	Chipeta	0	20
416	1,994,455	306,100	Chipeta	8	20
418	1,994,443	306,606	Huerfano	0	16
419	1,993,967	306,503	Razito	60	61
420	1,993,356	306,537	Patel	0	58
421	1,994,243	304,596	Razito	60	60
422	1,993,862	304,575	Huerfano	0	34
423	1,993,360	304,544	Shiprock Very Hard	19	60
425	1,992,850	304,968	Razito	60	63
426	1,992,404	304,906	Razito	60	61
427	1,992,257	305,371	Razito	60	63
428	1,992,697	305,444	Bacobi	21	28
429	1,993,162	305,523	Razito	41	41
430	1,993,009	306,027	Persayo	6	6
431	1,992,552	305,891	Razito Moderately Deep	26	44
432	1,992,130	305,780	Bacobi	19	39
433	1,991,953	306,231	Shiprock	52	52
434	1,992,361	306,355	Benally	0	29

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
435	1,992,643	306,419	Razito Moderately Deep	39	51
436	1,992,589	306,901	Huerfano	0	36
437	1,993,107	307,000	Patel	0	24
438	1,992,175	306,818	Patel	0	12
439	1,991,996	307,256	Razito	60	65
440	1,991,544	307,145	Stumble	60	60
441	1,991,106	307,047	Razito	60	60
442	1,994,153	307,208	Huerfano	0	19
444	1,995,179	307,304	Patel	0	25
445	1,994,638	307,302	Patel	0	24
446	1,991,190	306,553	Benally	0	68
447	1,991,653	306,647	Stumble	54	60
449	1,991,268	306,050	Benally	14	67
450	1,993,659	307,111	Huerfano	0	16
451	1,990,926	305,472	Shiprock	60	68
452	1,991,376	305,602	Huerfano	0	40
453	1,991,414	305,234	Razito	56	56
454	1,991,786	305,292	Razito	60	60
455	1,991,095	307,346	Razito	60	66
456	1,991,520	307,406	Shiprock Very Hard	24	66
457	1,992,089	307,490	Razito Moderately Deep	40	50
458	1,991,678	304,779	Huerfano	0	27
459	1,991,229	304,666	Shiprock	41	52
460	1,990,913	304,605	Monierco	9	14
461	1,991,075	304,197	Razito Moderately Deep	25	41
462	1,991,264	303,767	Benally	0	61
463	1,991,523	303,224	Benally	0	40
464	1,991,715	302,817	Bacobi	20	28
465	1,992,150	302,756	Benally	0	58
466	1,992,246	303,256	Benally	0	61
467	1,991,966	303,343	Doak	27	60
468	1,992,313	303,650	Benally	0	65
469	1,992,395	304,094	Razito	60	63
470	1,992,475	304,495	Razito	60	60
471	1,992,093	303,724	Razito Moderately Deep	19	60
472	1,991,749	303,821	Razito Moderately Deep	18	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
473	1,991,509	303,854	Benally	0	60
474	1,991,222	303,588	Doak	38	60
475	1,991,221	302,707	Huerfano	0	28
476	1,990,977	303,145	Shiprock	0	60
477	1,990,750	303,647	Razito Moderately Deep	31	65
478	1,990,609	304,024	Shiprock Very Hard	26	60
481	1,990,329	303,121	Shiprock Very Hard	0	60
482	1,990,329	302,942	Shiprock Very Hard	17	32
483	1,992,470	302,786	Doak	60	68
484	1,992,969	302,585	Mayqueen	60	72
485	1,994,103	303,754	Huerfano	0	21
486	1,994,899	301,905	Huerfano	0	24
487	1,994,306	302,049	Huerfano	0	12
488	1,994,304	301,519	Huerfano	0	15
489	1,995,062	301,207	Persayo	0	2
490	1,994,475	301,010	Persayo	0	8
491	1,993,996	300,698	Persayo	0	4
492	1,993,625	302,211	Beebe	30	63
493	1,993,721	301,833	Beebe	9	60
494	1,994,351	300,166	Persayo	0	3
495	1,994,931	300,526	Persayo	6	6
496	1,995,061	300,830	Benally	0	60
497	1,991,670	301,930	Stumble	24	65
498	1,991,830	301,437	Stumble	23	67
499	1,991,939	300,839	Monierco	10	16
500	1,991,936	300,145	Persayo	0	4
501	1,991,896	299,517	Persayo	0	4
502	1,992,303	300,060	Monierco	10	20
503	1,990,641	300,936	Persayo	0	8
504	1,990,554	300,596	Razito	60	65
505	1,990,980	300,363	Razito	60	65
506	1,991,123	302,193	Shiprock	60	63
507	1,990,754	302,406	Fruitland	60	68
508	1,990,461	302,466	Fruitland	33	33
509	1,990,302	302,071	Shiprock Very Hard	29	62
510	1,990,372	301,625	Stumble	16	70

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
511	1,990,568	301,671	Beebe	12	45
512	1,990,790	301,426	Farb	0	20
513	1,990,600	301,094	Persayo	0	3
514	1,990,854	300,823	Huerfano	10	35
515	1,991,126	300,672	Huerfano	11	18
516	1,991,372	300,388	Beebe	42	60
517	1,991,307	300,073	Beebe	60	60
518	1,991,425	299,846	Beebe	60	63
519	1,991,550	299,649	Beebe	60	62
520	1,991,591	299,281	Beebe	60	60
521	1,991,704	299,163	Beebe	60	60
522	1,992,264	299,165	Huerfano	9	36
523	1,992,552	299,533	Jocity	12	60
524	1,992,681	299,987	Jocity	16	60
525	1,992,445	300,499	Beebe	60	60
526	1,992,963	299,860	Beebe	60	65
527	1,993,462	299,778	Beebe	60	60
528	1,993,657	299,573	Beebe	60	65
529	1,994,101	299,566	Jocity	0	65
530	1,994,139	299,032	Beebe	60	66
531	1,994,176	298,619	Doak	60	60
532	1,994,572	299,387	Beebe	60	61
533	1,995,150	299,516	Beebe	0	61
534	1,995,085	300,088	Doak	60	60
535	1,994,821	299,653	Patel	0	19
536	1,994,209	299,777	Persayo	0	14
537	1,995,396	299,852	Benally	0	61
538	1,995,247	299,193	Beebe	60	65
539	1,995,693	299,650	Jocity	0	65
540	1,995,551	299,113	Jocity	0	44
541	1,995,427	298,378	Beebe	60	63
542	1,995,316	297,982	Beebe	60	65
543	1,995,278	297,573	Beebe	60	66
544	1,995,286	297,237	Razito	60	60
545	1,995,620	297,066	Beebe	60	63
547	1,996,145	297,269	Patel	0	64

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
548	1,996,378	297,781	Patel	0	60
549	1,993,895	301,454	Patel	0	8
550	1,992,413	302,098	Beebe	30	60
551	1,992,700	301,842	Fruitland	60	60
552	1,992,531	301,595	Fruitland	14	64
553	1,992,849	301,308	Shiprock Very Hard	16	62
554	1,993,146	300,984	Farb	0	2
555	1,993,546	300,499	Shiprock Very Hard	18	60
556	1,992,731	301,177	Shiprock Very Hard	18	61
557	1,992,864	300,809	Stumble	15	64
559	1,993,552	300,729	Persayo	11	11
560	1,993,532	301,175	Persayo	14	14
561	1,993,262	301,565	Persayo	0	1
562	1,993,753	300,994	Persayo	0	24
563	1,992,054	299,434	Monierco	8	17
564	1,992,139	300,457	Patel	0	11
565	1,992,236	301,063	Monierco	0	18
566	1,993,558	302,566	Razito	60	61
567	1,990,463	304,337	Rock Outcrop	0	0
568	1,990,782	305,049	Monierco	32	46
569	1,992,693	307,598	Patel	0	15
570	1,993,277	307,691	Bacobi	20	41
571	1,993,912	307,642	Patel	0	10
572	1,994,665	307,559	Badlands	0	0
573	1,990,045	302,583	Shiprock	60	65
574	1,990,046	302,297	Shiprock	60	62
575	1,990,053	301,901	Shiprock	41	61
576	1,990,037	301,615	Stumble	15	60
577	1,990,076	301,294	Persayo	0	5
578	1,990,062	301,177	Persayo	0	15
579	1,990,036	300,963	Stumble	60	63
580	1,989,675	300,767	Razito	60	60
581	1,989,678	301,304	Huerfano	0	13
582	1,989,707	301,695	Beebe	0	60
583	1,989,706	302,487	Shiprock	50	61
584	1,989,334	302,545	Shiprock	41	62

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
585	1,989,252	302,225	Fruitland	0	66
586	1,989,236	301,823	Fruitland	19	63
587	1,989,223	301,441	Persayo	0	5
588	1,989,104	301,033	Beebe	60	61
591	1,988,770	301,799	Persayo	0	4
592	1,988,817	302,139	Persayo	0	4
593	1,988,855	302,370	Razito Moderately Deep	30	64
594	1,988,965	302,411	Benally	0	68
595	1,988,467	302,219	Fruitland	35	61
596	1,988,521	301,817	Beebe	0	68
597	1,988,369	301,572	Huerfano	0	16
598	1,988,251	301,889	Monierco	20	20
599	1,987,776	301,804	Razito	60	72
600	1,979,519	306,569	Jocity	0	45
601	1,979,311	307,118	Jocity	28	72
602	1,986,097	301,365	Shiprock	51	51
603	1,986,282	301,251	Persayo	0	10
604	1,985,465	301,141	Persayo	0	4
605	1,984,911	301,080	Huerfano	0	15
606	1,985,540	300,813	Persayo	0	24
607	1,984,808	301,714	Persayo	9	9
608	1,984,451	301,374	Bacobi	28	28
609	1,985,280	302,481	Farb	6	6
610	1,985,472	302,428	Doak	40	40
611	1,991,222	298,804	Huerfano	0	10
615	1,987,529	301,598	Razito	60	61
616	1,987,302	301,905	Beebe	60	60
617	1,987,259	302,238	Jocity	0	62
619	1,987,187	302,734	Jocity	12	60
620	1,987,132	303,134	Jocity	12	60
621	1,987,077	303,512	Mayqueen	60	63
622	1,987,081	303,915	Mayqueen	38	60
623	1,987,240	304,175	Mayqueen	60	60
624	1,987,330	303,868	Stumble	60	67
625	1,987,454	303,548	Stumble	60	66
626	1,987,470	303,234	Benally	0	30

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
627	1,987,474	302,939	Shiprock	60	66
628	1,987,524	302,687	Shiprock Very Hard	0	39
630	1,987,629	302,034	Persayo	0	3
631	1,987,992	302,219	Monierco	24	24
632	1,988,154	302,227	Razito Moderately Deep	32	32
633	1,988,072	302,651	Fruitland	60	60
634	1,987,989	302,937	Fruitland	19	60
635	1,987,913	303,165	Fruitland	60	60
636	1,987,811	303,534	Fruitland	60	63
637	1,987,707	303,888	Mayqueen	60	60
638	1,987,605	304,240	Stumble	60	65
639	1,987,872	304,336	Mayqueen	35	60
641	1,988,103	304,038	Benally	6	60
642	1,988,180	303,748	Shiprock	60	64
643	1,988,293	303,363	Shiprock	60	64
644	1,988,454	302,960	Mayqueen	60	60
645	1,988,487	302,647	Stumble	60	69
646	1,988,772	302,718	Stumble	60	60
647	1,988,727	303,057	Razito	60	62
648	1,988,675	303,432	Doak	60	61
649	1,988,623	303,821	Stumble	60	68
650	1,988,571	304,194	Doak	44	61
651	1,988,524	304,554	Mayqueen	60	60
652	1,988,469	304,951	Razito	60	60
653	1,988,554	305,150	Razito	60	60
654	1,988,957	305,124	Huerfano	0	20
655	1,989,241	305,016	Razito	43	43
656	1,989,242	304,693	Razito	60	65
657	1,988,941	304,476	Mayqueen	60	70
658	1,988,893	304,263	Benally	0	62
659	1,989,079	303,905	Shiprock Very Hard	17	62
660	1,989,174	303,534	Shiprock	60	60
661	1,989,231	303,190	Shiprock Very Hard	28	62
662	1,989,272	302,853	Shiprock Very Hard	29	61
663	1,989,881	302,835	Fruitland	18	60
664	1,989,821	303,094	Shiprock Very Hard	0	66

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
665	1,987,004	304,419	Mayqueen	38	64
666	1,986,703	304,501	Stumble	60	60
667	1,986,721	304,162	Mayqueen	60	60
668	1,986,631	304,016	Razito	60	65
669	1,986,767	303,893	Fruitland	19	60
670	1,986,771	303,638	Benally	0	61
671	1,986,780	303,349	Chipeta	0	14
672	1,986,798	303,014	Rock Outcrop	0	0
673	1,986,805	302,837	Shiprock	60	60
674	1,986,815	302,659	Razito	60	60
675	1,986,824	302,418	Beebe	60	60
676	1,986,275	302,565	Beebe	60	60
677	1,986,239	302,807	Beebe	60	60
679	1,986,361	303,318	Monierco	19	19
681	1,986,359	304,014	Benally	0	61
682	1,986,332	304,216	Shiprock	40	60
683	1,985,668	304,623	Shiprock Very Hard	8	60
684	1,985,715	304,261	Chipeta	0	8
685	1,985,767	303,869	Rock Outcrop	0	0
686	1,985,470	303,860	Benally	0	60
687	1,985,358	304,234	Persayo	0	11
688	1,985,265	304,590	Shiprock Very Hard	30	60
689	1,985,199	304,900	Shiprock Very Hard	14	60
690	1,984,926	304,896	Huerfano	0	11
691	1,984,762	304,905	Fruitland	0	65
692	1,984,782	304,540	Razito	60	65
695	1,984,211	304,067	Beebe	60	65
697	1,984,303	304,713	Stumble	49	64
698	1,984,109	304,917	Fruitland	42	42
700	1,983,895	304,316	Beebe	60	63
701	1,983,548	304,859	Beebe	51	51
704	1,983,400	305,570	Stumble	56	71
705	1,983,293	305,334	Stumble	60	60
706	1,983,214	305,137	Beebe	60	60
707	1,983,138	304,954	Beebe	60	60
708	1,982,903	305,227	Beebe	60	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
709	1,983,029	305,611	Shiprock Very Hard	0	60
710	1,982,689	306,149	Shiprock Very Hard	25	65
712	1,982,573	305,676	Beebe	40	40
715	1,982,103	305,761	Fruitland	60	70
718	1,982,083	306,291	Shiprock Very Hard	9	71
729	1,984,090	307,815	Shiprock Very Hard	23	60
730	1,984,480	307,777	Fruitland	0	60
731	1,984,842	307,745	Bacobi	35	35
733	1,985,548	307,675	Razito	60	63
734	1,985,767	307,666	Fruitland	0	60
735	1,986,063	307,582	Razito	60	60
737	1,985,737	307,151	Fruitland	0	60
741	1,984,191	307,274	Benally	0	60
744	1,984,184	306,796	Razito	60	60
745	1,984,580	306,736	Benally	0	60
746	1,984,942	306,652	Razito	60	65
747	1,985,302	306,605	Stumble	54	54
748	1,985,867	306,501	Huerfano	0	3
749	1,985,812	306,038	Huerfano	0	30
752	1,983,699	307,838	Benally	0	60
753	1,983,432	307,851	Razito	60	60
754	1,983,061	307,825	Huerfano	0	20
755	1,982,608	307,830	Huerfano	0	26
756	1,982,215	307,840	Razito	60	60
758	1,981,820	307,788	Benally	0	60
759	1,981,438	307,740	Stumble	52	60
775	1,980,967	307,134	Jocity	0	60
777	1,980,946	307,510	Shiprock Very Hard	32	60
779	1,980,603	307,449	Jocity	0	62
780	1,980,496	306,977	Fruitland	60	60
781	1,980,643	306,597	Fruitland	60	60
784	1,979,859	307,327	Jocity	60	60
789	1,987,000	306,181	Razito	60	60
806	1,988,841	293,919	Benally	0	29
807	1,988,151	294,270	Rock Outcrop	0	0
808	1,987,045	293,934	Persayo	0	3

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
11-A	1,979,416	294,017	Natrargid	0	19
12-A	1,979,984	293,621	Farb	8	8
13-A	1,980,508	293,320	Jocity	60	60
185-A	1,983,965	298,260	Bacobi	52	52
199-A	1,994,575	298,567	Fruitland	60	60
352-A	1,984,364	302,253	Benally	16	63
659-A	1,989,078	304,210	Razito	29	72
682-A	1,986,304	304,537	Stumble	60	65
713-A	1,982,594	305,186	Beebe	33	65
DH-A	1,988,778	297,501	Grieta	27	51
DH-B	1,985,886	299,381	Patel	0	21
DH-C	1,985,963	294,649	Tsaya	0	10
DH-D	1,977,630	299,262	Patel	0	9
DH-E	1,980,662	304,717	Persayo	15	15
DH-H	1,982,490	302,187	Patel	0	49
DH-I	1,988,449	293,985	Tsaya	0	7
DH-J	1,981,752	299,068	Chipeta	26	80
DH-K	1,993,032	298,813	Tsaya	0	7
DH-V	1,987,796	296,167	Razito Moderately Deep	36	36

Appendix C Northing, Easting, Soil Series, Soil Symbol, Depth of Topdressing, and Depth to Bedrock for Each Site Located in Area 5

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
1-B	1,975,649	297,434	Shiprock	60	60
2-B	1,974,726	297,802	Gilco	60	60
3-B	1,974,810	297,724	Gilco	60	60
4-B	1,974,098	298,280	Monierco	11	11
5-B	1,976,370	297,264	Shiprock	60	60
6-B	1,976,814	296,747	Gilco	60	60
7-A	1,976,678	296,706	Fruitland	60	60
8-B	1,977,354	295,843	Bacobi	32	32
9-A	1,977,697	295,643	Jocity	60	60
10-B	1,978,833	294,514	Patel Overwashed	13	60
14-B	1,979,117	293,345	Doak	60	60
15-B	1,978,615	292,885	Doak	60	60
16-B	1,978,315	292,436	Grieta	60	60
17-A	1,978,169	291,706	Farb	4	4
18-A	1,978,114	291,239	Farb	4	4
19-B	1,977,928	290,962	Monierco	15	15
20-A	1,977,689	290,826	Monierco	18	18
21-A	1,977,287	290,506	Monierco	14	14
22-B	1,976,361	290,613	Farb	4	4
23-A	1,975,788	290,448	Huerfano	0	18
24-A	1,975,447	288,815	Natrargid	0	24
25-B	1,975,192	288,737	Shiprock	60	60
26-B	1,975,411	288,461	Fruitland	60	60
27-B	1,975,473	287,481	Bacobi	30	30
28-A	1,974,892	287,072	Bacobi	26	26
29-B	1,974,289	286,583	Monierco	18	18
30-B	1,973,965	286,713	Razito Moderately Deep	18	18
31-B	1,973,503	285,782	Razito	54	54
32-A	1,973,407	285,860	Razito Moderately Deep	32	32
33-A	1,974,371	287,635	Razito Moderately Deep	34	34
34-B	1,974,220	288,220	Huerfano	0	17
35-A	1,973,890	289,210	Farb	5	5
36-B	1,973,524	290,299	Monierco	17	17
37-B	1,974,795	291,890	Bacobi	31	31
38-B	1,974,853	292,763	Monierco	20	20
39-B	1,974,763	293,570	Farb	13	13
40-B	1,975,079	294,429	Shiprock	50	50

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
41-A	1,975,928	295,203	Shiprock	54	54
42-A	1,976,451	295,719	Jocity	60	60
43-A	1,975,846	297,114	Shiprock	60	60
44-A	1,974,726	296,479	Farb	8	8
45-A	1,973,926	295,506	Farb	12	12
46-B	1,973,187	294,759	Shiprock	60	60
47-B	1,972,721	293,914	Farb	10	10
48-A	1,972,923	292,602	Bacobi	23	23
48-B	1,973,048	292,137	Monierco	16	16
49-B	1,973,290	291,308	Bacobi	37	37
50-B	1,972,844	290,205	Shiprock	60	60
51-A	1,972,029	290,271	Monierco	15	15
51-B	1,972,313	290,193	Monierco	16	16
52-B	1,971,423	290,377	Shiprock	48	48
53-A	1,969,499	287,483	Farb	4	4
53-B	1,971,220	290,923	Monierco	10	10
54-A	1,969,708	288,080	Monierco	7	7
54-B	1,971,491	291,475	Blancot	60	60
55-A	1,970,065	288,726	Monierco	7	7
55-B	1,971,714	291,975	Doak	60	60
56-A	1,970,354	289,254	Natrargid	12	31
56-B	1,971,946	292,424	Bacobi	23	23
57-A	1,970,698	289,880	Natrargid	0	22
57-B	1,972,179	292,978	Blancot	60	60
58-A	1,972,571	294,456	Farb	4	4
58-B	1,972,443	294,949	Blancot	60	60
59-A	1,972,389	295,430	Monierco	18	18
59-B	1,972,348	295,826	Monierco	16	16
60-B	1,971,972	297,494	Razito Moderately Deep	21	21
61-B	1,971,916	298,266	Shiprock	35	35
62-B	1,973,615	298,453	Shiprock	37	37
63-A	1,972,888	297,780	Bacobi	25	25
63-B	1,971,774	295,168	Blancot	60	60
64-A	1,971,825	295,341	Bacobi	32	32
64-B	1,972,123	297,008	Shiprock	32	32
65-B	1,971,574	298,397	Jocity	60	60
66-A	1,971,204	297,081	Shiprock	15	15
66-B	1,971,337	297,768	Gilco	60	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
67-A	1,970,940	296,667	Natrargid	0	0
67-B	1,970,742	295,895	Doak	60	60
68-A	1,970,952	294,662	Bacobi	28	28
68-B	1,970,973	295,324	Blancot	36	36
69-A	1,970,961	293,934	Bacobi	26	26
69-B	1,970,922	294,481	Monierco	11	11
70-B	1,971,353	298,262	Huerfano	0	5
71-B	1,970,434	298,049	Bacobi	33	33
73-B	1,969,592	297,570	Fajada	7	26
74-B	1,968,993	296,194	Razito	46	46
75-B	1,969,031	295,754	Hoskay	0	60
76-B	1,969,016	295,090	Monierco	15	15
77-B	1,969,019	294,318	Monierco	11	11
78-A	1,970,972	293,499	Razito Moderately Deep	22	22
78-B	1,971,009	293,282	Razito Moderately Deep	19	19
79-A	1,970,986	292,802	Farb	4	4
80-B	1,971,019	292,230	Farb	20	20
81-B	1,970,503	291,948	Blancot	40	40
82-B	1,969,065	291,837	Patel	0	38
83-A	1,969,039	290,803	Bacobi	22	22
84-B	1,967,387	289,596	Razito Moderately Deep	12	12
85-A	1,967,337	288,914	Natrargid	0	12
85-B	1,967,264	288,634	Monierco	11	11
86-B	1,967,092	288,029	Razito Moderately Deep	24	24
87-B	1,966,667	286,961	Razito Moderately Deep	35	35
89-B	1,966,154	289,257	Razito Moderately Deep	30	60
90-B	1,964,699	288,321	Huerfano	0	12
91-B	1,965,579	286,659	Bacobi	22	22
92-B	1,964,339	287,791	Bacobi	33	33
93-B	1,963,538	286,942	Monierco	10	10
94-B	1,963,383	287,164	Razito Moderately Deep	12	12
95-B	1,964,037	288,188	Bacobi	23	23
96-B	1,964,343	288,613	Doak	60	60
97-B	1,964,906	289,335	Bacobi	24	24
98-B	1,965,049	290,077	Bacobi	23	23
99-B	1,966,210	291,000	Bacobi	26	26
100-B	1,966,949	290,878	Shiprock	36	36
101-B	1,975,700	298,211	Gilco	46	46

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
102-B	1,975,424	298,882	Mayqueen	60	60
103-B	1,975,115	299,563	Blancot	60	60
104-B	1,974,989	299,461	Gilco	60	60
105-B	1,975,738	298,704	Blancot	60	60
106-B	1,975,587	297,873	Shiprock	60	60
107-B	1,974,832	299,937	Gilco	60	60
108-B	1,974,029	299,755	Razito	60	60
109-A	1,973,418	299,510	Monierco	14	14
109-B	1,972,327	299,196	Bacobi	26	26
110-A	1,971,641	299,385	Huerfano	0	0
110-B	1,971,095	299,376	Sogzie	53	53
111-A	1,971,307	300,793	Bacobi	29	29
112-A	1,971,216	301,591	Natrargid	0	0
113-A	1,971,058	302,448	Natrargid	0	0
114-B	1,970,850	303,355	Benally	12	40
115-B	1,970,323	305,730	Blancot	60	60
116-B	1,970,423	306,306	Blancot	39	39
117-A	1,970,754	306,393	Huerfano	0	0
118-B	1,969,558	299,735	Shiprock	27	27
121-B	1,966,828	302,463	Benally	6	55
122-B	1,967,652	304,619	Benally	0	42
123-B	1,968,036	304,630	Benally	0	41
125-B	1,968,855	305,794	Razito Moderately Deep	30	30
126-B	1,968,428	305,852	Razito	40	40
127-B	1,968,108	305,723	Benally	0	52
128-B	1,967,884	305,619	Huerfano	0	18
130-B	1,967,047	306,519	Huerfano	0	36
134-B	1,966,508	303,134	Fajada	0	36
136-B	1,963,877	301,724	Monierco	10	10
138-B	1,964,082	303,287	Benally	0	48
139-B	1,963,973	303,252	Benally	0	60
140-B	1,963,869	303,242	Benally	8	60
141-B	1,963,206	305,954	Benally	15	60
142-B	1,962,863	305,893	Monierco	17	17
143-B	1,963,044	305,928	Huerfano	0	16
149-B	1,961,321	302,101	Razito Moderately Deep	35	35
150-B	1,961,323	302,330	Shiprock	35	35
151-B	1,962,915	301,553	Sogzie	60	60

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
152-B	1,969,587	293,429	Hoskay	0	60
153-B	1,969,029	293,311	Fajada	0	28
154-A	1,969,021	292,278	Farb	4	4
154-B	1,968,992	292,678	Monierco	17	17
155-B	1,969,025	293,910	Fruitvale	44	44
156-B	1,968,964	297,608	Fajada	0	22
167-B	1,968,423	298,887	Huerfano	0	12
173-B	1,964,496	298,362	Monierco	13	13
175-B	1,963,675	298,105	Razito Moderately Deep	32	32
176-B	1,963,095	298,151	Shiprock	60	60
178-B	1,962,926	298,713	Farb	4	4
180-B	1,962,603	300,164	Razito Moderately Deep	24	24
181-B	1,962,214	300,934	Monierco	16	16
182-B	1,961,594	300,836	Sogzie	39	39
184-B	1,961,379	301,618	Sogzie	42	42
185-B	1,961,310	302,642	Bacobi	23	23
188-B	1,960,721	302,238	Bacobi	34	34
189-B	1,961,714	301,866	Monierco	15	15
190-B	1,962,394	301,555	Bacobi	23	23
191-B	1,963,490	301,216	Huerfano	0	4
193-B	1,966,139	300,443	Huerfano	0	9
198-B	1,967,732	296,326	Huerfano	0	9
201-B	1,965,953	296,171	Farb	4	4
202-B	1,965,426	296,615	Huerfano	0	17
206-B	1,964,633	298,929	Monierco	17	17
207-B	1,964,703	299,345	Monierco	18	18
209-B	1,964,060	300,598	Razito	52	52
211-B	1,963,252	299,546	Monierco	16	16
212-B	1,962,544	298,744	Bacobi	22	22
213-B	1,961,948	298,696	Shiprock	60	60
214-B	1,961,824	299,514	Monierco	18	18
215-B	1,961,695	300,017	Huerfano	0	60
216-B	1,961,603	300,509	Bacobi	25	25
218-B	1,961,112	300,036	Monierco	20	28
219-B	1,960,589	300,506	Monierco	16	16
220-B	1,960,146	300,898	Bacobi	24	24
221-B	1,961,579	298,625	Razito Moderately Deep	32	32
222-B	1,961,302	298,598	Mayqueen	43	43

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
224-B	1,960,492	298,863	Bacobi	22	32
225-B	1,960,158	298,592	Monierco	14	14
226-B	1,959,250	298,534	Shiprock	60	60
228-B	1,959,016	298,899	Shiprock	48	48
229-B	1,958,946	299,692	Huerfano	0	20
230-B	1,959,049	297,731	Shiprock	43	43
231-B	1,959,135	296,662	Shiprock	60	60
233-B	1,960,318	298,299	Blancot	60	60
234-B	1,960,226	297,648	Bacobi	21	21
235-B	1,959,899	296,784	Sogzie	60	60
237-B	1,959,945	295,625	Shiprock	60	60
242-B	1,959,731	293,944	Shiprock	46	46
246-B	1,959,636	291,999	Razito	60	60
247-B	1,960,026	291,846	Razito	42	42
248-B	1,960,424	291,801	Bacobi	22	31
249-B	1,960,420	291,363	Razito	50	50
250-B	1,959,603	291,619	Razito	40	40
251-B	1,960,638	291,196	Razito	51	51
252-B	1,960,982	291,635	Bacobi	23	23
253-B	1,960,923	292,373	Bacobi	32	32
257-B	1,961,742	295,420	Mayqueen	35	35
258-B	1,961,890	295,755	Shiprock	60	60
260-B	1,961,965	296,502	Monierco	14	14
263-B	1,962,086	298,270	Shiprock	45	45
265-B	1,962,882	297,542	Bacobi	22	22
266-B	1,963,017	296,887	Blancot	39	39
269-B	1,962,131	295,598	Doak	54	54
270-B	1,962,318	295,012	Monierco	16	16
271-B	1,962,448	294,484	Monierco	19	19
273-B	1,963,321	297,829	Monierco	11	11
274-B	1,963,266	296,259	Shiprock	43	43
275-B	1,963,469	295,776	Bacobi	29	29
276-B	1,963,369	294,659	Monierco	18	18
277-B	1,962,946	293,901	Shiprock	60	60
278-B	1,964,077	292,807	Razito Moderately Deep	24	24
279-B	1,963,523	293,198	Bacobi	26	26
281-B	1,962,474	293,130	Bacobi	28	28
282-B	1,962,263	292,622	Monierco	12	12

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
283-B	1,961,824	292,108	Monierco	9	9
284-B	1,961,385	291,699	Bacobi	22	36
288-B	1,962,256	290,716	Monierco	15	15
290-B	1,963,090	290,348	Monierco	13	13
291-B	1,963,467	290,328	Sogzie	29	50
292-B	1,963,905	290,173	Monierco	19	19
293-B	1,964,523	290,267	Bacobi	29	29
294-B	1,964,558	291,120	Bacobi	37	37
295-B	1,963,819	291,208	Monierco	18	18
296-B	1,963,352	291,262	Mayqueen	47	47
297-B	1,961,764	291,540	Monierco	18	18
298	1,976,387	299,354	Shiprock Very Hard	22	62
298-B	1,962,517	291,466	Shiprock	54	54
299	1,976,196	300,060	Chipeta	0	12
299-B	1,962,946	291,608	Bacobi	22	22
300-B	1,963,413	291,724	Mayqueen	55	55
301-B	1,963,980	291,901	Monierco	16	16
302-B	1,964,729	291,936	Bacobi	32	32
303-B	1,965,117	291,934	Doak	45	45
304-B	1,965,564	291,879	Monierco	18	18
305-B	1,965,635	291,448	Bacobi	31	31
306-B	1,965,576	291,075	Bacobi	21	21
309-B	1,966,908	291,717	Bacobi	21	21
310-B	1,967,159	291,961	Razito	46	46
311-B	1,967,734	291,967	Bacobi	30	48
312-B	1,968,144	291,914	Bacobi	23	48
313-B	1,968,544	291,922	Bacobi	32	52
314-A	1,968,409	290,602	Natrargid	0	60
315-A	1,968,734	292,518	Natrargid	0	21
318-B	1,968,194	294,283	Razito Moderately Deep	24	24
320-B	1,967,580	294,725	Fajada	12	23
321-B	1,967,348	295,033	Patel	0	36
322	1,976,133	300,652	Doak	60	60
324-B	1,966,193	293,536	Hoskay	0	60
325-B	1,966,286	292,891	Shiprock	36	36
326-B	1,966,380	292,310	Bacobi	27	27
327-B	1,965,474	292,323	Doak	27	60
328-B	1,965,630	292,543	Monierco	12	12

Appendix C Continued

Site #	Northing 1.(ft)	Easting 1.(ft)	Soil Series	Depth of Topdressing (in)	Depth to Bedrock (in)
329-B	1,965,859	292,914	Benally	16	60
333-B	1,969,315	294,089	Razito Moderately Deep	13	13
335-B	1,970,664	293,925	Razito Moderately Deep	17	17
336-B	1,964,043	295,132	Bacobi	22	22
362	1,976,833	298,328	Jocity	36	60
363	1,975,617	300,529	Chipeta	0	12
364	1,976,463	298,745	Fruitland	60	60
365	1,976,039	301,448	Patel	0	40
366	1,975,547	301,333	Benally	0	46
367	1,974,929	301,189	Benally	31	43
368	1,974,649	301,895	Shiprock Very Hard	0	45
369	1,975,177	302,087	Benally	17	29
370	1,975,680	302,247	Chipeta	0	15
371	1,975,713	303,074	Chipeta	0	6
372	1,975,055	303,051	Benally	0	45
373	1,974,516	302,965	Razito Moderately Deep	34	55
374	1,974,008	302,839	Razito Moderately Deep	40	40
374-A	1,973,318	302,716	Shiprock	60	67
375	1,973,663	303,574	Razito	60	61
375-A	1,973,059	303,322	Huerfano	0	32
376	1,974,289	303,759	Persayo	0	4
377	1,974,902	303,893	Persayo	0	5
378	1,975,573	304,011	Persayo	0	17
392	1,975,541	300,278	Fruitvale	34	59
A5-1	1,971,751	293,815	Bacobi	23	23
A5-2	1,972,608	299,292	Fajada	0	22
A5-3	1,963,670	295,101	Mayqueen	45	45
A5-4	1,963,803	300,994	Fajada	4	22
A5-5	1,970,509	305,579	Blancot	60	60
A5-6	1,965,253	290,713	Bacobi	26	50
A5-7	1,975,318	290,971	Bacobi	24	24
A5-8	1,966,876	295,526	Grieta	60	60
A5-9	1,966,423	302,863	Fajada	0	21
DH-F	1,975,997	302,497	Patel Overwashed	12	32

Appendix D

Soil Series Descriptions

Bacobi Series

The soils in the Bacobi Series are classified as Fine-loamy, mixed, superactive, mesic Typic Haplagrids. These moderately deep, well-drained soils are on knolls, mesas, and plateaus. The soils formed in eolian and alluvial sediments overlying sandstone, siltstone, and shale.

Typifying Pedon: Bacobi sandy loam, 0 to 5 percent slopes. Location is in Area 4 South, site #45 at 1,987,448 ft north and 296,928 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 4 inches; brown (10YR 5/3) sandy loam, pale brown (10YR 6/3) moist; weak granular structure; very friable; very slightly effervescent; neutral (pH 7.2).

Bt- 4 to 11 inches; dark grayish brown (10YR 4/2) sandy clay loam, brown (10YR 5/3) moist; weak sub-angular blocky structure; slightly firm; common clay bridging of sand grains, a few thin patchy clay films on faces of peds; non-saline; slightly effervescent; neutral (pH 7.1).

2Bk- 11 to 26 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; moderate sub-angular blocky structure; very hard; common lime masses; strongly effervescent; non-saline; slightly alkaline (pH 7.6).

2Cky- 26 to 37 inches; very pale brown (10YR 7/3) silty clay loam, light olive brown (2.5Y 5/4) moist; massive; hard; common lime masses; secondary very fine sand sized gypsum crystals segregated in very few fine irregularly shaped soft masses and filaments; violently effervescent; moderately alkaline.

2Cky- Interbedded shale and sandstone.

Range in Characteristics

Topdressing depth: 10 to 40 inches.

Reaction: Neutral to moderately alkaline in the upper part and neutral to strongly alkaline in the lower part of the profile.

Salinity (EC, mmhos/cm): less than 3.0 in most profiles

Sodicity: Occasionally sodic below 20 inches.

Depth to paralithic contact: 20 to 40 inches.

There are commonly 1 or 2 lithologic discontinuities within the profile.

Topdressing availability is limited by depth to bedrock and sodium affected horizons.

Bacobi Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S00432	4 S	45	A	0	4	7.2	4.32	25	2.8	0.42	0.9	0.715	81	8	11
0398S00434	4 S	45	2Bk	11	26	7.6	0.84	37	0.95	0.26	7.8	10	51	21	28
0398S00433	4 S	45	Bt	4	11	7.1	0.35	28	2	0.35	1.1	1.03	75	10	15

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S00432	4 S	45	A	0	4	SL	2	0	0	21	20	.	.
0398S00434	4 S	45	2Bk	11	26	SCL	11	0	1	119	118	.	.
0398S00433	4 S	45	Bt	4	11	SL	5	0	0	46	46	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00432	4 S	45	A	0	4	.	.	.	0	0	0
0398S00434	4 S	45	2Bk	11	26	.	.	.	0	0	0
0398S00433	4 S	45	Bt	4	11	.	.	.	0	0	0

Bacobi Series Additional Laboratory Data for Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00514	12	A	0-4	7.3	0.34	25	2.65	0.34	0.5	0	76	12	12	SL
0398S00519	12	Bt	4-16	7.5	0.41	28	2.1	0.24	1.83	2	79	8	13	SL
0398S00506	12	Bk1	16-27	8.2	0.67	27	3.05	0.38	6.26	5	76	10	14	SL
0398S00536	12	Bk2	27-40	8.3	1.36	34	0.62	0.22	13.7	21	81	5	14	SL
0398S00547	25	Bt	3-21	7.6	0.74	45	2.96	0.8	11.3	8	34	23	43	C
0398S00510	40	2Btk	7-16	7.5	0.55	29	1.81	0.17	4.4	4	71	7	22	SCL
0398S00429	43	A	0-10	7.6	0.58	25	2.1	0.44	4.5	3.97	72	13	15	SL
0398S00430	43	Btk	10-19	7.7	0.62	30	1.9	0.29	6	5.78	58	19	23	SCL
0398S00431	43	2Ck	19-32	7.8	1.56	35	1.1	0.35	14	16.2	41	36	23	L
0398S00435	46	2Bk2	18-26	7.5	0.55	38	0.83	0.23	4.2	5.8	31	41	28	CL
0398S00559	77	A	0-6	7.6	0.52	24	3.51	0.65	1.19	1	76	11	13	SL
0398S00560	77	Btk	6-22	7.5	0.48	29	3.23	0.54	2.16	2	70	10	20	SCL
0398S00561	77	Bk	22-32	7.7	7.37	28	2.38	0.22	6.31	6	71	11	18	SL
0398S00548	84	Btk	12-21	7.8	1.08	35	3.85	0.57	11.1	7	59	13	28	SCL
0398S00549	84	2Ck	21-39	8	1.57	37	1.69	0.48	17.3	17	61	19	20	SCL
0398S00604	95	2Btkn	11-22	8	1.01	46	0.6	0.15	10.5	17	35	32	33	CL
0398S00619	124	A	0-3	7.5	0.75	23	6.97	0.85	0.57	0	76	13	11	SL
0398S00620	124	Bt	3-11	7.6	0.5	26	1.11	0.17	3.51	4	75	10	15	SL
0398S00621	124	Btk	11-17	7.8	0.51	27	0.66	0.11	5.55	9	73	12	15	SL
0398S00623	131	A	0-3	7.6	0.44	25	3.05	0.34	0.52	0	65	20	15	SL
0398S00624	131	Bt1	3-10	7.5	0.39	31	2.01	0.17	1.98	2	58	14	28	SCL
0398S00625	131	Bt2	10-20	7.5	0.43	34	1.07	0.09	3.71	5	65	7	28	SCL
0398S00626	131	Btk	20-29	7.4	0.99	34	2.81	0.2	6.86	6	58	17	25	SCL
0398S00662	153	Bt	3-16	7.3	0.49	27	2.13	0.33	2.23	2	73	9	18	SL
0398S00663	153	2Bk	16-35	7.6	0.65	32	1.32	0.28	5.61	6	66	13	21	SCL

Bacobi Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00514	12	A	0-4	2.4	0.01	0.31	17	16.8	.	.	.	.
0398S00519	12	Bt	4-16	5.1	0.01	0.31	37	37	.	.	.	.
0398S00506	12	Bk1	16-27	8.9	0.01	0.31	63	63	.	.	.	.
0398S00536	12	Bk2	27-40	3.6	0.02	0.62	30	29.4	.	.	.	.
0398S00547	25	Bt	3-21	5.2	0.04	1.3	57	56.1	.	.	.	.
0398S00510	40	2Btk	7-16	5.3	0.02	0.62	40	39.2	.	.	.	.
0398S00429	43	A	0-10	4	0	1	46	45	.	.	.	.
0398S00430	43	Btk	10-19	13	0	1	134	134	.	.	.	.
0398S00431	43	2Ck	19-32	17	0	1	165	165	.	.	.	.
0398S00435	46	2Bk2	18-26	14	0	0	129	129	.	.	.	.
0398S00559	77	A	0-6	1.2	0.01	0.31	15	15.1	.	.	.	.
0398S00560	77	Btk	6-22	3.4	0.01	0.31	40	39.6	.	.	.	.
0398S00561	77	Bk	22-32	14	0.01	0.31	150	150	.	.	.	.
0398S00548	84	Btk	12-21	13	0.02	0.62	140	139.3	.	.	.	.
0398S00549	84	2Ck	21-39	12	0.03	0.94	124	123.3	.	.	.	.
0398S00604	95	2Btkn	11-22	11	0.01	0.31	100	100	.	.	.	.
0398S00619	124	A	0-3	1.7	0.02	0.62	15	14.8	.	.	.	.
0398S00620	124	Bt	3-11	5.3	0.01	0.31	33	33.2	.	.	.	.
0398S00621	124	Btk	11-17	8.1	0.02	0.62	56	55.7	.	.	.	.
0398S00623	131	A	0-3	2.5	0.07	2.2	24	21.6	.	.	.	.
0398S00624	131	Bt1	3-10	2.7	0.05	1.6	24	21.9	.	.	.	.
0398S00625	131	Bt2	10-20	2.8	0.03	0.94	22	21	.	.	.	.
0398S00626	131	Btk	20-29	11	0.1	3.1	133	130.1	.	.	.	.
0398S00662	153	Bt	3-16	3.9	0.02	0.62	42	41.3	.	.	.	.
0398S00663	153	2Bk	16-35	6.9	0.04	1.3	71	70.1	.	.	.	.

Bacobi Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00514	12	A	0-4	.	0	0	0
0398S00519	12	Bt	4-16	.	0	0	0
0398S00506	12	Bk1	16-27	.	0	0	0
0398S00536	12	Bk2	27-40	.	0	0	0
0398S00547	25	Bt	3-21	.	0	0.35	0
0398S00510	40	2Btk	7-16	.	0	0	0
0398S00429	43	A	0-10	.	0	0	0
0398S00430	43	Btk	10-19	.	0	0	0
0398S00431	43	2Ck	19-32	.	0	0.25	0
0398S00435	46	2Bk2	18-26	.	0	0	0
0398S00559	77	A	0-6	.	0	0	0
0398S00560	77	Btk	6-22	.	0	0	0
0398S00561	77	Bk	22-32	.	0	0	0
0398S00548	84	Btk	12-21	.	0	0	0
0398S00549	84	2Ck	21-39	.	0	0	0
0398S00604	95	2Btkn	11-22	.	0	0.25	0
0398S00619	124	A	0-3	.	0	0	0
0398S00620	124	Bt	3-11	.	0	0	0
0398S00621	124	Btk	11-17	.	0	0	0
0398S00623	131	A	0-3	.	0	0.45	0
0398S00624	131	Bt1	3-10	.	0	0.35	0
0398S00625	131	Bt2	10-20	.	0	0	0
0398S00626	131	Btk	20-29	.	0	0.45	0
0398S00662	153	Bt	3-16	.	0	0	0
0398S00663	153	2Bk	16-35	.	0	0.25	0

Bacobi Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth	pH	EC	Sat	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
				s.u.	mmhos/cm	%	meq/l	meq/l	meq/l		%	%	%	USDA
0398S00677	180	Btk	10-16	7.7	0.68	32	1.27	0.29	5.5	6	63	14	23	SCL
0398S00678	180	2Bk	16-26	7.9	0.75	43	1.11	0.14	7.33	9	26	44	30	CL
0398S00681	208	AB	0-13	7.4	0.32	25	1.85	0.11	0.63	1	81	6	13	SL
0398S00682	208	Btk	13-33	7.7	0.48	27	1	0.25	4.23	5	73	7	20	SCL
0398S00683	209	AB	0-4	7.3	0.36	24	2.56	0.37	0.4	0	75	12	13	SL
0398S00684	209	Bt	4-20	7.3	0.38	27	1.81	0.17	1.8	2	73	11	16	SL
0398S00805	215	Bk	17-26	7.5	0.62	35	1.8	0.31	4.7	5	53	22	25	SCL
0398S00955	266	Btk	5-19	7.3	0.43	33	1.5	0.13	2.1	2.3	70	6	24	SCL
0398S01197	390	2Btk	15-28	7.7	0.83	44	0.93	0.21	7.2	10	53	12	35	SC
0398S01646	428	2Btb	12-21	8.1	0.76	36	1.7	0.63	6.2	6	68	12	20	SCL
0398S01669	464	Bt	11-20	8.3	1.61	34	1.9	0.58	16	14	76	11	13	SL
0398S03122	608	AB	0-12	7.7	1.13	28	1.6	0.36	8.6	9	68	10	22	SCL
0398S03123	608	2Bk	12-28	7.4	9.22	42	28	5	55	14	40	45	15	L

Bacobi Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00677	180	Btk	10-16	8.4	0.03	0.94	95	93.9	.	.	.	.
0398S00678	180	2Bk	16-26	11	0.03	0.94	98	96.8	.	.	.	.
0398S00681	208	AB	0-13	2.6	0.02	0.62	33	32.7	.	.	.	.
0398S00682	208	Btk	13-33	4.8	0.02	0.62	50	49.7	.	.	.	.
0398S00683	209	AB	0-4	1.6	0.03	0.94	21	20.5	.	.	.	.
0398S00684	209	Bt	4-20	5	0.02	0.62	52	51.9	.	.	.	.
0398S00805	215	Bk	17-26	9.9	0.01	0.31	97	96.5	.	.	.	.
0398S00955	266	Btk	5-19	5.7	0.02	0.62	48	47.0	.	.	.	.
0398S01197	390	2Btk	15-28	8.1	0.06	1.9	69	67	.	.	.	.
0398S01646	428	2Btb	12-21	3.7	0.01	0.31	32	31.3	.	.	.	.
0398S01669	464	Bt	11-20	2.6	0.01	0.31	20	20.2	.	.	.	.
0398S03122	608	AB	0-12	3.1	0.03	0.94	27	26.5	.	.	.	.
0398S03123	608	2Bk	12-28	1.9	1.95	61	16	-44.8	2	0	0	0

Bacobi Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00677	180	Btk	10-16	.	0	0.25	0
0398S00678	180	2Bk	16-26	.	0	0	0
0398S00681	208	AB	0-13	.	0	0	0
0398S00682	208	Btk	13-33	.	0	0	0
0398S00683	209	AB	0-4	.	0	0	0
0398S00684	209	Bt	4-20	.	0	0	0
0398S00805	215	Bk	17-26	.	0	0	0
0398S00955	266	Btk	5-19	.	0	0	0
0398S01197	390	2Btk	15-28	.	0.3	0.9	0
0398S01646	428	2Btb	12-21	.	0.3	0	0
0398S01669	464	Bt	11-20	.	0.4	0	0
0398S03122	608	AB	0-12	.	0.3	0	0
0398S03123	608	2Bk	12-28	16.2	1.4	0.35	0

Bacobi Series Additional Laboratory Data for Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmho/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1611	92B	A, Bt	0-7	7.57	0.61	26.4	3.24	0.72	1.76	67.5	17.5	15.0
S-1612	92B	Btk	7-18	7.69	0.93	34.4	2.52	0.64	5.61	65.0	10.0	25.0
S-1613	92B	Ck	18-26	7.62	4.18	28.0	25.6	7.85	17.7	80.0	7.5	12.5
S-1614	92B	C	26-33	7.82	4.39	25.8	24.3	8.72	19.5	81.3	6.3	12.5
S-1469	114B	C	0-12	7.43	1.19	29.2	0.89	0.09	11.6	72.5	15.0	12.5
S-1470R	114B	2Btkb	12-24	7.54	1.73	51.2	0.77	0.10	16.5	60.0	20.0	20.0
S-1470	114B	2Btkb	12-24	7.54	1.74	54.8	0.76	0.08	16.6	60.0	18.8	21.3
S-1471	114B	2Btky	24-40	7.07	8.32	50.8	16.1	2.53	73.9	55.0	18.8	26.3
S-1501	216B	A	0-6	7.47	0.60	28.9	3.45	0.65	0.89	80.0	13.8	6.3
S-1502	216B	Bt	6-16	7.43	0.32	32.1	0.92	0.14	2.14	70.0	17.5	12.5
S-1503	216B	Btk	16-25	7.04	0.57	30.6	0.86	0.15	4.48	57.5	27.5	15.0
S-1525	224B	A, C	0-12	7.46	0.43	27.1	2.72	0.43	0.53	87.5	2.5	10.0
S-1526	224B	Btb	12-22	7.36	0.38	46.8	2.43	0.25	1.09	52.5	12.5	35.0
S-1606	252B	A	0-7	8.02	2.60	30.4	25.8	6.83	2.11	77.5	12.5	10.0
S-1607	252B	Bt	7-16	8.56	0.57	35.6	1.11	0.37	4.39	48.8	22.5	28.8
S-1608	252B	Btk	16-23	8.47	1.11	44.3	2.09	0.79	8.18	38.8	23.8	37.5
S-1482	253B	A	0-8	7.11	0.20	28.2	1.07	0.16	0.64	90.0	5.0	5.0
S-1483	253B	Bt	8-20	7.40	0.32	31.7	1.10	0.27	1.80	67.5	16.3	16.3
S-1484	253B	Btk	20-32	7.70	0.60	31.0	1.04	0.27	4.70	45.0	36.3	18.8
S-1553	326B	A	0-5	7.27	0.37	29.9	2.25	0.38	0.64	80.0	6.3	13.8
S-1554	326B	Bt	5-15	7.54	0.32	25.9	1.16	0.26	1.87	70.0	15.0	15.0
S-1555	326B	Btk	15-27	7.96	0.68	32.7	1.14	0.38	5.18	60.0	15.0	25.0

Bacobi Series Additional Laboratory Data for Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$	Tot S	Sulfate	Pyr S	Org S	Acid Pot	Neut Pot
					%	%	%	%	%	tn/1000tn	tn/1000tn
S-1611	92B	A, Bt	0-7	SL	2.786	0.043	.	.	.	1.36	27.9
S-1612	92B	Btk	7-18	SCL	3.363	0.047	.	.	.	1.46	33.6
S-1613	92B	Ck	18-26	SL	3.844	0.101	.	.	.	3.16	38.4
S-1614	92B	C	26-33	SL	3.940	0.117	.	.	.	3.66	39.4
S-1469	114B	C	0-12	SL	3.706	0.041	.	.	.	1.28	37.1
S-1470R	114B	2Btkb	12-24	SL/SCL	5.421	0.046	.	.	.	1.42	54.2
S-1470	114B	2Btkb	12-24	SCL	5.421	0.046	.	.	.	1.43	54.2
S-1471	114B	2Btky	24-40	SCL	5.601	1.102	.	.	.	34.4	56.0
S-1501	216B	A	0-6	LS	2.015	0.024	.	.	.	0.74	20.2
S-1502	216B	Bt	6-16	SL	6.046	0.034	.	.	.	1.05	60.5
S-1503	216B	Btk	16-25	SL	11.19	0.028	.	.	.	0.88	112
S-1525	224B	A, C	0-12	LS	1.249	0.024	.	.	.	0.75	12.5
S-1526	224B	Btb	12-22	SCL/SC	9.802	0.043	.	.	.	1.35	98.0
S-1606	252B	A	0-7	SL	3.362	0.343	.	.	.	10.7	33.6
S-1607	252B	Bt	7-16	SCL	18.74	0.069	.	.	.	2.16	187
S-1608	252B	Btk	16-23	CL	20.76	0.096	.	.	.	3.01	208
S-1482	253B	A	0-8	S	1.312	0.022	.	.	.	0.69	13.1
S-1483	253B	Bt	8-20	SL	10.62	0.025	.	.	.	0.77	106
S-1484	253B	Btk	20-32	L	41.65	0.040	.	.	.	1.25	417
S-1553	326B	A	0-5	SL	1.730	0.039	.	.	.	1.23	17.3
S-1554	326B	Bt	5-15	SL	7.206	0.041	.	.	.	1.28	72.1
S-1555	326B	Btk	15-27	SCL	19.89	0.045	.	.	.	1.39	199

Bacobi Series Additional Laboratory Data for Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B Tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1611	92B	A, Bt	0-7	26.5	.	.	0.55	0.325	.	<0.015
S-1612	92B	Btk	7-18	32.2	.	.	1.75	0.325	.	<0.015
S-1613	92B	Ck	18-26	35.3	.	.	1.35	0.325	.	<0.015
S-1614	92B	C	26-33	35.7	.	.	0.90	0.325	.	<0.015
S-1469	114B	C	0-12	35.8	.	.	0.75	<0.15	.	<0.015
S-1470R	114B	2Btkb	12-24	52.8	.	.	1.00	0.500	.	<0.015
S-1470	114B	2Btkb	12-24	52.8	.	.	0.90	0.500	.	<0.015
S-1471	114B	2Btky	24-40	21.6	.	.	1.90	0.350	.	<0.015
S-1501	216B	A	0-6	19.4	.	.	<0.50	<0.15	.	<0.015
S-1502	216B	Bt	6-16	59.4	.	.	<0.50	<0.15	.	<0.015
S-1503	216B	Btk	16-25	111	.	.	1.20	<0.15	.	<0.015
S-1525	224B	A, C	0-12	11.7	.	.	0.60	<0.15	.	<0.015
S-1526	224B	Btb	12-22	96.7	.	.	0.95	0.325	.	<0.015
S-1606	252B	A	0-7	22.9	.	.	0.70	0.275	.	<0.015
S-1607	252B	Bt	7-16	185	.	.	0.75	0.375	.	<0.015
S-1608	252B	Btk	16-23	205	.	.	1.60	1.025	.	<0.015
S-1482	253B	A	0-8	12.4	.	.	<0.50	<0.15	.	<0.015
S-1483	253B	Bt	8-20	105	.	.	0.50	<0.15	.	<0.015
S-1484	253B	Btk	20-32	415	.	.	0.60	<0.15	.	<0.015
S-1553	326B	A	0-5	16.1	.	.	0.50	<0.15	.	<0.015
S-1554	326B	Bt	5-15	70.8	.	.	0.55	<0.15	.	<0.015
S-1555	326B	Btk	15-27	198	.	.	0.85	<0.15	.	<0.015

Bacobi Series Additional Laboratory Data for Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/com	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
S-1062	A5-1	A1	0-4	8.13	0.30	29.8	1.79	0.34	0.68	0.66	73.8	11.3	15.0
S-1063	A5-1	A2	4-9	8.18	0.28	29.3	1.62	0.31	0.80	0.82	73.8	12.5	13.8
S-1064	A5-1	Bt	9-16	8.16	0.33	33.1	1.22	0.35	1.88	2.12	72.5	11.3	16.3
S-1065	A5-1	Bk	16-23	8.57	0.47	33.4	0.36	0.15	4.48	8.90	68.8	12.5	18.8
S-1050	A5-6	A	0-6	8.00	0.43	29.9	2.77	0.53	0.76	0.59	71.3	15.0	13.8
S-1050R	A5-6	A	0-6	8.00	0.43	30.7	2.82	0.53	0.75	0.58	71.3	15.0	13.8
S-1051	A5-6	Bt	6-12	8.10	0.28	33.5	1.07	0.26	1.71	2.10	60.0	18.8	21.3
S-1052	A5-6	Bk	12-26	8.28	0.71	39.1	0.81	0.32	6.18	8.22	38.8	32.5	28.8
S-1078	A5-7	A1	0-4	8.13	0.40	24.1	2.62	0.45	0.79	0.64	68.8	15.0	16.3
S-1079	A5-7	Bt	4-13	8.06	0.27	33.9	1.45	0.26	1.14	1.24	56.3	22.5	21.3
S-1080	A5-7	Btk	13-24	8.39	0.78	31.5	0.67	0.19	7.31	11.1	30.0	48.8	21.3
S-1080R	A5-7	Btk	13-24	8.41	0.76	31.4	0.65	0.18	7.05	10.9	30.0	48.8	21.3

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Class	CaCO3 %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn	A-B Pot tn/1000tn
S-1062	A5-1	A1	0-4	SL	6.282	0.019	.	.	.	0.58	62.8	62.2
S-1063	A5-1	A2	4-9	SL	8.733	0.019	.	.	.	0.61	87.3	86.7
S-1064	A5-1	Bt	9-16	SL	8.536	0.023	.	.	.	0.72	85.4	84.6
S-1065	A5-1	Bk	16-23	SL	9.212	0.022	.	.	.	0.67	92.1	91.5
S-1050	A5-6	A	0-6	SL	1.156	0.031	.	.	.	0.97	11.6	10.6
S-1050R	A5-6	A	0-6	SL	1.255	0.032	.	.	.	0.99	12.5	11.6
S-1051	A5-6	Bt	6-12	SCL	6.847	0.028	.	.	.	0.87	68.5	67.6
S-1052	A5-6	Bk	12-26	CL	35.64	0.080	.	.	.	2.49	356	354
S-1078	A5-7	A1	0-4	SL	3.423	0.029	.	.	.	0.91	34.2	33.3
S-1079	A5-7	Bt	4-13	SCL	20.03	0.027	.	.	.	0.84	200	199
S-1080	A5-7	Btk	13-24	L	36.85	0.055	.	.	.	1.72	368	367
S-1080R	A5-7	Btk	13-24	L	36.75	0.061	.	.	.	1.89	367	366

Bacobi Series Additional Laboratory Data for Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	B ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1062	A5-1	A1	0-4	.	.	<0.50	<0.15	.	<0.015
S-1063	A5-1	A2	4-9	.	.	<0.50	<0.15	.	<0.015
S-1064	A5-1	Bt	9-16	.	.	<0.50	<0.15	.	<0.015
S-1065	A5-1	Bk	16-23	.	.	<0.50	<0.15	.	<0.015
S-1050	A5-6	A	0-6	.	.	<0.50	<0.15	.	<0.015
S-1050R	A5-6	A	0-6	.	.	0.50	<0.15	.	<0.015
S-1051	A5-6	Bt	6-12	.	.	0.70	<0.15	.	<0.015
S-1052	A5-6	Bk	12-26	.	.	0.95	<0.15	.	<0.015
S-1078	A5-7	A1	0-4	.	.	<0.50	<0.15	.	<0.015
S-1079	A5-7	Bt	4-13	.	.	<0.50	<0.15	.	<0.015
S-1080	A5-7	Btk	13-24	.	.	<0.50	0.925	.	<0.015
S-1080R	A5-7	Btk	13-24	.	.	<0.50	0.950	.	<0.015

Beebe Series

The soils in the Beebe Series are classified as Sandy, mixed, mesic Typic Torrifluvents. These deep, well drained soils are on flood plains and alluvial fans. The soils formed in sandy alluvium derived mainly from sandstone.

Typifying Pedon: Beebe loamy coarse sand, 0 to 3 percent slopes. Location is in Area 4 South, site #792 at 1,979,494 ft north and 308,325 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 3 inches; dark yellowish brown (10YR 4/4) moist, loamy coarse sand; weak platy parting to weak granular structure; soft, very friable; non-effervescent; non-saline; moderately alkaline (pH 7.9).

C_1- 3 to 14 inches; dark yellowish brown (10YR 4/4) moist, coarse sand; massive structure; soft, very friable; non-effervescent; non-saline; moderately alkaline (pH 7.9).

C_2- 14 to 40 inches; light yellowish brown (2.5Y 6/4) very fine loamy sand, light olive brown (2.5Y 5/4) moist; massive structure; hard; non-effervescent; non-saline; moderately alkaline (pH 8.4).

C_3- 40 to 62 inches; light yellowish brown (2.5Y 6/4) coarse sand, olive brown (2.5Y 4/4) moist; massive structure; soft parting to slightly hard; non-effervescent; non-saline; moderately alkaline (pH 8.1).

Range in Characteristics

Topdressing depth: 4 to 60 or more inches.

Reaction: Slightly to strongly alkaline

Salinity: Non-saline in the upper part and non-saline to strongly saline in the lower part of the profile.

Sodicity: SAR ranges from 2 to 45.

Depth to paralithic contact: 60 or more inches.

Depth of water table: 40 to 60 or more inches.

Limiting factors for topdressing are depth to bedrock, depth to water table, and SAR.

Beebe Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sar	Sand %	Silt %	Clay %
0398S04951	4 S	792	AC	0	14	7.9	0.34	21	2.2	0.38	0.82	0.73	91	2	7
0398S04952	4 S	792	C1	14	40	8.4	0.6	25	0.78	0.51	5.4	6.7	87	5	8
0398S04953	4 S	792	C2	40	60	8.1	1	27	1.9	0.28	7.4	7	96	0	4

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S04951	4 S	792	AC	0	14	S	1.4	0.02	0.62	14	12.9	.	.
0398S04952	4 S	792	C1	14	40	LS	1.4	0.01	0.31	14	13.6	.	.
0398S04953	4 S	792	C2	40	60	S	1.5	0.02	0.62	13	12.5	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04951	4 S	792	AC	0	14	.	.	.	0	0	0
0398S04952	4 S	792	C1	14	40	.	.	.	0	0	0
0398S04953	4 S	792	C2	40	60	.	.	.	0	0.4	0

Beebe Additional Laboratory Data from Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00778	1	A	0-4	7.4	0.39	28	3	0.29	0.46	0	78	7	15	SL
0398S00779	1	Bw	4-14	7.4	0.4	26	1.7	0.38	2.1	2	74	8	18	SL
0398S00780	1	BC	14-22	7.5	0.49	27	1.2	0.46	4.3	5	70	10	20	SCL
0398S00781	1	2C	22-60	7.9	1.83	32	0.84	0.16	15	22	83	9	8	LS
0398S00499	54	A	0-4	7.5	0.61	30	2.74	0.16	2.43	2	69	14	17	SL
0398S00501	54	C1	4-9	7.6	0.65	30	1.25	0.17	10.1	12	71	13	16	SL
0398S00516	54	C2	9-19	7.5	1.69	32	3.59	0.26	11.1	8	76	12	12	SL
0398S00520	54	C3	19-33	7.5	5.74	40	25.7	2.16	37.4	10	54	22	24	SCL
0398S00523	54	C4	33-60	7.6	1.84	27	2.76	0.18	14.1	12	91	3	6	S
0398S01978	492	AB	0-14	7.1	0.36	25	2.8	0.29	0.63	1	88	4	8	LS
0398S01979	492	BC	14-18	7.1	0.42	28	1.9	0.35	2.3	2	78	6	16	SL
0398S01980	492	2Ck	18-30	7.6	0.51	25	0.58	0.11	4.8	8	90	2	8	S
0398S01981	492	2C	30-60	8	1.05	28	0.35	0.073	11	23	93	2	5	S
0398S02013	511	Bw	0-12	7.5	0.49	28	2.6	0.29	2.1	2	73	18	9	SL
0398S02014	511	C	12-45	7.4	5.11	24	0	4.1	39	27	82	8	10	LS
0398S02017	516	C	12-42	7.7	0.49	31	0.94	0.12	4.8	7	86	7	7	LS
0398S02018	517	A	0-4	7.3	0.47	32	3.2	0.29	1.3	1	83	10	7	LS
0398S02019	517	C1	4-22	7.5	0.38	30	1	0.1	2.9	4	85	8	7	LS
0398S02020	517	C2	22-60	7.6	0.57	27	0.74	0.097	6.2	10	86	7	7	LS
0398S02021	521	C1	0-10	7.1	0.35	24	0.82	0.1	3	4	93	2	5	S
0398S02022	521	C2	10-28	7.1	0.43	27	1.1	0.14	4	5	95	1	4	S
0398S02023	521	C3	28-60	7	0.5	23	1.2	0.18	4.5	5	92	2	6	S
0398S02031	525	C1	0-33	7.2	0.55	22	2.3	0.38	3.6	3	89	3	8	LS
0398S02032	525	C2	33-60	7.3	0.86	30	2.9	0.56	7.9	6	71	16	13	SL

Beebe Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00778	1	A	0-4	3.1	0.01	0.31	25	24.6	0.01	0	0	0
0398S00779	1	Bw	4-14	4.4	0.02	0.62	37	36.2	0.02	0	0	0
0398S00780	1	BC	14-22	3.5	0.01	0.31	34	33.6	0.01	0	0	0
0398S00781	1	2C	22-60	1.4	0.01	0.31	38	37.3	0.01	0	0	0
0398S00499	54	A	0-4	2.4	0.01	0.31	22	21.7	.	.	.	.
0398S00501	54	C1	4-9	1.9	0.02	0.62	17	16.3	.	.	.	.
0398S00516	54	C2	9-19	1.2	0.02	0.62	12	11.2	.	.	.	.
0398S00520	54	C3	19-33	1.6	0.05	1.6	15	13.2	.	.	.	.
0398S00523	54	C4	33-60	1.1	0.03	0.94	12	11.2	.	.	.	.
0398S01978	492	AB	0-14	2.3	0.01	0.31	16	15.4	.	.	.	.
0398S01979	492	BC	14-18	5.4	0.02	0.62	65	64.3	.	.	.	.
0398S01980	492	2Ck	18-30	2.7	0.04	1.3	19	17.6	.	.	.	.
0398S01981	492	2C	30-60	1.6	0.02	0.62	13	12.7	.	.	.	.
0398S02013	511	Bw	0-12	3.6	0.02	0.62	36	35	.	.	.	.
0398S02014	511	C	12-45	3.5	0.11	3.4	33	29.4	.	.	.	.
0398S02017	516	C	12-42	2.7	0.01	0.31	21	20.8	.	.	.	.
0398S02018	517	A	0-4	1.3	0.01	0.31	12	11.7	.	.	.	.
0398S02019	517	C1	4-22	1.4	0.01	0.31	13	13	.	.	.	.
0398S02020	517	C2	22-60	1.3	0.02	0.62	12	11.8	.	.	.	.
0398S02021	521	C1	0-10	1.3	0.04	1.3	13	11.8	.	.	.	.
0398S02022	521	C2	10-28	1.1	0.02	0.62	10	9.6	.	.	.	.
0398S02023	521	C3	28-60	2.6	0.03	0.94	14	12.9	.	.	.	.
0398S02031	525	C1	0-33	3.9	0.06	1.9	34	32	.	.	.	.
0398S02032	525	C2	33-60	3.1	0.03	0.94	29	28.3	.	.	.	.

Beebe Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00778	1	A	0-4	0	0.3	0	0
0398S00779	1	Bw	4-14	0	0	0	0
0398S00780	1	BC	14-22	0	0	0	0
0398S00781	1	2C	22-60	0	0	0	0
0398S00499	54	A	0-4	.	0	0	0
0398S00501	54	C1	4-9	.	0	1.3	0
0398S00516	54	C2	9-19	.	0	0	0
0398S00520	54	C3	19-33	.	0	0	0
0398S00523	54	C4	33-60	.	0	0	0
0398S01978	492	AB	0-14	.	0	0	0
0398S01979	492	BC	14-18	.	0.2	0	0
0398S01980	492	2Ck	18-30	.	0	0	0
0398S01981	492	2C	30-60	.	0.2	0	0
0398S02013	511	Bw	0-12	.	0	0	0
0398S02014	511	C	12-45	.	0.3	0.25	0
0398S02017	516	C	12-42	.	0	0	0
0398S02018	517	A	0-4	.	0	0	0
0398S02019	517	C1	4-22	.	0	0	0
0398S02020	517	C2	22-60	.	0	0	0
0398S02021	521	C1	0-10	.	0	0	0
0398S02022	521	C2	10-28	.	0	0	0
0398S02023	521	C3	28-60	.	0	0	0
0398S02031	525	C1	0-33	.	0	0.35	0
0398S02032	525	C2	33-60	.	0.2	0.35	0

Beebe Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S02033	526	A	0-4	7.4	0.27	31	1.5	0.15	1.2	1	78	14	8	SL
0398S02034	526	C1	4-29	7.7	0.41	26	0.84	0.082	4.1	6	90	4	6	S
0398S02035	526	C2	29-40	7.6	0.59	27	1.1	0.12	6.2	8	86	7	7	LS
0398S02036	526	C3	40-60	7.6	1.03	27	1.8	0.22	11	11	92	3	5	S
0398S02044	533	A	0-4	8	1.45	30	1.3	0.15	17	20	67	18	15	SL
0398S02045	533	C1	4-26	7.9	10.4	48	15	3.1	88	30	57	24	19	SL
0398S02046	533	2Byb	26-37	8.3	15.7	32	19	11	130	33	77	11	12	SL
0398S02047	533	2Cy	37-60	8.4	23.1	36	19	24	220	47	67	16	17	SL
0398S02167	541	A	0-5	7.5	0.71	48	2.9	0.52	5.9	5	42	26	32	CL
0398S02168	541	Bw	5-10	7.5	0.52	30	1.6	0.25	3.7	4	76	12	12	SL
0398S02169	541	C1	10-28	7.5	0.37	29	1.5	0.22	2.4	3	88	4	8	LS
0398S02170	541	C2	28-60	7.8	0.67	29	1.5	1.6	6.7	5	86	6	8	LS
0398S02177	550	A	0-4	7.5	1.22	29	4.8	0.26	7.8	5	64	16	20	SCL
0398S02178	550	C1	4-30	8.4	0.8	28	1.2	0.74	9.5	10	88	4	8	LS
0398S02179	550	C2	30-60	8.2	2.11	36	0.55	0.33	21	32	88	4	8	LS
0398S04441	582	C1	0-40	7.7	8.44	26	21	3.2	93	27	84	6	10	LS
0398S04442	582	C2	40-60	8	7.06	44	8.6	5	84	32	84	5	11	LS
0398S04597	616	C1	0-14	7.5	0.39	22	1.8	0.27	1.8	1.8	84	3	13	LS
0398S04598	616	C2	14-35	7.8	0.32	24	0.86	0.37	2.3	3	89	1	10	LS
0398S04599	616	C3	35-60	7.8	1.03	24	0.95	0.25	9	12	86	3	11	LS
0398S04626	675	A	0-5	7.5	0.44	26	2.4	0.29	1.9	1.6	88	3	9	LS
0398S04627	675	C1	5-20	7.5	1.33	23	4.4	0.47	8.6	5.6	80	8	12	SL
0398S04628	675	C2	20-60	7.7	3.26	24	8.7	1.2	26	12	94	0	6	S
0398S04706	712	A	0-7	8	12.6	99	19	3	130	40	32	26	42	C
0398S04707	713-A	C1	4-33	7.7	2.5	22	8.5	0.99	17	7.7	88	4	8	LS
0398S04708	713-A	C2	33-60	7.8	4.76	25	11	2.4	49	19	95	0	5	S

Beebe Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S02033	526	A	0-4	1.4	0.01	0.31	13	13	.	.	.	.
0398S02034	526	C1	4-29	1.1	0.02	0.62	11	10	.	.	.	.
0398S02035	526	C2	29-40	1.3	0.02	0.62	13	12.4	.	.	.	.
0398S02036	526	C3	40-60	1.4	0.02	0.62	13	11.9	.	.	.	.
0398S02044	533	A	0-4	3	0.02	0.62	27	26.5	.	.	.	.
0398S02045	533	C1	4-26	2.2	0.09	2.8	21	17.7	.	.	.	.
0398S02046	533	2Byb	26-37	1.9	0.14	4.4	16	11.5	.	.	.	.
0398S02047	533	2Cy	37-60	3	0.2	6.3	26	19.5	.	.	.	.
0398S02167	541	A	0-5	2.6	0.02	0.62	25	24	.	.	.	.
0398S02168	541	Bw	5-10	1.8	0.02	0.62	17	16.3	.	.	.	.
0398S02169	541	C1	10-28	1.5	0.02	0.62	13	11.9	.	.	.	.
0398S02170	541	C2	28-60	1.4	0.01	0.31	14	13.3	.	.	.	.
0398S02177	550	A	0-4	3.8	0.02	0.62	35	34.8	.	.	.	.
0398S02178	550	C1	4-30	3.4	0.03	0.94	29	27.8	.	.	.	.
0398S02179	550	C2	30-60	1.7	0.02	0.62	17	16	.	.	.	.
0398S04441	582	C1	0-40	2.4	0.16	5	26	20.8	.	.	.	.
0398S04442	582	C2	40-60	2.9	0.11	3.4	30	26.1	.	.	.	.
0398S04597	616	C1	0-14	14	0.02	0.62	13	12.7	.	.	.	.
0398S04598	616	C2	14-35	1.3	0.02	0.62	15	14.1	.	.	.	.
0398S04599	616	C3	35-60	1.5	0.02	0.62	15	14.4	.	.	.	.
0398S04626	675	A	0-5	1.2	0.02	0.62	11	10.8	.	.	.	.
0398S04627	675	C1	5-20	1.5	0.03	0.94	16	15.1	.	.	.	.
0398S04628	675	C2	20-60	1.4	0.06	1.9	14	12.2	.	.	.	.
0398S04706	712	A	0-7	4.8	0.93	29	47	17.5	.	.	.	.
0398S04707	713-A	C1	4-33	1.5	0.04	1.3	18	16.7	.	.	.	.
0398S04708	713-A	C2	33-60	1.5	0.07	2.2	18	15.5	.	.	.	.

Beebe Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S02033	526	A	0-4	.	0	0	0
0398S02034	526	C1	4-29	.	0	0	0
0398S02035	526	C2	29-40	.	0	0	0
0398S02036	526	C3	40-60	.	0	0	0
0398S02044	533	A	0-4	.	0.3	0	0
0398S02045	533	C1	4-26	.	0.3	0.4	0.22
0398S02046	533	2Byb	26-37	.	0.3	0.3	0.1
0398S02047	533	2Cy	37-60	.	0.4	0.3	0.15
0398S02167	541	A	0-5	.	0.2	0	0
0398S02168	541	Bw	5-10	.	0	0	0
0398S02169	541	C1	10-28	.	0	0	0
0398S02170	541	C2	28-60	.	0	0	0
0398S02177	550	A	0-4	.	0.3	0.6	0
0398S02178	550	C1	4-30	.	0	0	0
0398S02179	550	C2	30-60	.	0.2	0.25	0.16
0398S04441	582	C1	0-40	.	0.8	0	0
0398S04442	582	C2	40-60	.	0.4	0.25	0.07
0398S04597	616	C1	0-14	.	0	0	0
0398S04598	616	C2	14-35	.	0	0	0
0398S04599	616	C3	35-60	.	0	0	0
0398S04626	675	A	0-5	.	0	0	0
0398S04627	675	C1	5-20	.	0	0	0
0398S04628	675	C2	20-60	.	0	0	0
0398S04706	712	A	0-7	.	2	0	0
0398S04707	713-A	C1	4-33	.	0	0	0
0398S04708	713-A	C2	33-60	.	0	0.25	0

Benally Series

The soils in the Benally series are classified as Fine-loamy, mixed, active, mesic Typic Natrargids. These sodium affected, deep, well drained soils are on small depressions and swales of mesas and terraces. Benally soils formed in alluvium and residuum derived primarily from carbonaceous shale.

Typifying Pedon: Benally sandy clay loam, 0 to 3 percent slopes. Location is in Area 4 South, site #175 at 1,982,658 ft north and 298,607 ft east (New Mexico West, State Plane Coordinates).

$Btkn_1$ 0 to 6 inches; brown (10YR 4/3) moist, sandy clay loam; moderate columnar structure; slightly firm; upper 2 inches of prisms have uncoated sand and silt grains; few, thin clay films on the faces of prisms; strongly effervescent; non-saline; moderately alkaline (pH 7.8).

$Btkn_2$ 6 to 20 inches; dark yellowish brown (10YR 4/4) sandy clay loam, brown (10YR 5/4) moist; strong angular blocky parting to strong prismatic structure; very hard; few, thin clay films on faces of peds and in pores; violently effervescent; secondary carbonates segregated in few, fine irregularly shaped, soft masses and stains; moderately saline; slightly alkaline (pH 7.6).

Byn 20 to 40 inches; yellowish brown (10YR 5/6) sandy loam, brown (10YR 5/3) moist; weak angular blocky structure; very hard; secondary very fine sized gypsum crystals segregated in common fine irregular shaped soft masses and filaments; slightly effervescent; moderately saline; slightly alkaline (pH 7.6).

Cy 20 to 60 inches; dark yellowish brown (10YR 4/5) sandy loam, brown (10YR 5/3) moist; massive; hard; secondary, very fine, sand sized gypsum crystals segregated in few, firm filaments and on the underside of rock fragments; very slightly effervescent; moderately saline; slightly alkaline (pH 7.6).

Range in Characteristics

Topdressing depth: 0 to 20 inches.

Reaction: Slightly to strongly alkaline.

Salinity (EC, mmhos/cm): 1 to 12.

Sodicity: 1 to 20 in the upper part of the profile and 13 to 25 in the lower parts of the profile.

Texture: Sandy clay loam and clay loam in the upper part of the profile and sandy loam, sandy clay loam, clay loam, and clay textures in the lower part of the profile.

Depth to paralithic contact: 40 to 60 or more inches.

There are commonly 2 to 4 lithologic discontinuities with the profile.

Benally Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00673	4 S	175	Btkn	0-6	7.8	1.05	30	6.75	0.87	8.04	4	68	9	23	SCL
0398S00674	4 S	175	Btkn2	6-20	7.6	7.97	36	24.2	3.46	73.6	20	73	7	20	SCL
0398S00675	4 S	175	Bty	20-40	7.6	10.1	34	26.7	7.22	94.6	23	87	2	11	LS
0398S00676	4 S	175	Cy	40-60	7.6	9.54	34	27.5	10.2	82.7	19	87	3	10	LS

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00673	4 S	175	Btkn	0-6	5.1	0.02	0.62	52	51.5	.	.	.	.
0398S00674	4 S	175	Btkn2	6-20	3.1	0.56	17	41	23.6	.	.	.	.
0398S00675	4 S	175	Bty	20-40	1.9	1.93	60	22	-37.9	1.2	0	0.7	21.9
0398S00676	4 S	175	Cy	40-60	1.9	1.72	54	22	-32	0.36	0	0	0

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00673	4 S	175	Btkn	0-6	.	0	0.3	0
0398S00674	4 S	175	Btkn2	6-20	.	1.2	0.85	0.02
0398S00675	4 S	175	Bty	20-40	0.5	1.4	0.35	0.03
0398S00676	4 S	175	Cy	40-60	21.7	1.3	0	0

Benally Series Additional Laboratory Data for Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00521	#37	Btn	0-9	8.1	1.84	42	1.72	0.22	17	17	56	12	32	SCL
0398S00436	#47	A	0-3	7.2	0.45	24	2.1	0.42	1.9	1.74	76	11	13	SL
0398S00437	#47	Bt	3-8	7.7	0.5	24	2.4	0.77	5.1	4.1	78	8	14	SL
0398S00438	#47	Btkn	8-18	8	1.58	67	1.1	0.28	15	18.2	36	54	10	SIL
0398S00609	#101	Btn1	0-4	7.8	0.65	25	1.32	0.28	5.68	6	48	28	24	SCL
0398S00610	#101	Btn2	4-14	7.5	8.84	48	20.8	5.36	87.9	24	35	25	40	C
0398S00611	#101	Btkn	14-25	7.9	1.46	42	1.08	0.19	14.9	19	40	25	35	CL
0398S00612	#102	Btkn	0-19	8	0.98	41	0.7	0.12	10.4	16	50	17	33	SCL
0398S00660	#151	Btn	0-6	7.7	0.63	38	2.33	1.45	7.06	5	41	24	35	CL
0398S00661	#151	Btkn	6-18	7.7	6.08	48	11.2	0.97	59.4	24	38	24	38	CL
0398S00669	#166	Btn	0-6	7.8	0.92	28	2.84	0.35	8.94	7	66	9	25	SCL
0398S00670	#166	Btkyn	6-28	7.6	9.81	31	23.3	3.65	90.2	25	77	5	18	SL
0398S00821	#241	Byn	0-11	7.1	2.25	45	44	1.4	1.2	0	50	20	30	SCL
0398S00979	#336	BA	0-12	7.4	0.62	39	2.6	0.23	3.3	2.7	50	16	34	SCL
0398S00987	#350	C	23-47	7.8	1.29	32	1.3	0.25	15	17	68	11	21	SCL
0398S01650	#434	Btkn	0-9	8.1	0.82	45	2.1	0.43	8.6	8	56	9	35	SC
0398S01656	#449	2Btkn	14-34	7.8	4.27	53	2.9	0.78	37	27	56	21	23	SCL
0398S01657	#449	2Ck	34-60	7.7	7.47	38	22	5.7	58	16	68	22	10	SL
0398S01670	#466	Btn1	0-8	8	3.94	47	4.4	0.43	35	22	53	24	23	SCL
0398S01671	#466	By	8-14	7.9	8.92	41	19	1.5	80	25	61	21	18	SL
0398S01672	#466	2Cy	14-22	7.9	8.9	81	17	2.3	92	30	43	29	28	CL
0398S01673	#466	3C	22-60	8.4	2.75	45	1.7	0.38	29	28	78	9	13	SL
0398S01732	#473	Btn	0-8	8	1.92	44	0.98	0.14	25	33	60	13	27	SCL
0398S01733	#473	Btkyn	8-20	7.7	10.4	58	19	1.8	100	32	38	23	39	CL
0398S01734	#473	Cdy	20-60	7.8	5.31	84	7	0.85	67	34	29	22	49	C

Benally Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00521	#37	Btn	0-9	5	0.04	1.3	42	40.6	.	.	.	.
0398S00436	#47	A	0-3	2	0	1	19	18	.	.	.	.
0398S00437	#47	Bt	3-8	4	0	0	38	38	.	.	.	.
0398S00438	#47	Btkn	8-18	14	0	1	138	137	.	.	.	.
0398S00609	#101	Btn1	0-4	5.2	0.02	0.62	48	47.4	.	.	.	.
0398S00610	#101	Btn2	4-14	5.3	0.06	1.9	50	48.1	.	.	.	.
0398S00611	#101	Btkn	14-25	0.84	0.03	0.94	59	57.8	.	.	.	.
0398S00612	#102	Btkn	0-19	6	0.02	0.62	53	52.2	.	.	.	.
0398S00660	#151	Btn	0-6	3.6	0.03	0.94	53	52.5	.	.	.	.
0398S00661	#151	Btkn	6-18	5.5	0.07	2.2	58	56.3	.	.	.	.
0398S00669	#166	Btn	0-6	7.1	0.04	1.3	75	73.9	.	.	.	.
0398S00670	#166	Btkyn	6-28	1.4	0.81	25	18	-7.4	0.81	0	0	0
0398S00821	#241	Byn	0-11	1.6	7.29	230	14	-213.5	7.3	0	0	0
0398S00979	#336	BA	0-12	3.2	0.06	1.9	31	29.5	.	.	.	.
0398S00987	#350	C	23-47	3.3	0.02	0.62	25	24.1	.	.	.	.
0398S01650	#434	Btkn	0-9	6.3	0.01	0.31	56	55.7	.	.	.	.
0398S01656	#449	2Btkn	14-34	9.6	0.05	1.6	97	95.1	.	.	.	.
0398S01657	#449	2Ck	34-60	2.6	0.09	2.8	20	17.4	.	.	.	.
0398S01670	#466	Btn1	0-8	2.9	0.05	1.6	30	28.1	.	.	.	.
0398S01671	#466	By	8-14	2.1	0.29	9.1	0	-9.1	0.29	0	0	0
0398S01672	#466	2Cy	14-22	3	0.31	9.7	30	20.1	.	.	.	.
0398S01673	#466	3C	22-60	4.9	0.04	1.3	53	51.9	.	.	.	.
0398S01732	#473	Btn	0-8	5.4	0.02	0.62	52	51	.	.	.	.
0398S01733	#473	Btkyn	8-20	2.9	0.84	26	29	2.7	.	.	.	.
0398S01734	#473	Cdy	20-60	4.7	0.13	4.1	48	43.7	.	.	.	.

Benally Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00521	#37	Btn	0-9	.	0.4	0.35	0
0398S00436	#47	A	0-3	.	0	0	0
0398S00437	#47	Bt	3-8	.	0	0	0
0398S00438	#47	Btkn	8-18	.	0	0.35	0
0398S00609	#101	Btn1	0-4	.	0	0	0
0398S00610	#101	Btn2	4-14	.	0.3	0.55	0.02
0398S00611	#101	Btkn	14-25	.	0	0.25	0
0398S00612	#102	Btkn	0-19	.	0	0	0
0398S00660	#151	Btn	0-6	.	0	0.3	0
0398S00661	#151	Btkn	6-18	.	0.2	0.5	0.02
0398S00669	#166	Btn	0-6	.	0	0.4	0
0398S00670	#166	Btkyn	6-28	17.9	0.9	0.55	0.07
0398S00821	#241	Byn	0-11	14.2	0	1.2	0
0398S00979	#336	BA	0-12	.	0	0.55	0
0398S00987	#350	C	23-47	.	0	0	0
0398S01650	#434	Btkn	0-9	.	0.7	0	0
0398S01656	#449	2Btkn	14-34	.	1.4	0.3	0
0398S01657	#449	2Ck	34-60	.	0.9	0	0
0398S01670	#466	Btn1	0-8	.	0.8	0.5	0
0398S01671	#466	By	8-14	0	1.3	0.45	0.03
0398S01672	#466	2Cy	14-22	.	1.9	0.75	0.1
0398S01673	#466	3C	22-60	.	0.5	0	0.06
0398S01732	#473	Btn	0-8	.	0.8	0.35	0
0398S01733	#473	Btkyn	8-20	.	0.9	0.7	0.1
0398S01734	#473	Cdy	20-60	.	0.8	0	0.03

Benally Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S04452	#594	Btkn	0-10	8.2	2.77	31	5.3	0.49	31	18	75	6	19	SL
0398S04615	#641	Btn	0-6	8.2	1.04	27	6.7	1.5	10	5	70	8	22	SCL
0398S04616	#641	Cky	6-22	8	12.3	30	20	2.3	130	38	78	5	17	SL
0398S04617	#641	C	22-46	7.9	11.2	23	19	3.5	100	30	88	2	10	LS
0398S04537	#658	Btn	0-17	8.1	2.12	30	1.5	0.1	27	30	68	8	24	SCL
0398S04538	#658	Btkn	17-28	7.7	13.3	32	24	4.1	120	33	72	6	22	SCL
0398S04539	#658	2C	28-50	8	8.13	26	13	2.4	68	24	90	2	8	S
0398S04540	#658	2Ck	50-60	8.4	5.3	40	2.8	0.65	57	44	84	6	10	LS
0398S04629	#681	Btkyn	0-8	7.9	6.93	32	9.2	0.97	64	28	81	5	14	SL
0398S04630	#681	2Btkyn	8-18	8.4	11.6	90	19	4.5	130	37	48	22	30	SCL
0398S04957	#798	Btn	3-28	8.4	2.77	42	3.3	0.36	30	22	54	22	24	SCL
0398S00988	#352-A	AC	0-8	7.4	0.71	36	2.0	0.02	5.4	5.4	53	19	28	SCL
0398S02162	#537	Btnb	13-33	7.4	9.58	39	18	3.7	70	21	58	17	25	SCL
0398S02163	#537	Bkyb	33-45	7.6	11.9	52	26	5.3	94	24	38	26	36	CL
0398S02164	#537	2Cy	45-60	8.2	18.4	42	18	7.8	160	45	60	16	24	SCL

Benally Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S04452	#594	Btkn	0-10	11	0.02	0.62	109	108.2	.	.	.	.
0398S04615	#641	Btn	0-6	3.1	0.02	0.62	33	32.1	.	.	.	.
0398S04616	#641	Cky	6-22	2.8	0.24	7.5	27	19.8	.	.	.	.
0398S04617	#641	C	22-46	1.7	0.15	4.7	22	17.5	.	.	.	.
0398S04537	#658	Btn	0-17	2.7	0.02	0.62	29	28.5	.	.	.	.
0398S04538	#658	Btkn	17-28	4.3	0.06	1.9	39	37.1	.	.	.	.
0398S04539	#658	2C	28-50	1.5	0.03	0.94	13	12.3	.	.	.	.
0398S04540	#658	2Ck	50-60	4.1	0.03	0.94	32	30.8	.	.	.	.
0398S04629	#681	Btkyn	0-8	2.1	0.08	2.5	17	14.6	.	.	.	.
0398S04630	#681	2Btkyn	8-18	4.6	0.42	13	46	10.5	.	.	.	.
0398S04957	#798	Btn	3-28	8.5	0.02	0.62	91	90.1	.	.	.	.
0398S00988	#352-A	AC	0-8	2.8	0.05	1.6	26	24.9	.	.	.	.
0398S02162	#537	Btnb	13-33	4.8	0.1	3.1	47	43.6	.	.	.	.
0398S02163	#537	Bkyb	33-45	6	0.26	8.1	61	52.9	.	.	.	.
0398S02164	#537	2Cy	45-60	5	0.26	8.1	47	39	.	.	.	.

Benally Series Additional Laboratory Data for Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04452	#594	Btkn	0-10	.	0.5	0.35	0
0398S04615	#641	Btn	0-6	.	0.8	0.3	0
0398S04616	#641	Cky	6-22	.	1.2	0.55	0.11
0398S04617	#641	C	22-46	.	0.4	0.35	0.05
0398S04537	#658	Btn	0-17	.	0.7	0	0
0398S04538	#658	Btkn	17-28	.	1.2	0.35	0
0398S04539	#658	2C	28-50	.	0.8	0.25	0
0398S04540	#658	2Ck	50-60	.	0.6	0	0
0398S04629	#681	Btkyn	0-8	.	0.5	8.3	0.26
0398S04630	#681	2Btkyn	8-18	.	2.9	6	2.9
0398S04957	#798	Btn	3-28	.	0.3	0.35	0
0398S00988	#352-A	AC	0-8	.	0	0.30	0
0398S02162	#537	Btnb	13-33	.	0.3	0.3	0
0398S02163	#537	Bkyb	33-45	.	0.5	0.65	0.31
0398S02164	#537	2Cy	45-60	.	0.5	0.35	0.04

Benally Series Additional Laboratory Data for Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmho/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1570R	122B	A, B, Bk	0-22	8.65	1.33	32.3	1.06	0.11	11.4	62.5	16.3	21.3
S-1570	122B	A, B, Bk	0-22	8.60	1.33	30.9	1.04	0.11	11.2	63.8	15.0	21.3
S-1571	122B	By	22-42	8.40	12.40	68.7	14.6	4.88	110	27.5	66.3	6.3
S-1564	127B	A, Btn	0-12	8.72	1.29	32.4	0.70	0.08	11.6	55.0	16.3	28.8
S-1565	127B	C	12-52	8.35	9.21	42.8	10.3	1.10	79.2	55.0	17.5	27.5
S-1632	138B	A	0-4	8.65	0.83	23.9	0.83	0.18	7.09	67.5	15.0	17.5
S-1633	138B	Btn	4-12	8.54	2.04	36.7	0.69	0.16	18.4	73.8	8.8	17.5
S-1634	138B	Btk, Btky	12-24	8.24	8.99	43.4	14.7	1.62	77.0	52.5	17.5	30.0
S-1635	138B	C	24-48	8.20	8.99	93.1	14.7	2.95	75.7	48.8	17.5	33.8
S-1629	141B	A	0-15	8.18	1.54	29.3	3.52	0.45	10.2	66.3	13.8	20.0
S-1630R	141B	Btnkb	15-24	8.36	0.92	42.3	0.48	0.16	8.13	55.0	17.5	27.5
S-1630	141B	C	15-24	8.40	0.92	41.0	0.49	0.16	8.09	55.0	17.5	27.5
S-1631	141B	Cb	24-60	8.35	7.14	44.4	13.3	1.97	59.2	58.8	16.3	25.0
S-1591	155B	A	0-4	8.57	1.90	25.1	3.53	0.77	15.2	72.5	15.0	12.5
S-1592	155B	Bt	4-10	8.61	0.61	24.6	1.01	0.21	5.65	68.8	11.3	20.0
S-1593	155B	Btky	10-18	8.52	0.65	26.6	1.08	0.24	5.79	66.3	11.3	22.5
S-1594	155B	Cky	18-27	8.57	1.05	26.6	1.47	0.34	8.92	68.8	10.0	21.3
S-1595	155B	Cky	27-44	7.99	4.13	27.6	17.1	4.57	24.4	71.3	11.3	17.5
S-1556	324B	A, Bt	0-8	7.39	0.43	33.9	1.57	0.29	2.22	50.0	22.5	27.5
S-1557	324B	Btkn, 2Btk	8-21	7.35	1.00	43.7	1.92	0.44	6.79	45.0	17.5	37.5
S-1558	324B	C	21-32	7.40	1.06	33.1	1.72	0.46	7.35	68.8	6.3	25.0
S-1545	329B	A, Bt	0-9	7.71	0.71	36.9	3.21	0.66	2.61	52.5	17.5	30.0
S-1546	329B	Btk, not calcitic	9-16	7.56	0.68	36.4	1.69	0.35	4.44	55.0	12.5	32.5

Benally Series Additional Laboratory Data for Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S%	Pyr Sulfur %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1570R	122B	A, B, Bk	0-22	SCL	3.267	0.040	.	.	.	1.24	32.7
S-1570	122B	A, B, Bk	0-22	SCL	3.267	0.040	.	.	.	1.25	32.7
S-1571	122B	By	22-42	SiL	1.921	0.322	.	.	.	10.0	19.2
S-1564	127B	A, Btn	0-12	SCL	3.267	0.033	.	.	.	1.03	32.7
S-1565	127B	C	12-52	SCL	4.517	0.097	.	.	.	3.02	45.2
S-1632	138B	A	0-4	SL	3.075	0.035	.	.	.	1.09	30.7
S-1633	138B	Btn	4-12	SL	3.748	0.046	.	.	.	1.43	37.5
S-1634	138B	Btk, Btky	12-24	SCL	4.421	0.727	.	.	.	22.7	44.2
S-1635	138B	C	24-48	SCL	7.305	0.333	.	.	.	10.4	73.1
S-1629	141B	A	0-15	SL/SCL	3.555	0.037	.	.	.	1.15	35.6
S-1630R	141B	Btnkb	15-24	SCL	3.555	0.042	.	.	.	1.30	35.6
S-1630	141B	C	15-24	SCL	3.555	0.044	.	.	.	1.39	35.6
S-1631	141B	Cb	24-60	SCL	3.748	0.130	.	.	.	4.06	37.5
S-1591	155B	A	0-4	SL	3.073	0.046	.	.	.	1.45	30.7
S-1592	155B	Bt	4-10	SL/SCL	5.767	0.039	.	.	.	1.23	57.7
S-1593	155B	Btky	10-18	SCL	4.228	0.051	.	.	.	1.58	42.3
S-1594	155B	Cky	18-27	SCL	4.324	0.067	.	.	.	2.09	43.2
S-1595	155B	Cky	27-44	SL	0.768	0.072	.	.	.	2.23	7.68
S-1556	324B	A, Bt	0-8	SCL	2.978	0.040	.	.	.	1.25	29.8
S-1557	324B	Btkn, 2Btk	8-21	CL/SC	3.459	0.048	.	.	.	1.50	34.6
S-1558	324B	C	21-32	SCL	2.305	0.037	.	.	.	1.16	23.1
S-1545	329B	A, Bt	0-9	SCL	4.036	0.040	.	.	.	1.26	40.4
S-1546	329B	Btk, not calcitic	9-16	SCL	10.57	0.040	.	.	.	1.24	106

Benally Series Additional Laboratory Data for Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1570R	122B	A, B, Bk	0-22	31.4	.	.	1.10	0.375	.	<0.015
S-1570	122B	A, B, Bk	0-22	31.4	.	.	0.95	0.425	.	<0.015
S-1571	122B	By	22-42	9.2	.	.	2.55	0.925	.	0.036
S-1564	127B	A, Btn	0-12	31.6	.	.	0.85	0.250	.	<0.015
S-1565	127B	C	12-52	42.1	.	.	1.85	0.375	.	<0.015
S-1632	138B	A	0-4	29.7	.	.	0.95	0.300	.	<0.015
S-1633	138B	Btn	4-12	36.0	.	.	0.90	0.400	.	<0.015
S-1634	138B	Btk, Btky	12-24	21.5	.	.	1.15	0.725	.	0.024
S-1635	138B	C	24-48	62.6	.	.	1.25	0.700	.	0.041
S-1629	141B	A	0-15	34.4	.	.	<0.50	0.300	.	<0.015
S-1630R	141B	Btnkb	15-24	34.3	.	.	0.90	0.425	.	<0.015
S-1630	141B	C	15-24	34.2	.	.	0.85	0.400	.	<0.015
S-1631	141B	Cb	24-60	33.4	.	.	1.30	0.450	.	0.018
S-1591	155B	A	0-4	29.3	.	.	0.75	0.350	.	<0.015
S-1592	155B	Bt	4-10	56.4	.	.	0.70	0.400	.	<0.015
S-1593	155B	Btky	10-18	40.7	.	.	0.80	0.450	.	<0.015
S-1594	155B	Cky	18-27	41.2	.	.	1.15	0.525	.	<0.015
S-1595	155B	Cky	27-44	5.4	.	.	1.50	0.475	.	0.021
S-1556	324B	A, Bt	0-8	28.5	.	.	0.80	<0.15	.	<0.015
S-1557	324B	Btkn, 2Btk	8-21	33.1	.	.	1.30	0.350	.	<0.015
S-1558	324B	C	21-32	21.9	.	.	1.55	0.275	.	<0.015
S-1545	329B	A, Bt	0-9	39.1	.	.	0.90	<0.15	.	<0.015
S-1546	329B	Btk, not calcitic	9-16	104	.	.	0.80	0.275	.	<0.015

Blancot Series

The soils in the Blancot series are classified as Fine-loamy, mixed, superactive, mesic Typic Haplargids. These deep well drained soils are in upland valleys and on alluvial fans. The soils formed in alluvium derived from sandstone and shale.

Typifying Pedon: Blancot sandy loam, 0 to 5 percent slopes. Location is in Area 5, site A5-5.

A- 0 to 3 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; weak, a fine granular structure parting to weak fine subangular blocky; soft, slightly sticky and slightly plastic; slightly effervescent; mildly alkaline; clear smooth boundary.

Bt_1- 3 to 10 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, sticky and plastic; thin clay films; strongly effervescent; moderately alkaline; clear smooth boundary.

Btk- 10 to 21 inches; brown (10YR 5/3) sandy clay loam, yellowish brown (10YR 5/4) moist; strong medium prismatic structure; very hard, very sticky and plastic; thin clay films; strongly effervescent; moderately alkaline; clear smooth boundary.

Ck- 21 to 46 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, slightly sticky and plastic; strongly effervescent; mildly alkaline; clear smooth boundary.

C- 46 to 60 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, slightly sticky and plastic; strongly effervescent; mildly alkaline; clear smooth boundary.

The control section averages 18 to 35 percent clay. The soil is mildly to strongly alkaline. The A horizon has a hue of 10YR or 2.5Y. It is heavy sandy loam, loam, sandy clay loam or clay loam. The C horizon has a hue of 10YR or 2.5 Y. It is sandy loam, loam, sandy clay loam or clay loam.

The range of topdressing depth is 10 to 91 inches. The limiting factors for topdressing are dry consistence and bedrock. The Blancot series was described at 51 sites in the survey area.

Blancot Series Typifying Pedon Laboratory Data

GAL #	Sample Site	Sample Depth (in)	Soil Horizon	pH s.u.	EC mmho/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
S-1073	A5-5	0-3	A	8.21	0.91	38.7	0.63	0.08	8.66	14.5	46.3	20.0	33.8
S-1074	A5-5	3-10	Bt	8.47	1.52	59.0	0.61	0.07	14.6	25.0	43.8	17.5	38.8
S-1075	A5-5	10-21	Btk	7.94	8.33	51.1	18.5	1.36	70.0	22.2	41.3	17.5	41.3
S-1076	A5-5	21-46	Ck	8.02	5.31	50.3	7.68	0.85	46.5	22.5	51.3	15.0	33.8
S-1077	A5-5	46-50	C	8.09	6.54	41.3	13.0	1.65	56.5	20.9	61.3	12.5	26.3

GAL#	Sample Site	Sample Depth (in)	Soil Horizon	Caco3 %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn
S-1073	A5-5	0-3	A	2.930	0.026	.	.	.	0.80	29.3	28.5	.	.
S-1074	A5-5	3-10	Bt	3.029	0.032	.	.	.	1.01	30.3	29.3	.	.
S-1075	A5-5	10-21	Btk	2.930	0.301	.	.	.	9.40	29.3	19.9	.	.
S-1076	A5-5	21-46	Ck	2.438	0.083	.	.	.	2.59	24.4	21.8	.	.
S-1077	A5-5	46-50	C	1.958	0.070	.	.	.	2.20	19.6	17.4	.	.

GAL#	Sample Site	Sample Depth (in)	Soil Horizon	Boron ppm	Tot Se ppm	Ab-Dtpa Se ppm	Sol Se ppm
S-1073	A5-5	0-3	A	<0.50	<0.15	.	0.017
S-1074	A5-5	3-10	Bt	<0.50	0.300	.	0.024
S-1075	A5-5	10-21	Btk	<0.50	0.300	.	0.020
S-1076	A5-5	21-46	Ck	<0.50	0.275	.	0.024
S-1077	A5-5	46-50	C	<0.50	<0.15	.	0.032

Chipeta Series

The soils in the Chipeta series are classified as Clayey, mixed, active, calcareous, mesic, shallow Typic Torriorthents. These shallow, well-drained, slowly permeable soils formed in residuum and alluvium derived primarily from carbonaceous shale. Chipeta soils are on upland pediments and hills.

Typifying Pedon: Chipeta clay loam, 0 to 10 percent slopes. Location is in Area 4 South Drill Site #J at 1,981,752 ft north and 299,068 ft east (New Mexico West, State Plane Coordinates).

AC- 0 to 8 inches; very dark grayish brown (10YR 3/2) moist, clay loam; weak platy structure, slightly firm; non-effervescent; non-saline; moderately alkaline (pH 7.9).

Byb- 8 to 26 inches; very dark grayish brown (10YR 3/2) moist, clay; weak sub-angular blocky structure; very hard; non-effervescent; moderately saline; slightly alkaline (pH 7.5).

Cdy- 26 to 68 inches; very dark grayish brown (10YR 3/2) moist, clay; massive structure; very hard; non-effervescent; moderately saline; slightly alkaline (pH 7.5).

2C- 68 to 80 inches; black (10YR 2/1) moist, loam; massive structure; slightly hard; non-effervescent; moderately saline; very strongly acid (pH 4.7).

2Cr- 80 + inches; carbonaceous shale.

Range in Characteristics

Topdressing depth: 0 to 26 inches.

Reaction: Very strongly acid to moderately alkaline.

Salinity: Non-saline to moderately saline.

Sodicity: SAR ranges from 6 to 13 or more.

Depth to paralithic contact: 5 to 20 or more inches.

Limiting factors for topdressing are SAR, texture, and depth to bedrock.

Chipeta Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S01479	4 S	DH-J	AC	0-8	7.9	1.18	40	3.9	0.4	8.5	6	39	25	36	CL
0398S01480	4 S	DH-J	Btyb	8-26	7.5	8.06	51	47	3	57	11	29	28	43	C
0398S01481	4 S	DH-J	Cdy	26-68	7.5	8.7	54	49	3.9	60	12	16	29	55	C
0398S01482	4 S	DH-J	2C	68-80	4.7	10	63	69	8.6	55	9	49	31	20	L

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S01479	4 S	DH-J	AC	0-8	5.6	0.03	0.94	56	54.7	0	0	0	0
0398S01480	4 S	DH-J	Btyb	8-26	5.7	0.14	4.4	57	52.3	0	0	0	0
0398S01481	4 S	DH-J	Cdy	26-68	4.9	0.43	13	51	37.5	0	0	0	0
0398S01482	4 S	DH-J	2C	68-80	0.21	3.43	110	4	-103.4	3.4	0.04	0.04	1.2

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01479	4 S	DH-J	AC	0-8	0	0	0.3	0
0398S01480	4 S	DH-J	Btyb	8-26	0	0	0.35	0
0398S01481	4 S	DH-J	Cdy	26-68	0	0	0.4	0.02
0398S01482	4 S	DH-J	2C	68-80	2.5	0.2	5	0.16

Doak Series

The soils in the Doak series are classified as fine-loamy, mixed, active, mesic Typic Haplargids. These deep well drained soils are on mesas, plateaus, and intermediate terraces. The soils formed in alluvial and eolian deposits derived from sandstone and shale.

Typifying Pedon: Doak sandy clay loam, 0 to 5 percent slopes. Pedon description taken from Shiprock Survey, Soil Conservation Service, 1980.

A- 0 to 5 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; slightly hard, sticky and plastic; noneffervescent; mildly alkaline; clear smooth boundary.

Bt_1- 5 to 29 inches; yellowish brown (10YR 5/4) heavy sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, sticky and plastic; thin clay films on ped faces; noneffervescent; mildly alkaline; clear smooth boundary.

Bt_2- 29 to 50 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; very hard, sticky and plastic; thin clay films on ped faces; disseminated calcium carbonate; strongly effervescent; mildly alkaline; clear smooth boundary.

Btk- 50 to 60 inches, very pale brown (10YR 7/3) sandy clay loam, very pale brown (10YR 7/3) moist; moderate medium subangular blocky structure; hard to very hard, sticky and plastic; filaments of calcium carbonate; violently effervescent; moderately alkaline; gradual smooth boundary.

C- 60 to 68 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; hard to very hard, slightly sticky and slightly plastic; disseminated calcium carbonate; strongly effervescent; moderately alkaline.

The solum ranges from 18 to 35 inches thick and depth to calcareous material ranges from 15 to 30 inches. The A horizon has a hue of 10YR to 7.5YR. It is a sandy loam or sandy clay loam, and ranges from 27 to 35 percent clay. Reaction ranges from moderately to strongly alkaline. The C horizon has a hue of 7.5YR to 10YR. It is loam, sandy clay loam, clay loam. Below 40 inches the texture may vary from loamy sand to clay. The range of topdressing depth is 7 to 60 inches. The limiting factors for topdressing are dry consistence and bedrock.

Doak Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00540	15	Bk1	19-30	7.6	0.47	28	1.83	0.18	2.79	3	26	56	18	SIL
0398S00538	15	Bk2	30-46	8	0.53	27	1.09	0.13	4.84	6	71	12	17	SL
0398S00522	17	A	0-3	7.5	0.48	26	3.26	0.31	0.71	1	74	12	14	SL
0398S00534	17	Bt1	3-18	7.5	0.35	29	1.37	0.16	1.85	2	76	5	19	SL
0398S00504	17	BC	18-38	7.7	0.78	27	1.2	0.15	4.82	6	81	7	12	SL
0398S00532	17	C	38-62	7.6	1.24	27	2.08	0.66	7.57	6	86	2	12	LS
0398S00511	19	A	0-2	7.4	0.36	27	1.81	0.27	1.55	2	61	17	22	SCL
0398S00513	19	Bt	2-17	7.5	0.72	40	2.14	0.4	5.72	5	54	10	36	SC
0398S00512	19	Btk	17-29	7.3	2.1	36	5.79	0.78	15	8	69	7	24	SCL
0398S00515	19	Ck	29-60	7.3	2.44	30	6.68	1.15	15.5	8	76	7	17	SL
0398S00553	33	A	0-5	7.2	0.42	25	4.81	0.21	1.09	1	71	11	18	SL
0398S00554	33	2Btk	5-14	7	2.05	29	26.4	1.61	3.61	1	71	9	20	SCL
0398S00555	33	2Bk	14-37	7.3	4.86	33	26.7	7.38	34.3	8	79	5	16	SL
0398S00556	33	2Ck	37-60	7.4	8.23	33	29.7	15.5	62.8	13	71	11	18	SL
0398S00809	211	A	0-6	7.3	1.62	35	9.8	1.5	20	8	53	19	28	SCL
0398S00810	211	Bt	6-24	7.1	0.55	33	2.6	0.47	3.3	3	60	14	26	SCL
0398S00811	211	Btb	24-41	7.2	0.8	39	1.8	0.4	6.2	6	55	15	30	SCL
0398S00812	211	Ck	41-60	7.2	1.98	32	7.8	1.3	11	5	73	9	18	SL
0398S00817	227	A	0-7	7.4	0.84	29	4	0.58	5.6	4	65	15	20	SCL
0398S00818	227	Bt1	7-18	7	2.67	33	31	4.4	8.4	2	58	17	25	SCL
0398S00819	227	Bt2	18-40	7.1	1.26	29	10	1.9	4.8	2	73	9	18	SL
0398S00820	227	Btb	40-60	6.9	1.51	26	13	2.9	2.5	1	78	4	18	SL
0398S00957	273	Btkb	36-49	7.3	0.86	33	4.0	0.74	2.9	1.9	68	8	24	SCL
0398S00974	322	2Bk	21-32	8.2	1.07	44	1.2	0.29	11	13	60	20	20	SCL
0398S01454	395	2Btk	15-29	7.7	1.01	33	3.2	0.48	6.7	5	74	6	20	SCL
0398S02041	531	A	0-5	7.6	1.04	33	4.5	0.9	4.7	3	63	18	19	SL
0398S02042	531	Bt	5-21	7.4	3.18	41	21	2.5	22	6	48	26	26	SCL
0398S02043	531	Bky	21-42	7.3	7.2	43	54	6.5	40	7	38	32	30	CL
0398S02048	534	A	0-4	8.1	4.01	37	3.1	0.81	21	15	59	23	18	SL
0398S02049	534	Bt	4-23	7.4	5.01	40	22	3.7	26	7	46	31	23	L
0398S02050	534	C	23-60	7.5	5.21	35	14	3.2	35	12	57	22	21	SCL

Doak Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00540	15	Bk1	19-30	14	0.01	0.31	106	105.8	.	.	.	.
0398S00538	15	Bk2	30-46	11	0.01	0.31	90	90.1	.	.	.	.
0398S00522	17	A	0-3	2.1	0.02	0.62	15	14.3	.	.	.	.
0398S00534	17	Bt1	3-18	2.1	0.01	0.31	17	16.8	.	.	.	.
0398S00504	17	BC	18-38	2.4	0.01	0.31	15	15.2	.	.	.	.
0398S00532	17	C	38-62	1.8	0.02	0.62	13	12.8	.	.	.	.
0398S00511	19	A	0-2	2.9	0.04	1.3	28	26.8	.	.	.	.
0398S00513	19	Bt	2-17	3.9	0.03	0.94	33	32.3	.	.	.	.
0398S00512	19	Btk	17-29	1.4	0.03	0.94	10	9	.	.	.	.
0398S00515	19	Ck	29-60	2.3	0.02	0.62	15	14.9	.	.	.	.
0398S00553	33	A	0-5	5.4	0.03	0.94	62	61.2	.	.	.	.
0398S00554	33	2Btk	5-14	8.7	0.05	1.6	94	92.8	.	.	.	.
0398S00555	33	2Bk	14-37	3.1	0.38	12	40	28.5	.	.	.	.
0398S00556	33	2Ck	37-60	5.2	0.32	10	61	50.7	.	.	.	.
0398S00809	211	A	0-6	3	0.04	1.3	26	25.1	.	.	.	.
0398S00810	211	Bt	6-24	2.3	0.03	0.94	20	19.4	.	.	.	.
0398S00811	211	Btb	24-41	2.4	0.04	1.3	20	18.5	.	.	.	.
0398S00812	211	Ck	41-60	2.3	0.03	0.94	17	16.5	.	.	.	.
0398S00817	227	A	0-7	3.3	0.02	0.62	25	24.9	.	.	.	.
0398S00818	227	Bt1	7-18	4.3	0.05	1.6	37	35.9	.	.	.	.
0398S00819	227	Bt2	18-40	3.5	0.03	0.94	23	21.9	.	.	.	.
0398S00820	227	Btb	40-60	2.1	0.02	0.62	11	10.4	.	.	.	.
0398S00957	273	Btkb	36-49	3.1	0.01	0.31	24	24.1	.	.	.	.
0398S00974	322	2Bk	21-32	14	0.01	0.31	105	104.3	.	.	.	.
0398S01454	395	2Btk	15-29	7.3	0.03	0.94	52	50.7	0	0	0	0
0398S02041	531	A	0-5	5.9	0.03	0.94	51	50.4	.	.	.	.
0398S02042	531	Bt	5-21	5.5	0.08	2.5	56	53.9	.	.	.	.
0398S02043	531	Bky	21-42	3.7	0.12	3.8	36	31.9	.	.	.	.
0398S02048	534	A	0-4	4.6	0.03	0.94	42	40.7	.	.	.	.
0398S02049	534	Bt	4-23	6.1	0.03	0.94	60	58.6	.	.	.	.
0398S02050	534	C	23-60	6.1	0.03	0.94	60	59.1	.	.	.	.

Doak Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00540	15	Bk1	19-30	.	0	0	0
0398S00538	15	Bk2	30-46	.	0	0	0
0398S00522	17	A	0-3	.	0	0	0
0398S00534	17	Bt1	3-18	.	0	0	0
0398S00504	17	BC	18-38	.	0	0	0
0398S00532	17	C	38-62	.	0	0	0
0398S00511	19	A	0-2	.	0	0.3	0
0398S00513	19	Bt	2-17	.	0	0.3	0
0398S00512	19	Btk	17-29	.	0	0	0
0398S00515	19	Ck	29-60	.	0	0	0
0398S00553	33	A	0-5	.	0	0.4	0
0398S00554	33	2Btk	5-14	.	0	0	0
0398S00555	33	2Bk	14-37	.	0.2	0	0
0398S00556	33	2Ck	37-60	.	0.6	0.25	0.04
0398S00809	211	A	0-6	.	0	0.3	0
0398S00810	211	Bt	6-24	.	0	0.35	0
0398S00811	211	Btb	24-41	.	0	0.3	0
0398S00812	211	Ck	41-60	.	0	0	0
0398S00817	227	A	0-7	.	0	0	0
0398S00818	227	Bt1	7-18	.	0	0.25	0
0398S00819	227	Bt2	18-40	.	0	0	0
0398S00820	227	Btb	40-60	.	0	0	0
0398S00957	273	Btkb	36-49	.	0	0	0
0398S00974	322	2Bk	21-32	.	0	0	0
0398S01454	395	2Btk	15-29	0	0	0.25	0
0398S02041	531	A	0-5	.	0.4	0.25	0
0398S02042	531	Bt	5-21	.	1.1	0.55	0
0398S02043	531	Bky	21-42	.	0.5	0.35	0.04
0398S02048	534	A	0-4	.	1	0	0
0398S02049	534	Bt	4-23	.	0.4	0.35	0
0398S02050	534	C	23-60	.	0.4	0.35	0.04

Doak Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1538	15B	A	0-4	7.41	1.44	21.7	9.73	1.68	3.53	72.5	12.5	15.0
S-1519	15B	Btk1	4-14	7.34	0.61	30.0	1.07	0.24	4.61	72.5	7.5	20.0
S-1520	15B	Btk2	14-24	7.03	5.82	43.6	21.8	6.51	33.1	37.5	25.0	37.5
S-1520R	15B	Btk2	14-24	7.02	5.84	42.5	21.7	6.48	33.1	37.5	25.0	37.5
S-1521	15B	By	24-36	6.83	5.80	29.2	21.6	7.02	31.6	80.0	2.5	17.5
S-1522	15B	C	36-60	7.31	3.19	28.8	9.28	2.88	19.3	90.0	0.0	10.0
S-1566	110B	A	0-4	8.10	0.59	25.0	3.89	0.60	1.19	78.8	11.3	10.0
S-1567	110B	Bt1	4-24	8.02	0.52	33.7	2.12	0.26	2.94	76.3	8.8	15.0
S-1568	110B	Bk	24-36	8.18	0.96	40.4	1.70	0.30	7.18	43.8	33.8	22.5
S-1619	96B	A	0-4	8.23	0.60	27.3	3.72	0.88	0.97	73.8	12.5	13.8
S-1620R	96B	Bt	4-8	8.06	0.40	26.7	2.16	0.41	1.14	68.8	13.8	17.5
S-1620	96B	Bt	4-8	8.08	0.42	27.6	2.15	0.41	1.11	67.5	13.8	18.8
S-1621	96B	Btk	8-18	8.21	0.45	29.1	1.63	0.39	2.56	58.8	18.8	22.5
S-1622	96B	Btk	18-45	7.73	4.67	33.5	22.5	9.38	23.1	56.3	18.8	25.0
S-1623	96B	C	45-60	8.00	4.29	28.1	15.4	8.31	20.1	73.8	11.3	15.0

Doak Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1538	15B	A	0-4	SL	3.171	0.032	.	.	.	0.98	31.7
S-1519	15B	Btk1	4-14	SL/SCL	4.901	0.028	.	.	.	0.88	49.0
S-1520	15B	Btk2	14-24	CL	4.613	0.575	.	.	.	18.0	46.1
S-1520R	15B	Btk2	14-24	CL	4.613	0.600	.	.	.	18.7	46.1
S-1521	15B	By	24-36	SL	0.383	0.396	0.379	0.001	0.016	12.4	3.83
S-1522	15B	C	36-60	S/LS	0.383	0.031	.	.	.	0.96	3.83
S-1566	110B	A	0-4	SL	2.882	0.030	.	.	.	0.94	28.8
S-1567	110B	Bt1	4-24	SL	4.323	0.033	.	.	.	1.02	43.2
S-1568	110B	Bk	24-36	L	16.43	0.042	.	.	.	1.31	164
S-1619	96B	A	0-4	SL	2.401	0.044	.	.	.	1.37	24.0
S-1620R	96B	Bt	4-8	SL	4.419	0.042	.	.	.	1.30	44.2
S-1620	96B	Bt	4-8	SL	4.516	0.037	.	.	.	1.17	45.2
S-1621	96B	Btk	8-18	SCL	5.766	0.042	.	.	.	1.32	57.7
S-1622	96B	Btk	18-45	SCL	9.034	0.391	.	.	.	12.2	90.3
S-1623	96B	C	45-60	SL	4.228	0.050	.	.	.	1.55	42.3

Doak Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1538	15B	A	0-4	30.7	.	.	0.80	0.525	.	<0.015
S-1519	15B	Btk1	4-14	48.1	.	.	0.95	<0.15	.	<0.015
S-1520	15B	Btk2	14-24	28.2	.	.	5.45	<0.15	.	<0.015
S-1520R	15B	Btk2	14-24	27.4	.	.	5.75	<0.15	.	<0.015
S-1521	15B	By	24-36	-8.54	0.03	3.80	4.60	<0.15	.	0.023
S-1522	15B	C	36-60	2.88	.	.	1.55	<0.15	.	<0.015
S-1566	110B	A	0-4	27.9	.	.	0.60	<0.15	.	<0.015
S-1567	110B	Bt1	4-24	42.2	.	.	0.65	0.250	.	<0.015
S-1568	110B	Bk	24-36	163	.	.	0.65	<0.15	.	<0.015
S-1619	96B	A	0-4	22.6	.	.	0.50	0.275	.	<0.015
S-1620R	96B	Bt	4-8	42.9	.	.	0.65	0.300	.	<0.015
S-1620	96B	Bt	4-8	44.0	.	.	0.65	0.325	.	<0.015
S-1621	96B	Btk	8-18	56.3	.	.	1.05	0.325	.	<0.015
S-1622	96B	Btk	18-45	78.1	.	.	2.50	1.725	.	<0.015
S-1623	96B	C	45-60	40.7	.	.	1.60	0.375	.	<0.015

Fajada Series

The soils in the Fajada series are classified as Fine-loamy, mixed, superactive, mesic Typic Natrargids. These moderately deep, well drained, sodium affected soils are on mesas, upland valley bottoms, side slopes and alluvial fans. The soils formed in alluvium underlain by weathered shale.

Typifying Pedon: Fajada loam 0 to 8 percent slopes. Location in Area 5, site A5-2.

A- 0 to 3 inches; dark gray (10YR 6/4) sandy loam, dark gray (10YR 4/4) moist; moderate fine granular structure; soft, sticky and plastic; very slightly effervescent; mildly alkaline; abrupt smooth boundary.

Btkn- 3 to 13 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/4) moist; moderate fine prismatic structure; very hard, sticky and plastic; common moderately thick clay films on faces of peds and lining pores; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

Cy- 13 to 22 inches; yellowish brown (10YR 5/6) silty clay, dark yellowish brown (10YR 5/4) moist; weak medium massive structure parting to weak medium subangular blocky; hard to very hard, slightly sticky and nonplastic; common thin clay films bridging sand grains; slightly effervescent; calcium carbonate as few fine irregular masses and seams; very strongly alkaline; clear smooth boundary.

Cr/R- 22 to 30 inches; soft sandstone interbedded with soft shale.

Paralithic contact is at a depth of 20 to 40 inches. The solum is 20 to 30 inches thick. The profile is 25 to 75 percent exchangeable sodium. The A horizon has hue of 10YR or 7.5YR. It has a texture of loamy sand to clay. The Bt horizon can be sandy loam to clay loam and ranges from 18 to 35 percent clay. It has a hue of 2.5 Y to 7.5 YR. The paralithic contact is usually shale.

The range of topdressing depth is 0 to 20 inches. The limiting factor for topdressing is SAR. The Fajada series was described at 104 sites in the survey area. The laboratory data for this series includes the eolian sands that occur on the surface of the soil.

Fajada Series Typifying Pedon Laboratory Data

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/com	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
S-1070	A5-2	A	0-3	8.36	0.38	25.5	0.59	0.13	3.36	5.60	71.3	12.5	16.3
S-1070R	A5-2	A	0-3	8.40	0.40	24.9	0.65	0.14	3.57	5.66	71.3	12.5	16.3
S-1071	A5-2	Btkn	3-13	8.48	1.54	62.4	0.54	0.16	14.8	25.0	13.8	40.0	46.3
S-1072	A5-2	Cy	13-22	7.96	6.70	58.6	16.2	5.96	53.5	16.1	8.8	42.5	48.8

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Class	CaCO3 %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn	A-B Pot tn/1000tn
S-1070	A5-2	A	0-3	SL	2.635	0.026	.	.	.	0.82	26.3	25.5
S-1070R	A5-2	A	0-3	SL	2.536	0.027	.	.	.	0.84	25.4	24.5
S-1071	A5-2	Btkn	3-13	C	4.113	0.052	.	.	.	1.61	41.1	39.5
S-1072	A5-2	Cy	13-22	SiC	1.452	0.685	0.663	0.003	0.019	21.4	14.5	-6.88

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	B ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1070	A5-2	A	0-3	.	.	2.50	<0.15	.	<0.015
S-1070R	A5-2	A	0-3	.	.	<0.50	<0.15	.	<0.015
S-1071	A5-2	Btkn	3-13	.	.	<0.50	0.475	.	0.038
S-1072	A5-2	Cy	13-22	0.09	14.4	2.00	0.35	.	0.029

Fajada Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1466	134B	A	0-2	7.96	1.78	30.9	4.81	0.39	12.7	57.5	23.8	18.8
S-1467	134B	Btn	2-15	7.55	1.20	37.0	1.38	0.13	11.1	62.5	16.3	21.3
S-1468	134B	Btky	15-27	7.40	7.81	44.6	19.8	1.61	67.4	37.5	50.0	12.5
S-1550R	156B	A, AC	0-5	8.14	2.15	29.2	2.22	0.20	17.9	52.5	22.5	25.0
S-1550	156B	A, AC	0-5	8.12	2.13	31.2	2.20	0.20	17.7	52.5	22.5	25.0
S-1551	156B	2Btnky	5-12	7.79	9.09	73.2	13.9	0.84	80.0	35.0	52.5	12.5
S-1552	156B	2Btky	12-22	7.69	14.40	82.9	17.2	1.91	132	35.0	52.5	12.5
S-1544	320B	A, Bt	0-12	7.50	0.99	27.7	1.95	0.29	6.87	65.0	15.0	20.0
S-1539	321B	A	0-5	7.68	0.73	28.1	1.49	0.28	4.83	57.5	17.5	25.0
S-1540R	321B	Bt	5-12	7.42	0.44	35.7	0.97	0.16	3.24	51.3	13.8	35.0
S-1540	321B	Bt	5-12	7.45	0.44	34.1	0.97	0.16	3.26	52.5	12.5	35.0
S-1541	321B	Btk1	12-18	7.74	1.40	47.5	3.25	0.70	9.26	42.5	20.0	37.5
S-1542	321B	Btk2	18-36	7.31	3.31	54.1	17.0	3.93	15.66	22.5	37.5	40.0

Fajada Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1466	134B	A	0-2	SL	3.845	0.034	.	.	.	1.06	38.5
S-1467	134B	Btn	2-15	SCL	3.526	0.036	.	.	.	1.12	35.3
S-1468	134B	Btky	15-27	SiL	2.804	1.987	1.950	0.004	0.033	62.1	28.0
S-1550R	156B	A, AC	0-5	SCL	3.748	0.061	.	.	.	1.89	37.5
S-1550	156B	A, AC	0-5	SCL	3.651	0.069	.	.	.	2.16	36.5
S-1551	156B	2Btnky	5-12	SiL	3.844	1.488	.	.	.	46.5	38.4
S-1552	156B	2Btky	12-22	SiL	2.978	1.983	1.932	0.004	0.047	61.9	29.8
S-1544	320B	A, Bt	0-12	SL/SCL	5.381	0.033	.	.	.	1.03	53.8
S-1539	321B	A	0-5	SCL	3.363	0.034	.	.	.	1.07	33.6
S-1540R	321B	Bt	5-12	SCL/SC	5.285	0.031	.	.	.	0.97	52.8
S-1540	321B	Bt	5-12	SCL/SC	5.285	0.032	.	.	.	1.01	52.8
S-1541	321B	Btk1	12-18	CL	6.823	0.059	.	.	.	1.84	68.2
S-1542	321B	Btk2	18-36	CL/C	4.709	0.114	.	.	.	3.55	47.1

Fajada Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1466	134B	A	0-2	37.4	.	.	1.00	<0.15	.	<0.015
S-1467	134B	Btn	2-15	34.1	.	.	0.50	<0.15	.	<0.015
S-1468	134B	Btky	15-27	-34.0	0.12	27.92	1.20	0.275	.	<0.015
S-1550R	156B	A, AC	0-5	35.6	.	.	0.90	0.300	.	<0.015
S-1550	156B	A, AC	0-5	34.4	.	.	0.85	0.325	.	<0.015
S-1551	156B	2Btnky	5-12	-8.0	.	.	0.70	0.475	.	<0.015
S-1552	156B	2Btky	12-22	-32.2	0.12	29.66	1.00	0.425	.	0.017
S-1544	320B	A, Bt	0-12	52.8	.	.	0.80	0.250	.	<0.015
S-1539	321B	A	0-5	32.6	.	.	0.85	0.250	.	<0.015
S-1540R	321B	Bt	5-12	51.9	.	.	1.65	0.375	.	<0.015
S-1540	321B	Bt	5-12	51.8	.	.	1.90	0.325	.	<0.015
S-1541	321B	Btk1	12-18	66.4	.	.	1.80	0.475	.	<0.015
S-1542	321B	Btk2	18-36	43.5	.	.	2.80	0.500	.	<0.015

Fajada Series Additional Laboratory Data Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	pH	EC	Sat	Ca	Mg	Na	SAR	Sand	Silt	Clay
				s.u.	mmhos/com	%	meq/l	meq/l	meq/l		%	%	%
S-1081	A5-4	A	0-4	8.04	0.57	26.0	1.97	0.29	3.68	3.47	66.3	15.0	18.8
S-1082	A5-4	Btnky	4-14	8.02	6.36	50.8	17.5	1.77	53.1	17.1	21.3	67.5	11.3
S-1083	A5-4	C	14-22	8.06	9.32	53.1	17.3	3.41	81.3	25.3	16.3	72.5	11.3
S-1066	A5-9	A	0-2	8.32	1.39	29.1	1.60	0.15	11.7	12.6	56.3	17.5	26.3
S-1067	A5-9	Btn	2-7	8.58	2.79	43.8	0.98	0.09	24.6	33.7	46.3	20.0	33.8
S-1068	A5-9	Btky	7-12	8.23	12.20	49.1	15.6	0.26	109	38.7	43.8	45.0	11.3
S-1069	A5-9	B/C	12-21	8.35	11.90	54.1	14.6	0.31	107	39.4	43.8	45.0	11.3

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Class	CaCO3	Tot S	Sulfate S	Pyr S	Org S	Acid Pot	Neut Pot	A-B Pot
					%	%	%	%	%	tn/1000tn	tn/1000tn	tn/1000tn
S-1081	A5-4	A	0-4	SL	3.325	0.025	.	.	.	0.79	33.2	32.46
S-1082	A5-4	Btnky	4-14	SiL	4.1134	0.993	.	.	.	31.0	41.1	10.12
S-1083	A5-4	C	14-22	SiL	2.733	2.091	2.061	0.004	0.026	65.3	27.3	-38.0
S-1066	A5-9	A	0-2	SCL	6.381	0.048	.	.	.	1.50	63.8	62.3
S-1067	A5-9	Btn	2-7	SCL	4.311	0.042	.	.	.	1.33	43.1	41.8
S-1068	A5-9	Btky	7-12	L	1.958	3.224	3.198	0.003	0.023	101	19.6	-81.1
S-1069	A5-9	B/C	12-21	L	1.761	2.727	2.697	0.006	0.024	85.2	17.6	-67.6

Fajada Series Additional Laboratory Data Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	B ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1081	A5-4	A	0-4	.	.	<0.50	<0.15	.	<0.015
S-1082	A5-4	Btnky	4-14	.	.	<0.50	0.450	.	0.020
S-1083	A5-4	C	14-22	0.12	27.2	<0.50	0.450	.	0.029
S-1066	A5-9	A	0-2	.	.	<0.50	<0.15	.	<0.015
S-1067	A5-9	Btn	2-7	.	.	<0.50	0.275	.	0.021
S-1068	A5-9	Btky	7-12	0.09	19.5	<0.50	0.575	.	0.110
S-1069	A5-9	B/C	12-21	0.19	17.4	<0.50	0.425	.	0.080

Farb Series

The soils in the Farb series are classified as Loamy, mixed, superactive, calcareous, mesic Lithic Torriorthents. These shallow and very shallow, excessively drained soils formed in residuum, colluvium, and alluvium derived from sandstone and shale. Farb soils are on hills, mesas, escarpments, and breaks.

Typifying Pedon: Farb sandy loam, 0 to 15 percent slopes. Pedon description was taken from Farb series, Soil Conservation Service, 1980.

A- 0 to 7 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; few fine pores; strongly effervescent, carbonates disseminated; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 7 inches thick)

C- 7 to 10 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; soft, friable, nonsticky and nonplastic; common very fine and fine roots; loose; few fine pores; strongly effervescent, carbonates disseminated; moderately alkaline (pH 8.4); abrupt smooth boundary. (3 to 13 inches thick)

R- 10 inches; hard sandstone, with thin lime accumulation at the soil-bedrock contact.

Range in Characteristics

Topdressing depth: 0 to 20 inches.

Reaction: Moderately alkaline.

Salinity: Non-saline.

Depth to paralithic contact: 2 to 20 inches.

Rock Fragments: 0 to 35 percent.

The limiting factors for use as topdressing are depth to bedrock, slope grade, and concentration of coarse fragments.

Farb Series Typifying Pedon Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S05054	795-B	C	0-18	8	0.88	29	2.7	0.46	4.9	3.8	66	14	20	SCL

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S05054	795-B	C	0-18	6.9	0.04	1.3	71	69.7	.	.	.	.

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S05054	795-B	C	0-18	.	0.2	0	0

Fruitland Series

The soils in the Fruitland series are classified as Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torriorthents. These deep and very deep, well drained soils formed in eolian and alluvial sediments derived predominantly from sandstone. Fruitland soils are on stream terraces, valley side slopes, mesas, fan terraces, and alluvial fans.

Typifying Pedon: Fruitland sandy clay loam, 0 to 5 percent slopes. Location is in Area 4 South, site #275 at 1,981,591 ft north and 300,321 ft east (New Mexico West, State Plane Coordinates).

C- 0 to 9 inches; very dark gray (10YR 3/1) moist, sandy clay loam; weak granular parting to massive structure; soft, friable; slightly effervescent; non-saline; neutral (pH 6.6).

2Ck- 9 to 26 inches; yellowish brown (10YR 5/4) sandy loam, yellowish brown (10YR 5/4) moist; weak sub-angular blocky structure; hard; violently effervescent, common, medium, soft, carbonate nodules; very slightly saline; neutral (pH 7.2).

$2C_1$- 26 to 48 inches; dark yellowish brown (10YR 4/5) fine loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard; non-effervescent; slightly saline; neutral (pH 6.8).

$2C_2$- 48 to 63 inches; dark yellowish brown (10YR 4/6) sandy loam, dark yellowish brown (10YR 3/4) moist; massive; hard parting to soft; non-effervescent; slightly saline; strongly acid (pH 5.3).

3Cr- 63 inches; coal.

Range in Characteristics

Topdressing depth: 20 to 60 or more inches.

Reaction: Slightly alkaline or moderately alkaline in the upper part of the profile and strongly acid through strongly alkaline in the lower part of the profile.

Salinity: Non-saline through strongly saline.

Sodicity: Sodium affected horizons typically exist in the lower part of the profile.

Depth to paralithic contact: 43 or more inches.

Coarse fragments: Some strata have as much as 65 percent pebbles and gravels.

The limiting factors for topdressing are SAR, texture, and depth to bedrock.

Fruitland Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00627	4 S	135	Bt	3-10	7.6	0.43	31	1.41	0.14	2.68	3	65	6	29	SCL
0398S00628	4 S	135	Btky1	10-23	7.3	4.43	46	33.7	7	23.1	5	50	27	23	SCL
0398S00629	4 S	135	Btky2	23-44	7.3	7.71	53	53.8	15.2	36.4	6	53	22	25	SCL

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00627	4 S	135	Bt	3-10	4.9	0.03	0.94	39	37.6	.	.	.	.
0398S00628	4 S	135	Btky1	10-23	5.2	0.09	2.8	45	42.1	.	.	.	.
0398S00629	4 S	135	Btky2	23-44	4.3	0.38	12	38	26.4	.	.	.	.

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00627	4 S	135	Bt	3-10	.	0	0	0
0398S00628	4 S	135	Btky1	10-23	.	0.4	0.35	0
0398S00629	4 S	135	Btky2	23-44	.	0.5	0.3	0.15

Fruitvale Series

The soils in the Fruitvale series are classified as Fine-loamy, mixed, active, mesic Typic Haplargids. These deep, well-drained soils formed in alluvium over shale on valley terraces, depressions, and troughs

Typifying Pedon: Fruitvale sandy clay loam, 0 to 5 percent slopes. Location is in Area 4 South, site #135 at 1,983,789 ft north and 295,981 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 3 inches; dark gray (10YR 4/1) moist, sandy clay loam; weak granular structure; soft; very friable; slightly effervescent; non-saline; slightly alkaline (pH 7.6).

Bt- 3 to 10 inches; dark gray (10YR 4/2) moist, sandy clay loam; weak sub-angular blocky structure; slightly hard, slightly friable; strongly effervescent; non-saline; slightly alkaline (pH 7.6).

$Btky_1$- 10 to 23 inches; dark grayish brown (10YR 4/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate sub-angular blocky structure; very hard; few thin clay films on faces of peds and many thin clay films lining pores; strongly effervescent, 5.2 percent calcium carbonate equivalent; very slightly saline; neutral (pH 7.3).

$Btky_2$- 23 to 44 inches; very dark grayish brown (10YR 3/2) sandy clay loam, dark grayish brown (10YR 4/2) moist; strong prismatic structure; very hard; common thin clay films on the faces of peds and common thin clay films lining pores; strongly effervescent, 4.3 percent calcium carbonate equivalent; few fine and very fine crystals of gypsum; slightly saline; neutral (pH 7.3).

Cy- 44 to 61 inches; very dark brown (10YR 2/2) clay loam; massive; hard; common fine crystals and seams of gypsum; strongly effervescent; slightly saline; slightly alkaline.

Range in Characteristics

Topdressing depth: 20 to 60 inches

Reaction: Slightly alkaline

Salinity: Non-saline and very slightly saline in the upper part of the profile, and very slightly saline through moderately saline in the lower part of the profile.

Depth to paralithic contact: 40 to 60 or more inches.

Topdressing availability is limited by depth to bedrock and concentrations of secondary salts and clays.

Fruitvale Series Typifying Pedon Laboratory Data

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00958	275	C	0-9	6.6	1.07	32	9.9	0.76	0.98	0.4	68	9	23	SCL
0398S00959	275	2Ck	9-26	7.2	2.72	28	21	2.2	11	3.2	78	6	16	SL
0398S00960	275	2C1	26-48	6.8	4.40	29	27	5.6	25	6.1	88	2	10	LS
0398S00961	275	2C2	48-60	5.3	5.32	29	26	6.7	29	7.2	79	6	15	SL

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00958	275	C	0-9	5.3	0.05	1.6	40	38.0	.	.	.	.
0398S00959	275	2Ck	9-26	5.3	0.03	0.94	38	37.2	.	.	.	.
0398S00960	275	2C1	26-48	0.81	0.12	3.8	7	3.2	.	.	.	.
0398S00961	275	2C2	48-60	0.31	0.20	6.3	3	-3.7	.	.	.	.

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00958	275	C	0-9	.	0.2	0.30	0
0398S00959	275	2Ck	9-26	.	0	0	0
0398S00960	275	2C1	26-48	.	0	0	0
0398S00961	275	2C2	48-60	.	0	0	0

Fruitvale Series Additional Laboratory Data from Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00509	56	A	0-4	7.3	0.62	30	4.7	0.14	0.91	1	74	9	17	SL
0398S00526	56	Bw	4-13	7.3	2.41	31	30.3	0.66	2.33	1	84	4	12	LS
0398S00507	56	Cy1	13-24	7.2	3.66	32	26.4	1.81	16.7	4	81	5	14	SL
0398S00529	56	Cy2	24-55	8.2	18.4	37	17.2	9.94	193	52	76	7	17	SL
0398S00785	199	AB	0-13	7.6	0.53	29	1.9	0.36	1.5	1	75	10	15	SL
0398S00786	199	C	13-60	7.2	4.44	31	26	3.9	18	5	75	7	18	SL
0398S00822	242	C2	15-42	7.5	0.91	28	2.9	0.64	5.3	4	83	7	10	LS
0398S00823	245	C1	0-19	7.6	0.73	24	2.5	0.38	4.3	4	75	12	13	SL
0398S00824	245	C2	19-38	7.5	7.09	25	20	4.1	56	16	80	7	13	SL
0398S00863	250	2C	47-60	7.2	7.63	38	32	6.8	49	11	51	23	26	SCL
0398S00865	254	AB	0-15	7.4	0.67	27	3.1	0.037	2.2	2	76	13	11	SL
0398S00866	254	C	15-51	7.3	3.33	29	25	2.6	15	4	73	9	18	SL
0398S00870	256	Ck	13-45	7.6	1.40	27	3.2	0.61	12	8	81	4	15	SL
0398S01182	364	Cky	8-27	7.4	5.53	31	22	3.5	44	12	80	5	15	SL
0398S01183	364	Ck	27-60	7.5	7.92	40	21	5.9	65	18	65	17	18	SL
0398S01189	384	C1	0-12	7.7	0.58	26	0.47	0.09	5	9	75	12	13	SL
0398S01190	384	C2	12-28	7.8	0.61	34	0.5	0.58	6.4	9	75	10	15	SL
0398S01191	384	C3	28-43	7.5	5.67	41	19	1.9	44	14	70	12	18	SL
0398S01458	410	Btn	0-5	8.3	0.93	48	2.9	1.3	9.9	7	82	4	14	SL
0398S01459	410	2Bk	5-29	8.3	5.64	34	3.4	1.2	57	38	91	1	8	S
0398S01460	410	2Ck	29-34	8.4	7.11	46	3.5	2.5	77	45	93	1	6	S
0398S01462	413	A	0-8	7.5	0.41	24	2.6	0.27	0.6	1	96	1	3	S
0398S01463	413	C	8-26	7.5	0.29	27	1.3	0.32	1.5	2	78	7	15	SL
0398S01464	413	Btkb	26-50	8.4	1	30	1.3	0.57	10	10	86	4	10	LS
0398S01465	413	2Btnb	50-60	8.2	2.65	47	1.5	0.5	31	31	61	19	20	SCL

Fruitvale Series Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00509	56	A	0-4	3	0.02	0.62	26	25.2	.	.	.	.
0398S00526	56	Bw	4-13	1.6	0.07	2.2	13	10.7	.	.	.	.
0398S00507	56	Cy1	13-24	1.7	0.36	11	13	1.4	.	.	.	.
0398S00529	56	Cy2	24-55	1.8	0.27	8.4	17	8.2	.	.	.	.
0398S00785	199	AB	0-13	3.5	0.02	0.62	32	30.9	0.02	0	0	0
0398S00786	199	C	13-60	3.8	0.02	0.62	33	32.3	0.02	0	0	0
0398S00822	242	C2	15-42	2.2	0.05	1.6	19	17.4	.	.	.	.
0398S00823	245	C1	0-19	2.4	0.02	0.62	20	18.9	.	.	.	.
0398S00824	245	C2	19-38	4.6	0.04	1.3	30	29	.	.	.	.
0398S00863	250	2C	47-60	3.7	0.06	1.9	34	32.4	.	.	.	.
0398S00865	254	AB	0-15	3.1	0.01	0.31	29	28.2	.	.	.	.
0398S00866	254	C	15-51	3.2	0.06	1.9	27	25.6	.	.	.	.
0398S00870	256	Ck	13-45	2.4	0.03	0.94	24	23.1	.	.	.	.
0398S01182	364	Cky	8-27	2.5	0.48	15	20	5.1	.	.	.	.
0398S01183	364	Ck	27-60	6.4	0.08	2.5	51	48.9	.	.	.	.
0398S01189	384	C1	0-12	8.4	0.01	0.31	81	81	.	.	.	.
0398S01190	384	C2	12-28	10	0.01	0.31	104	103.5	.	.	.	.
0398S01191	384	C3	28-43	8.9	0.08	2.5	84	81.1	.	.	.	.
0398S01458	410	Btn	0-5	5.3	0.01	0.31	49	48.9	.	.	.	.
0398S01459	410	2Bk	5-29	2.3	0.03	0.94	15	14.4	.	.	.	.
0398S01460	410	2Ck	29-34	2.9	0.06	1.9	23	21.2	.	.	.	.
0398S01462	413	A	0-8	1.3	0.01	0.31	11	10.2	.	.	.	.
0398S01463	413	C	8-26	1.3	0.01	0.31	11	10.7	.	.	.	.
0398S01464	413	Btkb	26-50	2.9	0.01	0.31	24	23.6	.	.	.	.
0398S01465	413	2Btnb	50-60	6.9	0.03	0.94	65	64	.	.	.	.

Fruitvale Series Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00509	56	A	0-4	.	0	0	0
0398S00526	56	Bw	4-13	.	0	0	0
0398S00507	56	Cy1	13-24	.	0	0	0
0398S00529	56	Cy2	24-55	.	0.5	0	0
0398S00785	199	AB	0-13	0	0	0	0
0398S00786	199	C	13-60	0	0	0	0
0398S00822	242	C2	15-42	.	0	0	0
0398S00823	245	C1	0-19	.	0	0	0
0398S00824	245	C2	19-38	.	0	0	0
0398S00863	250	2C	47-60	.	0	0.25	0
0398S00865	254	AB	0-15	.	0	0	0
0398S00866	254	C	15-51	.	0	0	0
0398S00870	256	Ck	13-45	.	0	0	0
0398S01182	364	Cky	8-27	.	0.4	0.4	0
0398S01183	364	Ck	27-60	.	0.4	0.25	0.07
0398S01189	384	C1	0-12	.	0	0	0
0398S01190	384	C2	12-28	.	0	0	0
0398S01191	384	C3	28-43	.	0	0	0
0398S01458	410	Btn	0-5	.	0	0	0
0398S01459	410	2Bk	5-29	.	0.3	0.25	0.08
0398S01460	410	2Ck	29-34	.	0.5	0.25	0.08
0398S01462	413	A	0-8	.	0	0	0
0398S01463	413	C	8-26	.	0	0	0
0398S01464	413	Btkb	26-50	.	0	0	0
0398S01465	413	2Btnb	50-60	.	0	0	0

Fruitvale Series Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S04447	586	C1	0-19	7.8	1.16	26	1.7	0.26	14	14	81	6	13	SL
0398S04448	586	C2	19-42	8	10	40	19	4.5	97	28	88	5	7	LS
0398S04449	586	C3	42-60	8.1	7.95	34	12	4.8	90	31	90	4	6	S
0398S04516	595	Ck	10-35	7.9	1.96	23	1.7	0.2	17	18	85	5	10	LS
0398S04517	595	C	35-60	8.2	2.36	25	0.95	0.25	22	28	94	2	4	S
0398S04610	634	2Btk	8-19	7.8	0.55	22	1.8	0.21	4.3	4.3	76	6	18	SL
0398S04611	636	C	0-15	7.6	0.37	21	1.8	0.15	1.8	1.8	82	6	12	SL
0398S04612	636	Ck	15-23	7.9	0.92	26	0.86	0.15	7.8	11	78	8	14	SL
0398S04613	636	C	23-60	8.3	0.69	23	0.44	0.34	6.1	9.8	89	2	9	LS
0398S04547	663	Bw	3-18	7.9	0.51	21	0.7	0.05	3.3	5.4	86	4	10	LS
0398S04548	663	Ck	18-37	7.6	5.77	30	16	1.55	56	19	76	6	18	SL
0398S04549	663	C	37-60	7.7	5.35	23	13	1.45	51	19	92	3	5	S
0398S04623	669	Bk	4-19	8.1	0.85	33	0.64	0.15	8.6	14	82	6	12	SL
0398S04624	669	Ck	19-60	8.2	3.3	37	1.5	0.5	30	30	90	2	8	S
0398S04638	691	Bw	0-14	8	8.3	30	21	2.6	71	21	76	12	12	SL
0398S04639	691	2CK	14-43	8.8	13.2	32	19	9.8	240	62	76	11	13	SL
0398S04640	691	2C	43-60	8.7	15.7	27	18	8.2	170	48	88	3	9	LS
0398S04703	698	2Ck	17-42	7.8	6.23	27	23	3.1	51	14	89	5	6	S

Fruitvale Series Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S04447	586	C1	0-19	2.7	0.03	0.94	29	28	.	.	.	.
0398S04448	586	C2	19-42	2.1	0.17	5.3	22	16.8	.	.	.	.
0398S04449	586	C3	42-60	2.6	0.12	3.8	27	23.1	.	.	.	.
0398S04516	595	Ck	10-35	5.4	0.04	1.3	51	49.4	.	.	.	.
0398S04517	595	C	35-60	2.6	0.04	1.3	26	24.7	.	.	.	.
0398S04610	634	2Btk	8-19	10	0.02	0.62	98	97.1	.	.	.	.
0398S04611	636	C	0-15	3	0.01	0.31	30	30.1	.	.	.	.
0398S04612	636	Ck	15-23	4.6	0.02	0.62	47	46.4	.	.	.	.
0398S04613	636	C	23-60	2.1	0.03	0.94	21	20.2	.	.	.	.
0398S04547	663	Bw	3-18	3.3	0.01	0.31	25	24.5	.	.	.	.
0398S04548	663	Ck	18-37	6.1	0.07	2.2	60	57.9	.	.	.	.
0398S04549	663	C	37-60	3.2	0.06	1.9	27	24.7	.	.	.	.
0398S04623	669	Bk	4-19	3	0.01	0.31	27	27.2	.	.	.	.
0398S04624	669	Ck	19-60	1.3	0.03	0.94	12	10.8	.	.	.	.
0398S04638	691	Bw	0-14	1.9	0.08	2.5	16	13.4	.	.	.	.
0398S04639	691	2CK	14-43	2.1	0.25	7.8	19	11.5	.	.	.	.
0398S04640	691	2C	43-60	1.7	0.17	5.3	16	10.6	.	.	.	.
0398S04703	698	2Ck	17-42	1.6	0.15	4.7	13	8.6	.	.	.	.

Fruitvale Series Additional Laboratory Data from Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04447	586	C1	0-19	.	0.3	0	0
0398S04448	586	C2	19-42	.	1.5	0	0.04
0398S04449	586	C3	42-60	.	0.4	0	0.13
0398S04516	595	Ck	10-35	.	0	0	0
0398S04517	595	C	35-60	.	0.3	0	0
0398S04610	634	2Btk	8-19	.	0.2	0	0
0398S04611	636	C	0-15	.	0	0	0
0398S04612	636	Ck	15-23	.	0.2	0	0
0398S04613	636	C	23-60	.	0	0	0
0398S04547	663	Bw	3-18	.	0	0	0
0398S04548	663	Ck	18-37	.	0.6	0.3	0
0398S04549	663	C	37-60	.	0.3	0	0
0398S04623	669	Bk	4-19	.	0.4	0	0
0398S04624	669	Ck	19-60	.	0.9	0	0
0398S04638	691	Bw	0-14	.	0.4	0.25	0
0398S04639	691	2CK	14-43	.	1.2	0.25	0.09
0398S04640	691	2C	43-60	.	1.5	0.25	0.07
0398S04703	698	2Ck	17-42	.	0.9	0.25	0

Fruitvale Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meqll	Sand %	Silt %	Clay %
S-1588	26B	A, C1, C2	0-60	8.04	1.15	27.6	7.53	1.70	3.13	68.8	15.0	16.3

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1588	26B	A, C1, C2	0-60	SL	4.517	0.044	.	.	.	1.36	45.2

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB- DTPA Se ppm	Sol Se ppm
S-1588	26B	A, C1, C2	0-60	43.8	.	.	0.55	0.275	.	<0.015

Gilco Series

The soils in the Gilco series are classified as Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents. These very deep, well-drained or moderately well drained, moderately permeable soils formed in mixed alluvium on flood plains and terraces.

Typifying Pedon: Gilco sandy loam, 0 to 3 percent slopes. Location is in Area 4 South, site #200 at 1,994,979 ft north and 298,371 ft east (New Mexico West, State Plane Coordinates).

AC- 0 to 10 inches, brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 3/4) moist; weak granular structure parting to massive; non-effervescent; very slightly saline; slightly alkaline (pH 7.5).

C- 10 to 29 inches; light olive brown (2.5Y 5/4) stratified clay loam, silt loam, loam, fine sandy loam, and loamy fine sand, olive brown (2.5Y 4/4) moist; massive; slightly friable; non-effervescent; non-saline; slightly alkaline (pH 7.5).

C_2- 29 to 60 inches; light olive brown (2.5Y 5/4) loamy fine sand, olive brown (2.5Y 4/4) moist; massive; soft; non-effervescent; non-saline; slightly alkaline (pH 7.6).

Range in Characteristics

Topdressing depth: 16 to 60 or more inches.

Reaction: Slightly alkaline or moderately alkaline.

Salinity: None-saline or very slightly saline.

Coarse fragments: Some strata may contain as much as 65 percent pebbles and gravels

Depth to paralithic contact: 60 or more inches.

Topdressing availability is limited by to depth to bedrock or sodium affected horizons.

Gilco Series Typifying Peon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00952	4 S	200	A	0-10	7.5	2.54	29	11	1.0	16	6.7	70	17	13	SL
0398S00953	4 S	200	Btk	10-29	7.5	0.58	43	2.4	0.13	3.1	2.7	55	22	23	SCL
0398S00954	4 S	200	Bk	29-60	7.6	1.15	25	1.9	0.10	8.6	8.6	90	5	5	S
0398S02012	4 S	507	2Ck	39-68	7.7	7.52	46	14	6.3	5.3	2	67	18	15	SL

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00952	4 S	200	A	0-10	3.0	0.02	0.62	27	26.6	.	.	.	.
0398S00953	4 S	200	Btk	10-29	1.7	0.03	0.94	16	15.2	.	.	.	.
0398S00954	4 S	200	Bk	29-60	1.4	0.02	0.62	13	12.1	.	.	.	.
0398S02012	4 S	507	2Ck	39-68	2.6	0.07	2.2	26	23.4	.	.	.	.

Lab ID	Area	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00952	4 S	200	A	0-10	.	0	0	0
0398S00953	4 S	200	Btk	10-29	.	0	0	0
0398S00954	4 S	200	Bk	29-60	.	0	0	0
0398S02012	4 S	507	2Ck	39-68	.	1	0	0.06

Gilco Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1569	3B	A, C1, C2, C3, C4, C5	0-60	8.10	2.88	28.3	14.3	3.32	15.2	68.8	18.8	12.5
S-1576	6B	A, Bk	0-15	8.14	1.40	34.6	7.09	1.28	5.00	47.5	33.8	18.8
S-1577	6B	C1	15-28	8.17	1.57	28.8	5.24	1.08	8.57	61.3	23.8	15.0
S-1560R	101B	A, C1, C2, C3	0-46	8.00	0.73	27.6	2.80	0.55	4.04	67.5	17.5	15.0
S-1560	101B	A, C1, C2, C3	0-46	8.01	0.73	29.2	2.72	0.54	4.02	67.5	17.5	15.0

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1569	3B	A, C1, C2, C3, C4, C5	0-60	SL	3.651	0.051	.	.	.	1.59	36.5
S-1576	6B	A, Bk	0-15	L	5.286	0.782	.	.	.	24.4	52.9
S-1577	6B	C1	15-28	SL	4.805	0.037	.	.	.	1.16	48.1
S-1560R	101B	A, C1, C2, C3	0-46	SL	3.940	0.034	.	.	.	1.07	39.4
S-1560	101B	A, C1, C2, C3	0-46	SL	3.844	0.034	.	.	.	1.07	38.4

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1569	3B	A, C1, C2, C3, C4, C5	0-60	34.9	.	.	1.25	0.375	.	<0.015
S-1576	6B	A, Bk	0-15	28.4	.	.	1.60	0.325	.	<0.015
S-1577	6B	C1	15-28	46.9	.	.	0.85	0.325	.	<0.015
S-1560R	101B	A, C1, C2, C3	0-46	38.3	.	.	0.50	0.275	.	<0.015
S-1560	101B	A, C1, C2, C3	0-46	37.4	.	.	0.60	0.275	.	<0.015

Grieta Series

The soils of the Grieta series are classified as Fine-loamy, mixed, superactive, mesic Typic Haplargids. These deep and very deep, well-drained, moderately permeable soils formed in eolian and alluvial sediments derived from sandstone and shale. These soils are on fan terraces, mesas, and plateaus.

Typifying Pedon: Grieta sandy loam, 0 to 5 percent slopes. Location is in Area 4 South, site #97 at 1,987,007 ft north and 294,554 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 4 inches; brown (10YR 4/3) moist, sandy loam; fine, weak granular structure; soft, friable; slightly effervescent; non-saline; slightly alkaline (pH 7.5).

Bt- 4 to 10 inches; brown (10YR 5/3) moist, sandy clay loam; hard, firm; weak sub-angular blocky structure; few fine discontinuous clay films on ped faces and pores; strongly effervescent; calcium carbonate disseminated; calcium carbonate equivalent 5.2 percent; non-saline; neutral (pH 7.3).

2Btk- 10 to 21 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; moderate sub-angular blocky structure; very hard; violently effervescent; calcium carbonate disseminated and as coatings on sand grains and common fine irregular shaped soft masses; calcium carbonate equivalent 15 percent; non-saline; slightly alkaline (pH 7.5).

2Ck- 21 to 48 inches; light olive brown (2.5Y 5/6) sandy loam, light olive brown (2.5Y 5/6) moist; massive; hard; strongly effervescent; calcium carbonate disseminated; slightly saline; slightly alkaline (pH 7.7).

3Cr- 48 inches; carbonaceous shale.

Range in Characteristics

Topdressing depth: 20 to 50 inches.

Reaction: Neutral to moderately alkaline.

Salinity: Non-saline to slightly saline.

Sodicity: Sodium affected horizons typically exist in the lower part of the profile.

Depth to paralithic contact: 48 or more inches.

There is commonly one or more discontinuities in profile. The hue is typically 10YR for the upper part of the profile and 2.5Y for the lower part of the profile.

The limiting factors for topdressing are bedrock, carbonates, and sodium affected horizons.

Grieta Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S00605	4S	97	A	0	4	7.5	0.72	23	2.54	0.27	4.11	3	73	17	10
0398S00606	4S	97	Bt	4	10	7.3	0.45	28	1.93	0.28	2.19	2	68	12	20
0398S00607	4S	97	2Btk	10	21	7.5	0.57	29	0.87	0.13	5.73	8	65	12	23
0398S00608	4S	97	2Ck	21	48	7.3	4.66	28	29.6	9.25	33.7	8	83	4	13

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S00605	4S	97	A	0	4	SL	3	0.01	0.31	23	22.7	.	.
0398S00606	4S	97	Bt	4	10	SCL	5.2	0	0	54	53.7	.	.
0398S00607	4S	97	2Btk	10	21	SCL	15	0.03	0.94	93	91.7	.	.
0398S00608	4S	97	2Ck	21	48	SL	4.2	0.18	5.6	30	24.7	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00605	4S	97	A	0	4	.	.	.	0	0	0
0398S00606	4S	97	Bt	4	10	.	.	.	0	0	0
0398S00607	4S	97	2Btk	10	21	.	.	.	0	0	0
0398S00608	4S	97	2Ck	21	48	.	.	.	0.2	0	0

Grieta Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00535	39	A	0-4	7.6	0.53	23	2.77	0.42	2.33	2	79	8	13	SL
0398S00533	39	Bt	4-10	7.5	0.41	27	2.24	0.23	1.76	2	71	10	19	SL
0398S00508	42	Bk	11-20	7.9	0.74	42	1.48	0.21	6.28	7	31	32	37	CL
0398S00539	42	2Bky	20-29	7.6	8.89	55	23.1	11.2	73.2	18	24	37	39	CL
0398S00614	110	Bk	9-20	7.7	0.47	27	0.83	0.1	4.07	6	68	14	18	SL
0398S00615	110	Ck	20-40	7.9	8.12	32	22.6	1.95	81.9	23	69	16	15	SL
0398S00680	206	2Btk	13-31	7.9	1.18	38	0.83	0.2	12	17	51	21	28	SCL
0398S00788	246	2Bk	17-26	7.6	0.57	31	1.1	0.34	3.6	4	65	17	18	SL
0398S00595	DH A	A	0-5	7.4	0.44	3	3.15	0.37	0.79	1	84	6	10	LS
0398S00596	DH A	Bt	5-21	7.4	0.38	28	1.28	0.33	2.26	3	78	8	14	SL
0398S00597	DH A	Btk	21-27	7.8	0.62	38	0.64	0.2	5.9	9	55	21	24	SCL
0398S00598	DH A	2Ck	27-51	7.9	1.42	45	1.09	0.47	15.2	17	55	25	20	SCL

Grieta Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00535	39	A	0-4	1.9	0.02	0.62	14	13.3	.	.	.	.
0398S00533	39	Bt	4-10	6.4	0.01	0.31	49	49.1	.	.	.	.
0398S00508	42	Bk	11-20	19	0.02	0.62	183	182.8	.	.	.	.
0398S00539	42	2Bky	20-29	9.2	0.7	22	74	52.6	.	.	.	.
0398S00614	110	Bk	9-20	17	0.02	0.62	156	154.9	.	.	.	.
0398S00615	110	Ck	20-40	10	0.08	2.5	79	76.4	.	.	.	.
0398S00680	206	2Btk	13-31	14	0.02	0.62	144	143	.	.	.	.
0398S00788	246	2Bk	17-26	17	0.01	0.31	156	156	0.01	0	0	0
0398S00595	DH A	A	0-5	1	0.01	0.31	8	7.3	.	.	.	.
0398S00596	DH A	Bt	5-21	3.3	0.01	0.31	23	23.1	.	.	.	.
0398S00597	DH A	Btk	21-27	16	0.01	0.31	131	130.9	.	.	.	.
0398S00598	DH A	2Ck	27-51	18	0	0	167	166.8	.	.	.	.

Grieta Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00535	39	A	0-4	.	0	0	0
0398S00533	39	Bt	4-10	.	0	0	0
0398S00508	42	Bk	11-20	.	0	0.25	0
0398S00539	42	2Bky	20-29	.	0.6	0.7	0
0398S00614	110	Bk	9-20	.	0	0	0
0398S00615	110	Ck	20-40	.	0	0.35	0
0398S00680	206	2Btk	13-31	.	0	0	0
0398S00788	246	2Bk	17-26	0	0	0	0
0398S00595	DH A	A	0-5	.	0	0	0
0398S00596	DH A	Bt	5-21	.	0	0	0
0398S00597	DH A	Btk	21-27	.	0	0	0
0398S00598	DH A	2Ck	27-51	.	0	0	0

Grieta Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1627	291B	A	0-6	8.06	0.26	31.2	1.44	0.26	0.62	86.3	3.8	10.0
S-1628	291B	Btk1	6-17	8.13	0.39	27.0	2.64	0.47	0.89	75.0	10.0	15.0
S-1609	291B	Btk2	17-29	8.35	0.47	32.8	1.30	0.38	3.28	35.0	43.8	21.3
S-1610	291B	CK	29-50	8.06	3.79	43.5	20.0	7.18	20.1	21.3	71.3	7.5
S-1610R	291B	CK	29-50	8.09	3.77	45.4	19.3	6.93	19.4	22.5	72.5	5.0
S-1599	303B	A	0-6	8.33	0.49	28.7	3.32	0.54	0.71	57.5	21.3	21.3
S-1600	303B	Bt1	6-13	8.38	0.26	29.0	1.31	0.27	1.18	60.0	17.5	22.5
S-1600R	303B	Bt1	6-13	8.37	0.26	28.0	1.26	0.26	1.20	58.8	18.8	22.5
S-1601	303B	Btk, Btk2	13-28	8.17	1.44	34.3	8.28	1.43	5.87	42.5	23.8	33.8
S-1602	303B	C	28-45	8.04	3.12	23.5	25.3	4.07	9.05	73.8	11.3	15.0
S-1543	327B	A, Btn, Btk	0-27	7.54	1.18	37.4	1.05	0.30	9.53	40.0	25.0	35.0

Grieta Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$	Tot S	Sulfate S	Pyr S	Org S	Acid Pot	Neut Pot
					%	%	%	%	%	tn/1000tn	tn/1000tn
S-1627	291B	A	0-6	LS	0.576	0.029	.	.	.	0.90	5.76
S-1628	291B	Btk1	6-17	SL	8.649	0.054	.	.	.	1.68	86.5
S-1609	291B	Btk2	17-29	L	4.993	0.055	.	.	.	1.73	49.9
S-1610	291B	CK	29-50	SiL	33.26	0.750	.	.	.	23.4	333
S-1610R	291B	CK	29-50	SiL	33.64	0.727	.	.	.	22.7	336
S-1599	303B	A	0-6	SCL	3.075	0.039	.	.	.	1.22	30.7
S-1600	303B	Bt1	6-13	SCL	2.690	0.035	.	.	.	1.08	26.9
S-1600R	303B	Bt1	6-13	SCL	2.690	0.036	.	.	.	1.11	26.9
S-1601	303B	Btk, Btk2	13-28	CL	6.150	0.071	.	.	.	2.22	61.5
S-1602	303B	C	28-45	SL	6.535	0.101	.	.	.	3.14	65.3
S-1543	327B	A, Btn, Btk	0-27	CL	4.132	0.044	.	.	.	1.38	41.3

Grieta Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1627	291B	A	0-6	4.85	.	.	<0.50	<0.15	.	<0.015
S-1628	291B	Btk1	6-17	84.8	.	.	0.65	0.275	.	<0.015
S-1609	291B	Btk2	17-29	48.2	.	.	0.95	0.250	.	<0.015
S-1610	291B	CK	29-50	309	.	.	1.85	0.375	.	<0.015
S-1610R	291B	CK	29-50	314	.	.	1.70	<0.15	.	<0.015
S-1599	303B	A	0-6	29.5	.	.	0.60	0.275	.	<0.015
S-1600	303B	Bt1	6-13	25.8	.	.	0.65	0.250	.	<0.015
S-1600R	303B	Bt1	6-13	25.8	.	.	0.65	0.300	.	<0.015
S-1601	303B	Btk, Btk2	13-28	59.3	.	.	0.80	0.350	.	<0.015
S-1602	303B	C	28-45	62.2	.	.	0.50	0.300	.	<0.015
S-1543	327B	A, Btn, Btk	0-27	39.9	.	.	1.00	0.300	.	<0.015

Grieta Series Additional Laboratory Data Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/com	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
S-1053	A5-8	A	0-5	8.02	0.44	29.9	3.11	0.51	0.63	0.47	78.8	7.5	13.8
S-1054	A5-8	Bt	5-15	8.13	0.26	28.7	1.26	0.24	1.23	1.42	68.8	12.5	18.8
S-1055	A5-8	Btk1	15-26	8.16	0.56	29.7	0.98	0.23	4.39	5.64	70.0	8.8	21.3
S-1056	A5-8	Btk2	26-40	7.88	4.07	50.0	23.7	4.68	21.5	5.72	41.3	25.0	33.8
S-1057	A5-8	2Bk	40-56	7.85	5.06	52.2	28.9	5.40	24.4	5.89	28.8	32.5	38.8
S-1058	A5-8	2C	56-60	7.58	5.67	51.7	32.5	5.53	23.5	5.40	26.3	26.3	51.3

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Class	CaCO3 %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn	A-B Pot tn/1000tn
S-1053	A5-8	A	0-5	SL	1.564	0.022	.	.	.	0.68	15.6	15.0
S-1054	A5-8	Bt	5-15	SL	3.620	0.002	.	.	.	0.06	36.2	36.1
S-1055	A5-8	Btk1	15-26	SCL	4.593	0.040	.	.	.	1.24	45.9	44.7
S-1056	A5-8	Btk2	26-40	CCL	22.78	0.210	.	.	.	6.55	228	221
S-1057	A5-8	2Bk	40-56	CL	6.676	0.499	.	.	.	15.6	66.8	51.16
S-1058	A5-8	2C	56-60	C	0.874	0.102	.	.	.	3.17	8.74	5.56

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	B ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1053	A5-8	A	0-5	.	.	<0.50	<0.15	.	<0.015
S-1054	A5-8	Bt	5-15	.	.	<0.50	<0.15	.	<0.015
S-1055	A5-8	Btk1	15-26	.	.	0.70	<0.15	.	<0.015
S-1056	A5-8	Btk2	26-40	.	.	2.35	0.400	.	0.029
S-1057	A5-8	2Bk	40-56	.	.	<0.50	0.450	.	0.032
S-1058	A5-8	2C	56-60	.	.	<0.50	0.350	.	0.054

Hoskay Series

The soils in the Hoskay series are classified as Fine, mixed, superactive, mesic Typic Natrargids. These deep, well drained, slowly permeable, sodic soils formed in alluvium derived from shale and sandstone on alluvial fans and terraces.

Typifying Pedon: Hoskay loam, 0 to 3 percent slopes. Pedon description taken from Shiprock Survey, Soil Conservation Service 1987.

A- 0 to 2 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; granular; soft, slightly sticky and slightly plastic; strong effervescent; moderately alkaline; clear smooth boundary.

Btkn- 2 to 6 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, sticky and plastic; common thin; clay films on faces of peds and lining pores; strongly effervescent, secondary calcium carbonates in few fine irregularly shaped accumulations on faces of peds; strongly alkaline; clear smooth boundary.

Btky- 6 to 14 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; hard, sticky and plastic; few thin clay films on faces of peds and lining pores; secondary fine sand sized gypsum crystals in few fine irregularly shaped accumulations on faces of peds and lining pores; strongly effervescent, secondary calcium carbonates in few fine irregularly shaped accumulations on faces of peds; moderately alkaline; abrupt wavy bounds.

$2Byk_1$ 14 to 21 inches; light gray (10YR 7/2) clay loam, light yellowish brown (10YR 6/4) moist; moderate coarse subangular blocky structure; hard, sticky and plastic; secondary fine sand sized gypsum crystals in many fine and medium irregularly shaped accumulations on faces of peds; strongly effervescent, secondary calcium carbonates in few medium irregularly

shaped accumulations of faces of peds and on rock fragments; mildly alkaline; clear smooth boundary.

$2Byk_2$ 21 to 27 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate coarse subangular blocky structure; slightly hard, sticky and plastic; secondary fine and medium sand sized gypsum crystals in few medium irregularly shaped accumulations on ped faces; slightly effervescent, secondary calcium carbonates in few medium irregularly shaped accumulations on ped faces; mildly alkaline; clear wavy boundary.

$3Byk_3$ 27 to 39 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; hard, sticky and plastic; secondary medium sand sized gypsum crystals in few fine and medium irregularly shaped accumulations on faces of peds; carbonates in very few medium irregularly shaped accumulations on faces of peds; moderately alkaline; abrupt irregular boundary.

4BC- 39 to 60 inches; light yellowish brown (2.5 Y 6/4) and gray (10YR 6/1) silty clay, yellowish brown (2.5Y 5/4) and gray (10YR 5/1) moist; weak very coarse subangular blocky structure; very hard, sticky and plastic; few coarse sand and fine pebble sized primary gypsum crystals throughout matrix; slightly effervescent; moderately alkaline.

There is not suitable topdressing available from this soil. The limiting factors for topdressing are SAR, texture and dry consistence. The Hoskay series are described at 17 sites in the survey area. Samples were not collected because this soil has limited extent in the survey area.

Hoskay Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1578	152B	Btn	5-16	8.50	0.59	94.0	0.78	0.20	4.61	32.5	28.8	38.8
S-1559	152B	Bt2, Bky	16-39	7.66	1.25	48.6	1.46	0.37	9.61	45.0	17.5	37.5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1578	152B	Btn	5-16	CL	2.978	0.038	.	.	.	1.20	29.8
S-1559	152B	Bt2, Bky	16-39	CL/SC	2.690	0.048	.	.	.	1.48	26.9

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1578	152B	Btn	5-16	28.6	.	.	1.15	0.375	.	<0.015
S-1559	152B	Bt2, Bky	16-39	25.4	.	.	1.65	0.350	.	<0.015

Huerfano Series

The soils of the Huerfano series are classified as Loamy, mixed, superactive, mesic, shallow Typic Natrargids. These shallow and moderately shallow, well-drained, sodium affected soils are on mesas, upland valley bottoms, and alluvial fans. These soils formed in alluvium and residuum derived predominately from siltstone and carbonaceous shale.

Typifying Pedon: Huerfano clay loam, 0 to 3 percent slopes. Location is in Area 4 South, site #147 at 1,984,513 ft north and 296,994 ft east (New Mexico West, State Plane Coordinates).

Btn- 0 to 21 inches; black (10YR 2/1) clay loam, very dark gray (2.5Y 3/1) moist; moderate sub-angular blocky parting to strong angular blocky structure; very hard; strongly effervescent; very slightly saline; moderately alkaline (pH 7.9).

Bky- 21 to 41 inches; very dark gray (10YR 3/1) clay; weak sub-angular blocky structure parting to massive; strongly effervescent; few fine calcium carbonate accumulations; few fine and very fine gypsum crystals; moderately saline; moderately alkaline.

2Cr- 41 inches; carbonaceous shale.

Range in Characteristics

Topdressing depth: 0 to 21 inches.

Reaction: Slightly alkaline to strongly alkaline.

Salinity: Non-saline to moderately saline.

Sodicity: SAR ranges from 3 to 15 or more.

Depth to paralithic contact: 10 to 40 inches.

Hue is 10YR or 2.5Y, value is 2, 3, or 4 (dry), and chroma is 1 through 4 (dry). Texture ranges from sandy clay loam to clay. The limiting factors for topdressing are SAR, texture, and depth to bedrock.

Huerfano Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S00631	4S	147	Btn	0	21	7.9	2.14	42	2.99	0.44	18.4	14	43	22	35

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S00631	4S	#147	Btn	0	21	CL	4	0.04	1.3	37	35.5	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00631	4S	#147	Btn	0	21	.	.	.	0.2	0.55	0

Huerfano Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00630	142	BC	0-6	7.7	0.86	29	4.14	0	4.05	3	50	25	25	SCL
0398S00679	188	Btkn	0-13	7.6	3.13	46	14	0.86	23.8	9	43	21	36	CL
0398S02015	514	2Btkn	10-21	7.8	6.78	47	4.9	2.1	79	42	44	24	32	CL
0398S02016	515	Btn	0-11	7.9	0.68	29	0.69	0.16	7.5	11	62	17	21	SCL
0398S02024	522	C	0-9	7.2	0.38	30	0.89	0.099	3.7	5	89	5	6	S
0398S02025	522	Btnb	9-17	7.5	3.49	33	3.8	0.64	40	27	86	5	9	LS
0398S02026	522	2By	17-28	7.2	6.03	31	26	4.5	59	15	79	12	9	SL
0398S05005	832	Btkn	2-11	8.5	0.89	41	0.84	0.44	12	15	84	6	10	LS

Huerfano Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00630	142	BC	0-6	6.4	0.02	0.62	60	59.8	.	.	.	.
0398S00679	188	Btkn	0-13	4.9	0.05	1.6	59	57.5	.	.	.	.
0398S02015	514	2Btkn	10-21	7	0.04	1.3	157	155.6	.	.	.	.
0398S02016	515	Btn	0-11	5.1	0.01	0.31	49	48.9	.	.	.	.
0398S02024	522	C	0-9	1.3	0.01	0.31	12	11.2	.	.	.	.
0398S02025	522	Btnb	9-17	2	0.03	0.94	16	14.9	.	.	.	.
0398S02026	522	2By	17-28	3.4	0.2	6.3	27	20.6	.	.	.	.
0398S05005	832	Btkn	2-11	5	0.02	0.62	44	43.5	.	.	.	.

Huerfano Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00630	142	BC	0-6	.	0	0	0
0398S00679	188	Btkn	0-13	.	0	0.25	0
0398S02015	514	2Btkn	10-21	.	1.2	0.4	0
0398S02016	515	Btn	0-11	.	0.3	0	0
0398S02024	522	C	0-9	.	0	0	0
0398S02025	522	Btnb	9-17	.	0.2	0	0
0398S02026	522	2By	17-28	.	0.8	0	0
0398S05005	832	Btkn	2-11	.	0.5	0.25	0.02

Huerfano Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH . s.u	EC mmhos/cm	% Sat	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1636	143B	A	0-3	8.24	4.28	34.2	11.0	2.30	26.3	65.0	17.5	17.5
S-1637	143B	Btn	3-16	8.78	1.35	33.9	0.48	0.14	11.7	65.0	17.5	17.5
S-1518	202B	A	0-4	7.94	3.15	39.7	1.07	0.10	26.5	57.5	12.5	30.0
S-1499	202B	Btnky	4-10	7.17	21.8	51.5	17.4	1.02	191	47.5	47.5	5.0
S-1500	202B	Btn	10-17	7.10	20.1	56.7	14.4	1.53	184	45.0	48.8	6.3
S-1500R	202B	Btn	10-17	7.10	20.2	55.2	14.9	1.53	180	46.3	48.8	5.0

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1636	143B	A	0-3	SL	3.075	0.043	.	.	.	1.36	30.7
S-1637	143B	Btn	3-16	SL	6.921	0.037	.	.	.	1.16	69.2
S-1518	202B	A	0-4	SCL	2.690	0.033	.	.	.	1.04	26.9
S-1499	202B	Btnky	4-10	SL	2.587	2.326	2.300	0.000	0.026	72.7	25.9
S-1500	202B	Btn	10-17	SL	2.106	1.434	1.406	0.001	0.027	44.8	21.1
S-1500R	202B	Btn	10-17	SL	2.106	1.469	1.444	0.003	0.022	45.9	21.1

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1636	143B	A	0-3	29.4	.	.	1.40	0.275	.	<0.015
S-1637	143B	Btn	3-16	68.0	.	.	1.00	0.450	.	<0.015
S-1518	202B	A	0-4	25.9	.	.	1.60	<0.15	.	0.020
S-1499	202B	Btnky	4-10	-46.8	0.00	25.87	1.30	0.450	.	0.108
S-1500	202B	Btn	10-17	-23.7	0.03	21.02	0.75	0.425	.	0.111
S-1500R	202B	Btn	10-17	-24.8	0.09	20.96	0.65	0.450	.	0.119

Jocity Series

The soils in the Jocity series are classified as Fine-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents. These very deep, well-drained soils formed in alluvium derived from sandstone and shale. Jocity soils formed on flood plains and alluvial fans.

Typifying Pedon: Jocity loamy sand, 0 to 3 percent slopes. Location is in Area 4 South, site #601 at 1,979,311 ft north and 307,118 ft east (New Mexico West, State Plane Coordinates).

C_1- 0 to 13 inches; light yellowish brown (2.5Y 6/4) loamy sand, light olive brown (2.5Y 5/4) moist; massive; very hard; very slightly effervescent; non-saline; moderately alkaline (pH 8.1).

C_2- 13 to 28 inches; olive brown (2.5Y 4/4) clay loam, light olive brown (2.5Y 5/4) moist; massive; very hard; very slightly effervescent; slightly saline; slightly alkaline (pH 7.6).

C_3- 28 to 64 inches; light yellowish brown (2.5Y 6/4) silty clay loam, clay loam, and sandy loam (stratified); massive; very hard; strongly effervescent; calcium carbonate disseminated; slightly saline; slightly alkaline (pH 7.6).

Range in Characteristics

Topdressing depth: 0 to 60 or more inches.

Salinity: Non-saline through moderately saline.

Sodicity: SAR is usually less than 10 but exceeds 40 in some pedons.

Depth to paralithic contact: 40 to 60 or more inches.

Texture: Stratified loamy sands, sandy loams, sandy clay loams, clay loams, and silty clay loams.

Coarse fragments: 0 to 15 percent.

Hues are 10YR or 2.5Y, values are 3 through 6 (dry) and chroma is 2, 3, or 4 (dry). The limiting factors for topdressing are SAR, texture, and depth to bedrock.

Jocity Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S03115	4S	601	C1	0	13	8.1	1.14	31	1	0.39	12	15	80	8	12
0398S03116	4S	601	C2	13	28	7.6	6.55	52	21	2.3	53	16	26	45	29
0398S03117	4S	601	C3	28	60	7.6	5.89	48	15	1.6	48	17	42	32	26

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S03115	4S	601	C1	0	13	SL	1.4	0.01	0.31	12	11.6	.	.
0398S03116	4S	601	C2	13	28	CL	7.4	0.09	2.8	74	71.3	.	.
0398S03117	4S	601	C3	28	60	L	7	0.06	1.9	71	68.9	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S03115	4S	601	C1	0	13	.	.	.	0	0	0
0398S03116	4S	601	C2	13	28	.	.	.	0.3	0	0
0398S03117	4S	601	C3	28	60	.	.	.	0.3	0	0

Jocity Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00524	55	A	0-3	7.4	1.52	33	9.28	0.59	3.9	2	61	15	24	SCL
0398S00531	55	Bw	3-18	7.6	0.61	33	1.79	0.1	3.33	3	56	20	24	SCL
0398S00666	159	AB	0-8	7.4	0.69	33	5.31	0.19	1.56	1	63	12	25	SCL
0398S00667	159	2Ck1	8-50	7.3	4.99	34	26.3	6.19	32.2	8	71	9	20	SCL
0398S00668	159	2Ck2	50-60	7.3	6.03	35	17.5	6.84	41.8	12	68	13	19	SL
0398S00875	262	CA	0-9	7.6	1.59	38	7.0	1.0	7.2	4	41	29	30	CL
0398S00876	262	BC	9-33	7.1	4.30	32	32	7.0	9.7	2	56	24	20	SCL
0398S00877	262	C	33-50	7.1	2.56	26	15	3.2	5.3	2	71	9	20	SCL
0398S00878	262	Btb	50-60	7.2	1.55	34	7.7	1.6	4.3	2	48	24	28	SCL
0398S00956	271	C	0-13	7.5	0.37	28	1.4	0.07	1.8	2.1	55	26	19	SL
0398S00978	330	C	0-18	7.5	3.41	37	24	0.81	18	5.3	50	20	30	SCL
0398S00982	346	C1	0-16	7.8	1.91	48	7.1	0.12	12	6.3	38	27	35	CL
0398S00983	346	C2	16-45	7.4	5.33	43	31	1.9	31	7.8	43	24	33	CL
0398S00984	348	C1	0-12	7.9	10.3	34	2.8	0.34	9.4	7.5	53	21	26	SCL
0398S00985	348	C2	12-21	7.9	1.24	29	2.5	0.28	11	8.9	80	10	10	SL
0398S00986	348	C3	21-39	7.6	6.38	41	18	1.8	61	20	58	21	21	SCL
0398S01180	362	AC	0-17	7.3	1.88	39	12	0.76	7.9	3	50	21	29	SCL
0398S01181	362	C	17-36	7.2	3.04	36	25	2.1	12	3	58	16	26	SCL
0398S01192	385	AB	0-16	7.7	6.25	31	22	2.1	52	15	63	19	18	SL
0398S01193	385	Cy	16-40	7.5	6.64	46	20	1.9	61	19	48	27	25	SCL
0398S01194	385	C	40-60	8.3	1.26	28	0.39	0.23	13	23	88	6	6	LS
0398S01195	388	AC	0-15	7.7	0.58	28	0.55	0.39	5.6	8	68	14	18	SL
0398S01196	388	C	15-41	7.7	4.96	35	4.1	0.44	46	31	80	7	13	SL
0398S01451	394	AC	0-16	7.9	1.12	34	1.4	0.19	8.3	9	86	4	10	LS
0398S01452	394	Cy	16-36	8.5	20.3	41	23	7.4	250	64	71	11	18	SL
0398S01453	394	C	36-60	8.4	15.8	34	20	4.6	180	51	89	3	8	LS
0398S02027	524	Bw	0-16	7.2	0.71	27	2.1	0.23	6.5	6	74	13	13	SL
0398S02028	524	C1	16-27	7.4	2.72	36	5.1	0.67	33	20	59	19	22	SCL
0398S02029	524	C2	27-41	7.3	4.16	83	10	1.4	46	19	20	34	46	C
0398S02030	524	C3	41-60	7.2	5.96	60	28	3.7	57	14	22	38	40	C

Jocity Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00524	55	A	0-3	4.2	0.03	0.94	40	39	.	.	.	.
0398S00531	55	Bw	3-18	4	0.02	0.62	38	37.1	.	.	.	.
0398S00666	159	AB	0-8	7.4	0.06	1.9	80	77.9	.	.	.	.
0398S00667	159	2Ck1	8-50	11	0.89	28	113	85.3	.	.	.	.
0398S00668	159	2Ck2	50-60	20	0.06	1.9	196	194.4	.	.	.	.
0398S00875	262	CA	0-9	5.6	0.04	1.3	55	53.4	.	.	.	.
0398S00876	262	BC	9-33	5.0	0.03	0.94	45	44.2	.	.	.	.
0398S00877	262	C	33-50	3.9	0.02	0.62	34	33.6	.	.	.	.
0398S00878	262	Btb	50-60	4.5	0.02	0.62	40	39.7	.	.	.	.
0398S00956	271	C	0-13	5.7	0.02	0.62	51	50.3	.	.	.	.
0398S00978	330	C	0-18	6.8	0.07	2.2	65	63.0	.	.	.	.
0398S00982	346	C1	0-16	5.1	0.05	1.6	49	47.4	.	.	.	.
0398S00983	346	C2	16-45	4.7	0.10	3.1	46	42.5	.	.	.	.
0398S00984	348	C1	0-12	5.2	0.03	0.94	48	46.7	.	.	.	.
0398S00985	348	C2	12-21	1.4	0.02	0.62	14	12.9	.	.	.	.
0398S00986	348	C3	21-39	2.5	0.05	1.6	22	20.7	.	.	.	.
0398S01180	362	AC	0-17	4.5	0.03	0.94	43	42.3	.	.	.	.
0398S01181	362	C	17-36	4.3	0.34	11	38	27.2	.	.	.	.
0398S01192	385	AB	0-16	7.7	0.01	0.31	89	88.9	.	.	.	.
0398S01193	385	Cy	16-40	8.6	0.14	4.4	86	81.8	.	.	.	.
0398S01194	385	C	40-60	6	0.01	0.31	59	58.5	.	.	.	.
0398S01195	388	AC	0-15	5.2	0.01	0.31	49	48.3	.	.	.	.
0398S01196	388	C	15-41	6	0.04	1.3	60	58.9	.	.	.	.
0398S01451	394	AC	0-16	1.3	0.01	0.31	13	12.4	0	0	0	0
0398S01452	394	Cy	16-36	2.1	0.37	12	20	8.3	0	0	0	0
0398S01453	394	C	36-60	1.5	0.19	5.9	14	7.8	0	0	0	0
0398S02027	524	Bw	0-16	2.8	0.02	0.62	26	24.9	.	.	.	.
0398S02028	524	C1	16-27	2.9	0.03	0.94	29	28.1	.	.	.	.
0398S02029	524	C2	27-41	2.1	0.07	2.2	22	20	.	.	.	.
0398S02030	524	C3	41-60	5	0.19	5.9	50	43.7	.	.	.	.

Jocity Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00524	55	A	0-3	.	0	0	0
0398S00531	55	Bw	3-18	.	0	0	0
0398S00666	159	AB	0-8	.	0	0.5	0
0398S00667	159	2Ck1	8-50	.	0.3	0.45	0.02
0398S00668	159	2Ck2	50-60	.	0	0.25	0
0398S00875	262	CA	0-9	.	0	0	0
0398S00876	262	BC	9-33	.	0	0	0
0398S00877	262	C	33-50	.	0	0	0
0398S00878	262	Btb	50-60	.	0	0	0
0398S00956	271	C	0-13	.	0	0	0
0398S00978	330	C	0-18	.	0	0.45	0
0398S00982	346	C1	0-16	.	0	0.40	0
0398S00983	346	C2	16-45	.	0	0.35	0
0398S00984	348	C1	0-12	.	0	0.25	0
0398S00985	348	C2	12-21	.	0	0	0
0398S00986	348	C3	21-39	.	0.6	0	0
0398S01180	362	AC	0-17	.	0	0	0
0398S01181	362	C	17-36	.	0	0	0
0398S01192	385	AB	0-16	.	0	0	0
0398S01193	385	Cy	16-40	.	0	0	0
0398S01194	385	C	40-60	.	0	0	0
0398S01195	388	AC	0-15	.	0	0	0
0398S01196	388	C	15-41	.	0	0	0
0398S01451	394	AC	0-16	0	0	0	0
0398S01452	394	Cy	16-36	0	0	0.25	0.02
0398S01453	394	C	36-60	0	0	0	0
0398S02027	524	Bw	0-16	.	2.4	0	0
0398S02028	524	C1	16-27	.	0.7	0.25	0.02
0398S02029	524	C2	27-41	.	0.4	0.35	0.12
0398S02030	524	C3	41-60	.	0.4	0.4	0.08

Jocity Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S02037	529	C	0-9	8.1	8.95	37	7.3	0.96	94	46	59	26	15	SL
0398S02038	529	Bynb	9-15	7.8	16.5	38	34	5.4	130	29	48	34	18	L
0398S02039	529	C1	15-32	7	11.9	43	35	6.5	85	19	48	32	20	L
0398S02040	529	C3	32-50	7.4	4.84	31	33	4.8	33	8	67	19	14	SL
0398S02165	540	C	0-13	8.1	1.98	30	1.5	0.57	26	26	68	19	13	SL
0398S02166	540	Btknb	13-22	7.9	12.3	53	23	2.4	100	30	42	32	26	L
0398S03112	600	Bn	0-5	7.9	1.39	47	1.4	0.29	14	16	34	32	34	CL
0398S03113	600	C	5-15	7.8	10.1	41	23	1.6	87	25	52	26	22	SCL
0398S03114	600	2Cy	15-35	7.9	9.43	41	20	2.9	73	21	60	20	20	SCL
0398S04600	617	AB	0-5	8	5.92	29	5.3	0.72	58	33	68	14	18	SL
0398S04601	617	Cy1	5-36	7.8	14.5	33	28	3.9	170	42	72	12	16	SL
0398S04602	617	Cy2	36-60	8.8	14.3	45	20	8.7	290	76	44	28	28	CL
0398S04603	620	Bw	0-12	7.9	0.79	23	1.5	0.26	5.5	5.9	68	13	19	SL
0398S04604	620	C1	12-20	7.9	7.95	37	20	2.6	69	21	50	20	30	SCL
0398S04605	620	C2	20-37	7.8	5.24	26	7.3	1.2	44	21	72	10	18	SL
0398S04954	794	Cy1	0-13	8	7.64	48	22	1.4	67	20	44	30	26	L
0398S04955	794	Cy2	21-35	8.1	8.79	47	18	1.3	86	28	60	16	24	SCL
0398S04956	794	C	35-60	8.2	9.35	31	19	1.7	91	29	76	8	16	SL
0398S05006	833	Ck	5-22	8.2	2.13	44	2.3	0.29	28	25	52	12	36	SC
0398S05049	791-A	AC	0-13	8.5	1.05	27	2	0.45	11	10	73	9	18	SL
0398S05050	791-A	C	13-36	8.2	7.28	33	12	1.5	67	26	75	11	14	SL
0398S05051	792-A	AC	0-11	8.4	1	31	1.6	0.43	10	10	63	15	22	SCL
0398S05052	793-A	AC	0-9	8.3	1.29	30	3.5	0.72	8.3	5.7	80	8	12	SL
0398S05053	793-A	C	9-27	8.4	13.4	40	19	5.3	140	40	77	8	15	SL

Jocity Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S02037	529	C	0-9	3.4	0.05	1.6	30	28.7	.	.	.	.
0398S02038	529	Bynb	9-15	2	0.13	4.1	39	35	.	.	.	.
0398S02039	529	C1	15-32	3.3	0.14	4.4	33	29.1	.	.	.	.
0398S02040	529	C3	32-50	1.9	0.06	1.9	19	17.1	.	.	.	.
0398S02165	540	C	0-13	7.3	0.02	0.62	92	91.2	.	.	.	.
0398S02166	540	Btknb	13-22	6.4	0.3	9.4	65	56	.	.	.	.
0398S03112	600	Bn	0-5	9	0.01	0.31	88	88.1	.	.	.	.
0398S03113	600	C	5-15	9.5	0.05	1.6	93	91.6	.	.	.	.
0398S03114	600	2Cy	15-35	9.4	0.21	6.6	93	86.8	.	.	.	.
0398S04600	617	AB	0-5	1.8	0.02	0.62	18	17.2	.	.	.	.
0398S04601	617	Cy1	5-36	1.5	0.11	3.4	13	9.8	.	.	.	.
0398S04602	617	Cy2	36-60	2.5	0.41	13	24	11.5	.	.	.	.
0398S04603	620	Bw	0-12	2.5	0.01	0.31	27	26.4	.	.	.	.
0398S04604	620	C1	12-20	4.1	0.12	3.8	48	43.8	.	.	.	.
0398S04605	620	C2	20-37	2.7	0.03	0.94	26	25	.	.	.	.
0398S04954	794	Cy1	0-13	3.8	0.13	4.1	36	32.4	.	.	.	.
0398S04955	794	Cy2	21-35	4.2	0.27	8.4	43	34.4	.	.	.	.
0398S04956	794	C	35-60	4	0.13	4.1	42	38.4	.	.	.	.
0398S05006	833	Ck	5-22	4.8	0.03	0.94	43	42.5	.	.	.	.
0398S05049	791-A	AC	0-13	3.5	0.03	0.94	38	36.7	.	.	.	.
0398S05050	791-A	C	13-36	2.5	0.04	1.3	25	23.4	.	.	.	.
0398S05051	792-A	AC	0-11	7.8	0.05	1.6	90	88.2	.	.	.	.
0398S05052	793-A	AC	0-9	7.1	0.02	0.62	83	82.2	.	.	.	.
0398S05053	793-A	C	9-27	12	0.29	9.1	132	122.9	.	.	.	.

Jocity Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S02037	529	C	0-9	.	1	0	0
0398S02038	529	Bynb	9-15	.	1	0	0
0398S02039	529	C1	15-32	.	0.7	0.5	0
0398S02040	529	C3	32-50	.	0.3	0	0
0398S02165	540	C	0-13	.	0.2	0	0
0398S02166	540	Btknb	13-22	.	0.4	0.3	0
0398S03112	600	Bn	0-5	.	0.5	0	0
0398S03113	600	C	5-15	.	0.3	0	0
0398S03114	600	2Cy	15-35	.	0.3	0.25	0
0398S04600	617	AB	0-5	.	0.6	0	0
0398S04601	617	Cy1	5-36	.	0.5	0	0
0398S04602	617	Cy2	36-60	.	0.9	0	0
0398S04603	620	Bw	0-12	.	0.3	0	0
0398S04604	620	C1	12-20	.	1.3	0.35	0
0398S04605	620	C2	20-37	.	0.3	0	0
0398S04954	794	Cy1	0-13	.	0.2	0.3	0
0398S04955	794	Cy2	21-35	.	0.2	0.35	0.04
0398S04956	794	C	35-60	.	0.2	0.3	0.05
0398S05006	833	Ck	5-22	.	0.7	0.25	0
0398S05049	791-A	AC	0-13	.	0.4	0	0
0398S05050	791-A	C	13-36	.	0.2	0	0.03
0398S05051	792-A	AC	0-11	.	0.3	0	0
0398S05052	793-A	AC	0-9	.	0.3	0	0
0398S05053	793-A	C	9-27	.	0.4	0.35	0

Jocity Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1574	65B	A, C1, C2	0-35	8.25	0.65	32.9	1.64	0.26	4.08	57.5	23.8	18.8
S-1575	65B	C3, C4	35-60	8.43	1.27	43.5	0.93	0.16	10.7	53.8	22.5	23.8

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1574	65B	A, C1, C2	0-35	SL	3.171	0.036	.	.	.	1.12	31.7
S-1575	65B	C3, C4	35-60	SCL	3.651	0.046	.	.	.	1.44	36.5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1574	65B	A, C1, C2	0-35	30.6	.	.	0.55	<0.15	.	<0.015
S-1575	65B	C3, C4	35-60	35.1	.	.	0.75	0.350	.	<0.015

Mayqueen Series

The soils in the Mayqueen series are classified as Coarse-loamy, mixed, superactive, mesic Typic Haplargids. These deep, somewhat excessively drained soils formed in eolian material and alluvium on stabilized dunes and alluvial fans on mesas and plateaus.

Typifying Pedon: Mayqueen loamy sand, 0 to 8 percent slopes. Location is in Area 4 South, site #484 at 1,992,969 ft north and 302,585 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 11 inches; yellowish brown (10YR 5/8) loamy sand, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable; very slightly effervescent; non-saline; neutral (pH 7.3).

Bw- 11 to 22 inches; yellowish brown (10YR 5/6) loamy sand, dark yellowish brown (10YR 4/4) moist; weak sub-angular blocky structure; slightly hard, friable; very slightly effervescent; non-saline; neutral (pH 7.2).

Bt- 22 to 31 inches; dark yellowish brown (10YR 4/5) loamy fine sand, dark yellowish brown (10YR 4/4) moist; weak sub-angular blocky structure; hard; slightly effervescent; non-saline; neutral (pH 7.3).

C- 31 to 39 inches; yellowish brown (10YR 5/6) fine sand, brown (10YR 4/3) moist; massive; slightly hard, friable; slightly effervescent, non-saline; slightly alkaline (pH 7.4).

2Ck- 39 to 72 inches; dark yellowish brown (10YR 3/4) gravelly coarse sand; massive; soft, very friable; slightly effervescent; disseminated calcium carbonate; non-saline; slightly alkaline (pH 7.7).

Range in Characteristics

Topdressing depth: 34 to 60 or more inches.

Reaction: Neutral in upper parts of profile and neutral to moderately alkaline in lower part of profile.

Salinity: Non-saline through slightly saline.

Sodicity: SAR is less than 10 in most profiles but is as much as 27 in some strata.

Depth to paralithic contact: 40 to 60 or more inches.

Coarse fragments: Substrata in some profiles have 10 to 65 percent gravels and pebbles.

Hues are 10YR or 2.5Y, values are 3 through 6 (dry), and chroma is 4 through 8 (dry). Topdressing is limited primarily by quantity of coarse fragments and depth to bedrock.

Mayqueen Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S01743	4S	484	A	0	11	7.3	0.39	24	3.1	0.29	0.63	0	88	5	7
0398S01744	4S	484	Bw	11	22	7.2	0.33	27	2.3	0.39	0.88	1	85	6	9
0398S01745	4S	484	Bt	22	31	7.3	0.32	29	2.1	0.57	0.81	1	83	5	12
0398S01746	4S	484	C	31	39	7.4	0.3	28	1.2	0.41	1.4	2	93	0	7
0398S01747	4S	484	2Ck	39	72	7.7	0.74	25	0.58	0.24	6.5	10	90	6	4

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S01743	4S	484	A	0	11	LS	1.1	0.01	0.31	8	7.5	.	.
0398S01744	4S	484	Bw	11	22	LS	2.2	0.01	0.31	13	13	.	.
0398S01745	4S	484	Bt	22	31	LS	2.5	0.01	0.31	14	14	.	.
0398S01746	4S	484	C	31	39	S	0.86	0.01	0.31	6	5.6	.	.
0398S01747	4S	484	2Ck	39	72	S	2.8	0.02	0.62	18	16.9	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01743	4S	484	A	0	11	.	.	.	0	0	0
0398S01744	4S	484	Bw	11	22	.	.	.	0	0	0
0398S01745	4S	484	Bt	22	31	.	.	.	0	0	0
0398S01746	4S	484	C	31	39	.	.	.	0	0	0
0398S01747	4S	484	2Ck	39	72	.	.	.	0	0	0

Mayqueen Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00782	3	A	0-4	7.5	0.57	29	2.3	0.6	2.6	2	78	7	15	SL
0398S00783	3	Bt	4-21	7.9	1.09	30	1.6	0.49	9.9	10	70	11	19	SL
0398S00784	3	C	21-53	7.6	7.71	32	13	2.5	51	18	78	7	15	SL
0398S00439	49	Bt	12-34	7.2	0.78	27	1.8	0.59	4.7	4.3	75	12	13	SL
0398S00440	50	A	0-3	7.1	0.5	25	3.8	0.49	0.68	0.464	76	11	13	SL
0398S00441	50	Bt1	3-7	7.2	0.34	27	2.1	0.38	1.4	1.24	73	12	15	SL
0398S00442	50	Bt2	7-17	7.3	0.39	27	1.5	0.33	2.8	2.89	76	10	14	SL
0398S04606	622	2BCk	38-60	8	5.07	38	5.9	3.5	42	20	56	21	23	SCL
0398S04614	637	Bt	14-28	7.5	0.3	23	2.1	0.5	1.1	0.93	78	8	14	SL
0398S04526	639	Bw	0-11	7.5	0.33	23	1.7	0.1	1.1	1.1	86	4	10	LS
0398S04527	639	Btb	11-35	8.2	0.79	28	3	0.35	8.4	6.5	76	9	15	SL
0398S04528	639	2Ck	35-60	7.9	5.19	27	8.2	1.65	60	27	86	3	11	LS

Mayqueen Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00782	3	A	0-4	6	0.02	0.62	55	54.2	0.02	0	0	0
0398S00783	3	Bt	4-21	6.3	0.02	0.62	55	54	0.02	0	0	0
0398S00784	3	C	21-53	4.2	0.07	2.2	37	34.6	0.07	0	0	0
0398S00439	49	Bt	12-34	2	0	0	16	16	.	.	.	.
0398S00440	50	A	0-3	2	0	1	22	21	.	.	.	.
0398S00441	50	Bt1	3-7	3	0	0	24	24	.	.	.	.
0398S00442	50	Bt2	7-17	4	0	0	32	31	.	.	.	.
0398S04606	622	2BCk	38-60	12	0.05	1.6	111	109.1	.	.	.	.
0398S04614	637	Bt	14-28	2.8	0.01	0.31	23	22.4	.	.	.	.
0398S04526	639	Bw	0-11	1.1	0.01	0.31	10	9.6	.	.	.	.
0398S04527	639	Btb	11-35	2.8	0.01	0.31	25	24.5	.	.	.	.
0398S04528	639	2Ck	35-60	2.4	0.05	1.6	25	23.5	.	.	.	.

Mayqueen Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00782	3	A	0-4	0	0	0	0
0398S00783	3	Bt	4-21	0	0	0	0
0398S00784	3	C	21-53	0	0	0.25	0
0398S00439	49	Bt	12-34	.	0	0	0
0398S00440	50	A	0-3	.	0	0	0
0398S00441	50	Bt1	3-7	.	0	0	0
0398S00442	50	Bt2	7-17	.	0	0	0
0398S04606	622	2BCk	38-60	.	1.3	0	0.02
0398S04614	637	Bt	14-28	.	0	0	0
0398S04526	639	Bw	0-11	.	0	0	0
0398S04527	639	Btb	11-35	.	0.4	0	0
0398S04528	639	2Ck	35-60	.	0.5	0	0.03

Mayqueen Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1527	257B	A	0-4	7.57	0.23	33.6	1.17	0.20	0.70	92.5	0.0	7.5
S-1528	257B	Bt (w)	14-21	7.45	0.31	31.1	1.88	0.34	0.90	85.0	2.5	12.5
S-1509	257B	Bt	21-35	6.97	0.42	27.6	0.99	0.29	2.81	82.5	8.8	8.8

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1527	257B	A	0-4	S	0.672	0.020	.	.	.	0.63	6.72
S-1528	257B	Bt (w)	14-21	LS	2.017	0.025	.	.	.	0.77	20.2
S-1509	257B	Bt	21-35	LS	4.662	0.027	.	.	.	0.85	46.6

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1527	257B	A	0-4	6.09	.	.	0.60	<0.15	.	<0.015
S-1528	257B	Bt (w)	14-21	19.4	.	.	0.55	<0.15	.	<0.015
S-1509	257B	Bt	21-35	45.8	.	.	0.80	<0.15	.	<0.015

Mayqueen Series Additional Laboratory Data Area 5 (Continued)

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/com	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
S-1059	A5-3	A	0-12	8.20	0.26	32.4	1.39	0.29	0.70	0.76	83.8	5.0	11.3
S-1060	A5-3	Btk	12-28	8.38	0.43	34.0	0.52	0.22	3.75	6.17	68.8	10.0	21.3
S-1060R	A5-3	Btk	12-28	8.30	0.42	33.2	0.52	0.22	3.61	5.90	68.8	10.0	21.3
S-1061	A5-3	2Btk	28-45	8.10	5.77	49.7	18.6	9.54	38.8	10.3	21.3	32.5	46.3

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Class	CaCO3 %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn	A-B Pot tn/1000tn
S-1059	A5-3	A	0-12	LS	0.479	0.022	.	.	.	0.69	4.79	4.10
S-1060	A5-3	Btk	12-28	SCL	4.396	0.023	.	.	.	0.72	44.0	43.2
S-1060R	A5-3	Btk	12-28	SCL	4.297	0.020	.	.	.	0.62	43.0	42.4
S-1061	A5-3	2Btk	28-45	C	18.16	0.483	.	.	.	15.1	182	166

GAL #	Sample Site	Soil Horizon	Sample Depth (in)	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	B ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1059	A5-3	A	0-12	.	.	<0.50	<0.15	.	<0.015
S-1060	A5-3	Btk	12-28	.	.	<0.50	<0.15	.	<0.015
S-1060R	A5-3	Btk	12-28	.	.	<0.50	<0.15	.	<0.015
S-1061	A5-3	2Btk	28-45	.	.	<0.50	0.775	.	0.044

Monierco Series

The soils of the Monierco series are classified as Loamy, mixed, superactive, mesic, shallow Typic Haplargids. These shallow, well-drained, moderately slowly permeable soils are on knolls, ridges, mesas, and plateaus. The soils formed in moderately fine textured residuum, eolian, and alluvial materials derived predominately from siltstone and sandstone.

Typifying Pedon: Monierco sandy loam, 0 to 5 percent slopes. Location is in Area 4 South, site #502 at 1,992,303 ft north and 300,060 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 3 inches; very pale brown (10YR 7/3) sandy loam, dark yellowish brown (10YR 4/6) moist; weak platy structure; loose; strongly effervescent; disseminated calcium carbonate; non-saline; neutral (pH 7.2).

Btk- 3 to 10 inches; pale brown (10YR 6/3) sandy clay loam, yellowish brown (10YR 5/4) moist; weak sub-angular blocky structure; hard, firm; violently effervescent; many fine, irregular, soft, carbonate nodules and soft masses; non-saline; neutral (pH 7.2).

2Ck- 10 to 20 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard; violently effervescent with disseminated calcium carbonate; calcium carbonate equivalent 14 percent; non-saline; slightly alkaline (pH 7.7).

2Cr- 20 inches; soft sandstone.

Range in Characteristics

Topdressing depth: 10 to 20 inches.

Reaction: Neutral to moderately alkaline.

Salinity: Non-saline.

Sodicity: SAR is typically less than 13 but is as much as 18 in some profiles.

Depth to paralithic contact: 5 to 20 inches

The limiting factors of topdressing are bedrock, carbonates, and SAR.

Monierco Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S01986	4 S	502	Btk	0	10	7.2	0.4	29	1.9	0.28	2.4	2	70	11	19
0398S01987	4 S	502	2Ck	10	20	7.7	1.17	41	0.84	0.24	12	17	25	42	33

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S01986	4 S	#502	Btk	0	10	SL	6.5	0.01	0.31	49	48.8	.	.
0398S01987	4 S	#502	2Ck	10	20	CL	14	0.01	0.31	137	136.9	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01986	4 S	#502	Btk	0	10	.	.	.	0.2	0	0
0398S01987	4 S	#502	2Ck	10	20	.	.	.	0.4	0.35	0

Monierco Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00528	18	A	0-4	7.4	0.5	24	2.66	0.24	1.69	1	51	21	28	SCL
0398S00527	18	Btk	4-9	7.8	0.49	30	1.2	0.07	3.68	5	34	37	29	CL
0398S00530	18	Bk	9-16	8.3	0.93	43	0.87	0.07	7.59	11	19	54	27	SICL
0398S00550	89	A	0-4	7.3	0.47	24	3.42	0.66	1.18	1	76	14	10	SL
0398S00551	89	Bt	4-11	7.2	0.41	28	2.86	0.42	1.42	1	70	11	19	SL
0398S00552	89	Btk	11-16	7.2	0.49	31	3	0.43	2.79	2	61	15	24	SCL
0398S00603	94	Bt	0-8	7.6	0.95	25	1.98	0.35	7.02	7	68	14	18	SL
0398S00815	223	Bt	3-9	8	1.6	29	1.6	0.56	16	15	80	5	15	SL
0398S00816	226	AB	0-6	7.4	0.44	29	2.9	0.43	2.9	2	65	10	25	SCL
0398S04518	598	Btk	3-8	8.2	0.74	23	1.1	0.2	6.8	8.4	88	4	8	LS
0398S04519	598	Ck	8-20	8	0.57	20	1.1	0.25	5	6.2	76	6	18	SL
0398S04958	799	AC	8-17	8.7	1.47	36	1.5	1.4	16	14	79	7	14	SL
0398S00544	21	2Bky	9-19	7.3	2.98	46	32.12	2	8.8	2	83	8	9	LS

Monierco Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00528	18	A	0-4	9.3	0.02	0.62	92	91.5	.	.	.	.
0398S00527	18	Btk	4-9	19	0.02	0.62	190	189	.	.	.	.
0398S00530	18	Bk	9-16	9.6	0.01	0.31	189	188.6	.	.	.	.
0398S00550	89	A	0-4	1.2	0.01	0.31	15	14.7	.	.	.	.
0398S00551	89	Bt	4-11	2.5	0.01	0.31	31	30.6	.	.	.	.
0398S00552	89	Btk	11-16	7.2	0.02	0.62	80	79.1	.	.	.	.
0398S00603	94	Bt	0-8	6.8	0.02	0.62	58	57.3	.	.	.	.
0398S00815	223	Bt	3-9	2.2	0.02	0.62	14	13.7	.	.	.	.
0398S00816	226	AB	0-6	8.4	0.02	0.62	64	63.3	.	.	.	.
0398S04518	598	Btk	3-8	5.8	0.21	6.6	68	61.2	.	.	.	.
0398S04519	598	Ck	8-20	5.6	0.07	2.2	64	61.5	.	.	.	.
0398S04958	799	AC	8-17	3.5	0.01	0.31	35	34.9	.	.	.	.
0398S00544	21	2Bky	9-19	6.7	7.78	240	65	-177.7	7.8	0	0	0

Monierco Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00528	18	A	0-4	.	0	0.25	0
0398S00527	18	Btk	4-9	.	0	0.25	0
0398S00530	18	Bk	9-16	.	0	0.5	0
0398S00550	89	A	0-4	.	0	0	0
0398S00551	89	Bt	4-11	.	0	0	0
0398S00552	89	Btk	11-16	.	0	0	0
0398S00603	94	Bt	0-8	.	0	0	0
0398S00815	223	Bt	3-9	.	0	0	0
0398S00816	226	AB	0-6	.	0	0	0
0398S04518	598	Btk	3-8	.	0	0.6	0
0398S04519	598	Ck	8-20	.	0.2	0.35	0
0398S04958	799	AC	8-17	.	0	0	0
0398S00544	21	2Bky	9-19	65.3	0	0.5	0

Muff Series

The soils of the Muff series are classified as Fine-loamy, mixed, superactive, mesic Typic Natrargids. These moderately deep, well-drained soils formed in residuum and slope alluvium weathered predominantly from carbonaceous shale. Muff soils are on mesas, hillslopes, and troughs.

Typifying Pedon: Muff sandy clay, 0 to 8 percent slopes. Location is Area 4 South, site #86 at 1,988,656 ft north and 296,298 ft east (New Mexico West, State Plane Coordinates).

AB- 0 to 3 inches; yellowish brown (10YR 5/4) moist, sandy clay; weak columner; slightly firm; slightly effervescent; non-saline; moderately alkaline (pH 7.9).

Btkn- 3 to 10 inches; dark yellowish brown (10YR 4/6) sandy clay loam, light yellowish brown (10YR 6/4) moist; moderate sub-angular blocky; hard; many distinct clay films on ped faces and lining pores; strongly effervescent; calcium carbonate as common filaments and soft masses; non-saline; moderately alkaline (pH 8.0).

Ck- 10 to 18 inches; yellowish brown (10YR 5/6) sandy clay loam, yellowish brown (10YR 5/6) moist; massive; very hard; strongly effervescent; calcium carbonate disseminated; slightly saline; slightly alkaline (pH 7.6).

2Ck- 18 to 30 inches; very dark gray (10YR 3/1) clay loam, very dark grayish brown (10YR 3/2) moist; massive; hard; slightly effervescent; slightly saline; moderately alkaline.

2Cr- 30 inches; soft shale.

Range in Characteristics

Topdressing depth: 0 to 10 inches.

Reaction: Slightly or moderately alkaline

Salinity: Non-saline through moderately saline.

Sodicity: SAR ranges from 5 to 30 and is greater than 16 in most profiles.

Depth to paralithic contact: 20 to 40 inches

Topdressing is limited by SAR, texture, and depth to bedrock.

Muff Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Type	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S00600	4 S	86	Mf	Btn	0	3	7.9	0.83	40	1.17	0.23	8.35	10	45	12	43
0398S00601	4 S	86	Mf	Btkn	3	10	8	0.77	34	0.65	0.05	8.15	14	60	10	30
0398S00602	4 S	86	Mf	Ck	10	18	7.6	6.8	33	24.2	3.4	65.8	18	68	9	23

Lab ID	Area	Sample Site	Soil Type	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S00600	4 S	86	Mf	Btn	0	3	SC	13	0.02	0.62	113	112.7	.	.
0398S00601	4 S	#86	Mf	Btkn	3	10	SCL	8.3	0.06	1.9	68	66	.	.
0398S00602	4 S	#86	Mf	Ck	10	18	SCL	4.7	0.53	17	37	20.9	.	.

Lab ID	Area	Sample Site	Soil Type	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00600	4 S	#86	Mf	Btn	0	3	.	.	.	0	0	0
0398S00601	4 S	#86	Mf	Btkn	3	10	.	.	.	0.2	0.3	0
0398S00602	4 S	#86	Mf	Ck	10	18	.	.	.	0.4	0.7	0.03

Muff Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00557	73	Btkn	0-7	7.8	5.34	31	8.42	1.23	60.81	28	59	16	25	SCL
0398S00558	73	Ck	7-17	7.6	10.4	37	23.7	3.94	108	29	41	34	25	L
0398S00613	108	Bt	0-7	7.7	0.56	27	0.98	0.15	5.21	7	55	22	23	SCL

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00557	73	Btkn	0-7	9.6	0.03	0.94	103	102.2	.	.	.	.
0398S00558	73	Ck	7-17	12	0.04	1.3	126	124.5	.	.	.	.
0398S00613	108	Bt	0-7	7.2	0.02	0.62	53	52.2	.	.	.	.

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00557	73	Btkn	0-7	.	0.2	0	0
0398S00558	73	Ck	7-17	.	0.2	0.3	0
0398S00613	108	Bt	0-7	.	0	0	0

Patel Series

The soils of the Patel series are classified as Fine, mixed, active, mesic Typic Natrargids. These moderately deep, well-drained, slowly permeable, sodic soils formed on mesas, upland valley bottoms, and foot slopes below structural benches. The soils formed in alluvium and residuum derived from shale, limestone, and siltstone.

Typifying Pedon: Patel clay loam, 0 to 3 percent slopes. Location is in Area 4 South, Overburden Drill Hole #H at 1982490 ft north and 302187 ft east (New Mexico West, State Plane Coordinates).

AC- 0 to 4 inches; dark gray (10 YR 4/1) clay loam, very dark grayish brown (10YR 3/2) moist; weak platy parting to weak sub-angular blocky structure; slightly hard; slightly effervescent; moderately saline; moderately alkaline (pH 7.9).

Btyn- 4 to 16 inches; very dark grayish brown (10YR 3/2) clay, very dark grayish brown (10YR 3/2) moist; weak sub-angular blocky structure; hard; few thin clay films on faces of peds and lining pores; secondary gypsum crystals segregated in common, fine, irregular shaped accumulations on faces of peds; non-effervescent; strongly saline; moderately alkaline (pH 8.2).

By- 16 to 34 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; weak sub-angular blocky structure; hard; secondary gypsum crystals segregated in common, fine, irregularly shaped accumulations of faces of peds; non-effervescent; strongly saline; moderately alkaline (pH 8.3).

Cy- 34 to 49 inches; dark brown (10YR 3/3) sandy clay loam, very dark brown (10YR 2/2) moist; massive; hard; non-effervescent; strongly saline; neutral (pH 7.1).

2Cr- 49 inches; coal.

Range in Characteristics

Topdressing depth: This series does not provide a suitable source of topdressing material.

Reaction: Neutral through strongly alkaline.

Salinity: Moderately or strongly saline.

Depth to paralithic contact: 20 to 40 inches

Clay: 16 to 52 percent.

Limiting factors for topdressing are EC, SAR, texture, and depth to bedrock.

Patel Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S01474	4 S	DH-H	AC	0	4	7.9	9.55	47	28	1.7	91	23	39	23	38
0398S01475	4 S	DH-H	Btyn	4	16	8.2	20.6	66	26	9.7	260	61	26	26	48
0398S01476	4 S	DH-H	By	16	34	8.3	21.7	63	22	23	220	46	31	21	48
0398S01477	4 S	DH-H	Cy	34	49	7.1	22.9	47	23	37	280	51	56	24	20

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S01474	4 S	DH-H	AC	0	4	CL	5.7	0.16	5	55	49.6	0	0
0398S01475	4 S	DH-H	Btyn	4	16	C	5	1.35	42	50	7.8	0	0
0398S01476	4 S	DH-H	By	16	34	C	4.5	1.67	52	47	-5.6	1.7	0.03
0398S01477	4 S	DH-H	Cy	34	49	SCL	2.2	3.75	120	23	-94.5	3.7	0.04

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01474	4 S	DH-H	AC	0	4	0	0	0	0.2	0.55	0.02
0398S01475	4 S	DH-H	Btyn	4	16	0	0	0	1.9	0.7	0.17
0398S01476	4 S	DH-H	By	16	34	0	0	46.8	4.9	0.55	0.15
0398S01477	4 S	DH-H	Cy	34	49	0.02	0.6	22	4.4	0.8	0.06

Patel Series Typifying Pedon Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00502	60	A	0-3	7.6	1.15	48	1.8	0.22	9.46	9	26	30	44	C
0398S00517	60	Btn	3-6	7.5	3.99	61	12.5	0.55	31.9	12	29	29	42	C
0398S00503	60	Btkyn	6-17	7.5	9.63	56	23.5	1.51	4.82	1	24	30	46	C
0398S00525	60	Cdy	17-60	7.5	8.82	64	27	2.47	76.1	20	14	30	56	C
0398S00617	118	Bty1	0-19	7.7	1.04	44	2.81	0.18	7.47	6	30	29	41	C
0398S00618	118	Bty2	19-32	7.2	8.24	53	56.5	6.36	47.1	8	21	35	44	C
0398S00962	283	Btkyn	0-15	7.9	8.62	71	17	0.72	94	32	35	22	43	C
0398S00980	340	Btn	0-6	7.7	2.57	57	5.1	0.30	26	16	23	29	48	C
0398S00981	340	Btyn	6-23	7.4	12.4	59	38	2.6	120	26	30	25	45	C
0398S01642	420	Btn	0-10	8.2	3.67	55	1.7	0.28	35	35	51	16	33	SCL
0398S01643	420	Btyn	10-20	7.9	13	57	25	1.8	130	34	38	22	40	C
0398S01644	420	Cy	20-34	7.9	11.8	46	23	1.8	110	32	28	29	43	C
0398S01645	420	Btnb	34-58	8.1	4.37	39	3.1	0.44	45	34	38	39	23	L
0398S01663	444	Btn	0-8	7.8	5.11	47	7.7	0.66	39	19	38	24	38	CL
0398S01664	444	2Bky	8-15	7.8	11.2	53	22	2	100	29	26	34	40	C
0398S01665	444	2Cky	15-25	7.8	9.71	68	20	2.5	85	25	18	37	45	C
0398S02173	547	Btn	0-4	7.6	0.79	51	1.5	0.68	8.7	8	40	24	36	CL
0398S02174	547	Btkyn	4-17	7.5	7.99	93	15	3.2	71	24	18	30	52	C
0398S02175	547	C1	17-54	7.4	5.25	60	12	2.5	43	16	32	36	32	CL
0398S02176	547	C2	54-60	7.7	2.8	30	3.4	0.78	29	20	70	14	16	SL
0398S01467	DH-B	Btn	0-10	7.9	3.6	50	4	0.8	38	25	41	20	39	CL
0398S01468	DH-B	Bky	10-21	7.9	9.85	75	27	5.7	98	24	25	27	48	C
0398S01470	DH-D	Btn	0-4	7.6	7.87	63	26	2.1	73	19	36	19	45	C
0398S01471	DH-D	Btyn	4-9	7.9	10.8	91	24	2.9	110	31	26	21	53	C
0398S00580	8	2Btknb	13-26	7.9	8.24	59	22.3	8.27	73	19	21	37	42	C
0398S00685	168	C	0-10	7.6	1.22	37	4.96	0.29	6.54	4	53	17	30	SCL
0398S00686	186	C	0-7	7.5	3.03	35	31.3	2.87	8.83	2	51	24	25	SCL
0398S00963	287	C	0-10	7.4	0.81	38	3.4	0.06	3.5	2.7	55	17	28	SCL
0398S00964	287	2Btn	10-19	7.2	1.54	51	11	0.59	5.4	2.2	40	22	38	CL
0398S00965	295	C	0-8	7.8	1.46	28	1.9	0.49	17	15	78	7	15	SL
0398S01362	DH-F	AC	0-7	7.8	0.74	22	1.2	0.2	5.8	7	83	2	15	SL
0398S01363	DH-F	2Btn	7-12	8	0.83	34	2.1	0.92	8.9	7	68	6	26	SCL
0398S01364	DH-F	2Btkn	12-22	7.9	2.83	53	2.4	0.52	31	25	43	19	38	CL
0398S01365	DH-F	2Cky	22-32	7.7	8.31	55	22	5.7	69	18	35	30	35	CL

Patel Series Typifying Pedon Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00502	60	A	0-3	7.7	0.04	1.3	66	65	.	.	.	.
0398S00517	60	Btn	3-6	8.4	0.08	2.5	77	74.6	.	.	.	.
0398S00503	60	Btkyn	6-17	7.8	0.91	28	73	45	.	.	.	.
0398S00525	60	Cdy	17-60	5.8	0.8	25	57	32.4	.	.	.	.
0398S00617	118	Bty1	0-19	4.8	0.02	0.62	46	45.1	.	.	.	.
0398S00618	118	Bty2	19-32	2.6	0.31	9.7	38	28	.	.	.	.
0398S00962	283	Btkyn	0-15	2.4	1.67	52	24	-27.9	1.67	0.0	0.0	0.0
0398S00980	340	Btn	0-6	5.3	0.09	2.8	50	47.3	.	.	.	.
0398S00981	340	Btyn	6-23	5.0	0.45	14	45	31.3	.	.	.	.
0398S01642	420	Btn	0-10	4.2	0.02	0.62	40	39.3	.	.	.	.
0398S01643	420	Btyn	10-20	5.3	0.19	5.9	51	44.9	.	.	.	.
0398S01644	420	Cy	20-34	5.8	0.14	4.4	55	51.1	.	.	.	.
0398S01645	420	Btnb	34-58	5.3	0.03	0.94	45	44.3	.	.	.	.
0398S01663	444	Btn	0-8	8.2	0.06	1.9	74	72	.	.	.	.
0398S01664	444	2Bky	8-15	5.1	1.98	62	50	-11.6	2	0	0	0
0398S01665	444	2Cky	15-25	5.6	0.49	15	54	38.9	.	.	.	.
0398S02173	547	Btn	0-4	2.6	0.02	0.62	26	25.5	.	.	.	.
0398S02174	547	Btkyn	4-17	2.1	0.6	19	20	1.6	.	.	.	.
0398S02175	547	C1	17-54	3.5	0.09	2.8	33	29.8	.	.	.	.
0398S02176	547	C2	54-60	4.8	0.04	1.3	45	43.7	.	.	.	.
0398S01467	DH-B	Btn	0-10	7.7	0.05	1.6	66	64.2	0	0	0	0
0398S01468	DH-B	Bky	10-21	6.9	3.73	120	61	-55.2	3.7	0	0.03	0.9
0398S01470	DH-D	Btn	0-4	5.4	0.27	8.4	57	48.7	0	0	0	0
0398S01471	DH-D	Btyn	4-9	4.7	1.41	44	46	1.6	0	0	0	0
0398S00580	8	2Btknb	13-26	14	0.03	0.94	132	130.6	.	.	.	.
0398S00685	168	C	0-10	2.3	0.08	2.5	29	26.2	.	.	.	.
0398S00686	186	C	0-7	3.6	0.17	5.3	41	35.9	.	.	.	.
0398S00963	287	C	0-10	4.9	0.04	1.3	50	48.5	.	.	.	.
0398S00964	287	2Btn	10-19	6.2	0.07	2.2	61	58.5	.	.	.	.
0398S00965	295	C	0-8	5.8	0.02	0.62	53	52.1	.	.	.	.
0398S01362	DH-F	AC	0-7	1.7	0.01	0.31	14	13.4	.	.	.	.
0398S01363	DH-F	2Btn	7-12	4.1	0.01	0.31	40	39.3	.	.	.	.
0398S01364	DH-F	2Btkn	12-22	3.5	0.03	0.94	30	29.4	.	.	.	.
0398S01365	DH-F	2Cky	22-32	1.7	0.34	11	15	4.1	.	.	.	.

Patel Series Typifying Pedon Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00502	60	A	0-3	.	0	0	0
0398S00517	60	Btn	3-6	.	0.2	0.3	0
0398S00503	60	Btkyn	6-17	.	0	0.45	0.04
0398S00525	60	Cdy	17-60	.	0	0.35	0.11
0398S00617	118	Bty1	0-19	.	0	0.3	0
0398S00618	118	Bty2	19-32	.	0.4	0	0
0398S00962	283	Btkyn	0-15	24.3	0.3	0.40	0.06
0398S00980	340	Btn	0-6	.	0	0.50	0
0398S00981	340	Btyn	6-23	.	0	0.70	0.14
0398S01642	420	Btn	0-10	.	2.3	0.45	0.02
0398S01643	420	Btyn	10-20	.	1	0.65	0.1
0398S01644	420	Cy	20-34	.	1.5	0.55	0.08
0398S01645	420	Btnb	34-58	.	0.7	0.55	0.1
0398S01663	444	Btn	0-8	.	1	0.35	0
0398S01664	444	2Bky	8-15	50.2	1.3	0.35	0.02
0398S01665	444	2Cky	15-25	.	0.8	0.25	0
0398S02173	547	Btn	0-4	.	0.3	0	0
0398S02174	547	Btkyn	4-17	.	0.2	0.3	0.06
0398S02175	547	C1	17-54	.	0	0	0.04
0398S02176	547	C2	54-60	.	0.3	0.25	0.04
0398S01467	DH-B	Btn	0-10	0	0	0.25	0
0398S01468	DH-B	Bky	10-21	60.4	0.3	0.4	0
0398S01470	DH-D	Btn	0-4	0	0.3	0.35	0
0398S01471	DH-D	Btyn	4-9	0	0.6	0.55	0.09
0398S00580	8	2Btknb	13-26	.	0	0.25	0
0398S00685	168	C	0-10	.	0	0.6	0
0398S00686	186	C	0-7	.	0	0.35	0
0398S00963	287	C	0-10	.	0	0.45	0
0398S00964	287	2Btn	10-19	.	0	0.60	0
0398S00965	295	C	0-8	.	0	0.25	0
0398S01362	DH-F	AC	0-7	.	0	0	0
0398S01363	DH-F	2Btn	7-12	.	0	0	0
0398S01364	DH-F	2Btkn	12-22	.	0.3	0	0
0398S01365	DH-F	2Cky	22-32	.	0.2	0	0

Persayo Series

The soils in this series are classified as Loamy, mixed, active, calcareous, mesic, shallow Typic Torriorthents. These shallow, well-drained soils are on hills, terraces, ridges, and breaks. They formed in alluvium and residuum derived from sandstone, siltstone, and shale.

Typifying Pedon: Persayo clay loam, 0 to 35 percent slopes. Location is in Area 4 South, Overburden Drill Site #E at 1,980,662 ft north and 304,717 ft east (New Mexico West, State Plane Coordinates).

AC- 0 to 3 inches; very dark grayish brown (10YR 3/2) moist, clay loam; weak platy structure; slightly friable; very slightly effervescent; non-saline; slightly alkaline (pH 7.8).

C- 3 to 15 inches; dark brown (1YR 3/3) moist, sandy clay; massive; friable; slightly effervescent; non-saline; slightly alkaline (pH 7.7).

2Cr- 15 inches; soft sandstone.

Range in Characteristics

Topdressing depth: 0 to 20 inches.

Reaction: Neutral through moderately alkaline.

Salinity: Non-saline in the upper parts of the profile and non-saline to moderately saline in the lower part of the profile.

Depth to paralithic contact: 2 to 20 inches

Rock fragments: Typically less than 5 percent channers but as much as 35 percent in some profiles.

The limiting factors for topdressing are depth to bedrock, SAR, and slope grade.

Persayo Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S01472	4 S	DH-E	AC	0	3	7.8	0.7	39	3.5	0.3	3	2	44	18	38
0398S01473	4 S	DH-E	C	3	15	7.7	0.76	39	3	0.3	4.9	4	46	16	38

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S01472	4 S	DH-E	AC	0	3	CL	4.7	0.03	0.94	48	47	0	0
0398S01473	4 S	DH-E	C	3	15	SC	4.1	0.04	1.3	44	42.4	0	0

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01472	4 S	DH-E	AC	0	3	0	0	0	0	0.4	0
0398S01473	4 S	DH-E	C	3	15	0	0	0	0	0.45	0

Persayo Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00616	116	AC	0-4	7.6	0.41	31	2.56	0.3	1.29	1	48	19	33	SCL
0398S00622	126	C	0-4	8	1.92	39	2.26	0.6	21.9	18	28	37	35	CL
0398S00787	201	AC	0-6	7.4	1.74	35	19	2.8	3	1	38	26	36	CL
0398S00856	230	AC	0-8	7.3	0.65	26	3.1	0.083	5.8	5	73	12	15	SL
0398S00864	253	C	0-20	7.4	3.21	32	22	1.4	17	5	63	19	18	SL
0398S01982	495	C	0-6	7	0.45	28	3.7	0.48	0.72	0	58	19	23	SCL
0398S02184	560	C1	0-8	7	3.09	41	27	4.4	12	3	62	14	24	SCL
0398S02185	560	C2	8-14	6.8	3.15	37	27	6	10	2	69	9	22	SCL
0398S04633	687	2Ck	2-11	8	8.43	48	19	2.1	120	35	30	36	34	CL
0398S04950	790	AC	0-8	8.6	2.15	56	3.9	1.3	23	14	56	32	12	SL

Persayo Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00616	116	AC	0-4	9.2	0.02	0.62	97	96.7	.	.	.	.
0398S00622	126	C	0-4	15	0.01	0.31	142	142	.	.	.	.
0398S00787	201	AC	0-6	13	0.02	0.62	120	119.5	0.02	0	0	0
0398S00856	230	AC	0-8	3.9	0.03	0.94	37	36.2	.	.	.	.
0398S00864	253	C	0-20	4.9	0.04	1.3	44	43.2	.	.	.	.
0398S01982	495	C	0-6	9.3	0.01	0.31	87	86.6	.	.	.	.
0398S02184	560	C1	0-8	3.6	0.17	5.3	38	32.6	.	.	.	.
0398S02185	560	C2	8-14	3.8	0.22	6.9	40	32.7	.	.	.	.
0398S04633	687	2Ck	2-11	3.4	0.99	31	34	3.1	.	.	.	.
0398S04950	790	AC	0-8	36	0.01	0.31	410	409.7	.	.	.	.

Persayo Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00616	116	AC	0-4	.	0	0.25	0
0398S00622	126	C	0-4	.	0	0.25	0
0398S00787	201	AC	0-6	0	0	0.3	0
0398S00856	230	AC	0-8	.	0	0	0.02
0398S00864	253	C	0-20	.	0	0	0
0398S01982	495	C	0-6	.	0.3	0	0
0398S02184	560	C1	0-8	.	0.8	0.55	0
0398S02185	560	C2	8-14	.	0.6	0.5	0
0398S04633	687	2Ck	2-11	.	1.4	0.7	0
0398S04950	790	AC	0-8	.	0.5	0.45	0

Razito Series

The soils in the Razito series are classified as Mixed, mesic Typic Torripsamments. These deep, somewhat excessively drained soils formed in eolian material and alluvium derived from sandstone on undulating mesas, plateaus, and low terraces.

Typifying Pedon: Razito very fine sand, 0 to 5 percent slopes. Location is in Area 4 South, site #647 at 1,988,727 ft north and 303,057 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 4 inches; yellowish brown (10YR 4/6) very fine sand, dark yellowish brown (10YR 4/4) moist; weak platy parting to weak granular structure; soft, very friable; non-effervescent; non-saline; slightly alkaline (pH 7.4).

C_1- 4 to 15 inches; yellowish brown (10YR 5/4) fine sand, dark yellowish brown (10YR 4/5) moist; massive; slightly hard; very slightly effervescent; non-saline; slightly alkaline (pH 7.4).

C_2- 15 to 42 inches; yellowish brown (10YR 5/8) fine sand, dark yellowish brown (10YR 4/5) moist; massive; slightly hard; slightly effervescent; non-saline; slightly alkaline (pH 7.5).

C_3- 42 to 62 inches; yellowish brown (10YR 5/8) fine sand, yellowish brown (10YR 5/4) moist; massive; hard; non-effervescent; non-saline; strongly alkaline (pH 8.6).

Range in Characteristics

Topdressing depth: 30 to 60 or more inches.

Reaction: Neutral or slightly alkaline in the upper part of the profile and neutral to strongly alkaline in the lower part of the profile.

Salinity: Non-saline in the upper part of the profile and non-saline to moderately saline in the lower part of the profile.

Depth to paralithic contact: 20 to 60 or more inches.

Razito soils occasionally have 1 lithologic discontinuity. The substrata of these profiles is typically unsuitable for use as topdressing because of SAR

Razito Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S04530	4 S	647	A	0	4	7.4	0.24	21	1.7	0.1	0.15	0.16	92	2	6
0398S04531	4 S	647	C1	4	15	7.4	0.22	23	1.7	0.1	0.15	0.16	92	1	7
0398S04532	4 S	647	C2	15	42	7.5	0.26	25	1.3	0.15	0.7	0.84	94	1	5
0398S04533	4 S	647	C3	42	62	8.6	0.69	27	0.3	0.05	5.4	13	92	3	5

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S04530	4 S	647	A	0	4	S	0.48	0.01	0.31	5	5	.	.
0398S04531	4 S	647	C1	4	15	S	0.84	0.01	0.31	8	7.3	.	.
0398S04532	4 S	647	C2	15	42	S	1.2	0.01	0.31	9	8.8	.	.
0398S04533	4 S	647	C3	42	62	S	0.65	0.01	0.31	6	5.3	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04530	4 S	647	A	0	4	.	.	.	0	0	0
0398S04531	4 S	647	C1	4	15	.	.	.	0	0	0
0398S04532	4 S	647	C2	15	42	.	.	.	0	0	0
0398S04533	4 S	647	C3	42	62	.	.	.	0	0	0

Razito Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00813	217	C	0-41	7.4	1.32	27	2.3	0.48	8.8	8	88	4	8	LS
0398S00814	217	Ck	41-60	7.4	1.35	28	2.8	0.97	8.4	6	83	6	11	LS
0398S00806	220	C	4-18	7.2	0.35	27	2.5	0.39	1.3	1	83	4	13	SL
0398S00807	220	Ck	18-42	7.7	0.57	26	1.4	0.31	5.3	6	85	2	13	LS
0398S00808	220	2C	42-60	7.8	0.86	28	0.55	0.26	7.4	12	93	2	5	S
0398S00867	255	AB	0-13	7.5	0.37	27	3.8	0.56	1.2	1	86	4	10	LS
0398S00868	255	Ck	13-26	7.5	0.43	28	3.4	0.57	2.5	2	86	4	10	LS
0398S00869	255	2Btk	26-43	7.9	0.80	35	4.2	0.87	8.6	5	66	14	20	SCL
0398S00871	257	AC	0-16	7.4	0.41	29	4.1	0.43	1.4	1	83	7	10	LS
0398S00872	257	Ck	16-29	7.2	2.72	31	27	2.2	6.6	2	81	9	10	LS
0398S00873	257	Cy1	29-48	7.5	5.54	31	22	5.3	45	12	86	3	11	LS
0398S00874	257	Cy2	48-60	7.8	8.72	36	20	7.8	86	23	75	10	15	SL
0398S00975	323	C	0-22	7.3	0.50	25	2.3	0.26	2.9	2.6	83	4	13	SL
0398S00976	323	2Btk	22-44	7.7	0.82	26	3.0	0.54	8.1	6.1	75	10	15	SL
0398S00977	323	2Ck	44-60	7.7	2.78	28	2.0	0.57	24	21	83	7	10	LS
0398S01186	375	AB	0-18	7.4	0.31	25	1.2	0.078	0.9	1	85	5	10	LS
0398S01187	375	Ck1	18-42	7.9	0.55	25	0.31	1.8	6.1	6	88	4	8	LS
0398S01188	375	Ck2	42-60	8.1	0.79	28	1.9	1	5.7	5	93	2	5	S
0398S01461	411	2Cy	46-60	8.4	16.7	38	19	7.1	180	51	88	4	8	LS
0398S01647	431	C	0-19	7.4	0.32	26	2.4	0.55	1.8	1	93	2	5	S
0398S01648	431	2Btk	19-26	8.1	0.75	37	2.8	0.91	8.1	6	78	4	18	SL
0398S01649	431	3Bky	26-36	7.6	7.31	68	19	4.9	66	19	51	19	30	SCL
0398S01651	435	Btkb	29-39	8.1	1.12	31	3.5	0.97	12	8	83	7	10	LS
0398S01661	454	Btb	35-45	7.5	0.3	36	1.5	0.34	1.9	2	61	14	25	SCL
0398S01662	454	C	45-60	7.7	0.49	25	2.3	0.5	3.7	3	88	4	8	LS
0398S01735	477	2Btkn	31-46	8.4	5.58	34	1.7	0.62	62	58	85	3	12	LS
0398S01736	477	2Bck	46-60	8.1	10.4	31	19	4.4	110	32	88	1	11	LS
0398S01988	505	C1	0-46	7.3	0.43	30	1.2	0.12	3.3	4	90	5	5	S
0398S01989	505	C2	46-60	7.4	1.82	34	6.1	0.68	14	8	83	9	8	LS
0398S02171	544	C1	0-31	7.3	0.29	30	1.7	0.45	1.4	1	90	2	8	S
0398S02172	544	C2	31-60	7.5	0.42	29	0.78	0.078	3.9	6	90	2	8	S

Razito Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00813	217	C	0-41	1.6	0.01	0.31	10	9.4	.	.	.	.
0398S00814	217	Ck	41-60	3	0.01	0.31	20	19.8	.	.	.	.
0398S00806	220	C	4-18	2.7	0.01	0.31	23	22.3	.	.	.	.
0398S00807	220	Ck	18-42	1.9	0.01	0.31	10	9.7	.	.	.	.
0398S00808	220	2C	42-60	0.66	0.01	0.31	4	3.3	.	.	.	.
0398S00867	255	AB	0-13	1.3	0.01	0.31	10	9.4	.	.	.	.
0398S00868	255	Ck	13-26	2.1	0.01	0.31	15	14.8	.	.	.	.
0398S00869	255	2Btk	26-43	6.4	0.02	0.62	55	54.3	.	.	.	.
0398S00871	257	AC	0-16	2.4	0.01	0.31	19	18.7	.	.	.	.
0398S00872	257	Ck	16-29	3.6	0.07	2.2	25	22.8	.	.	.	.
0398S00873	257	Cy1	29-48	0.41	0.30	9.4	2	-7.0	0.300	0	0	0
0398S00874	257	Cy2	48-60	0.11	2.79	87	1	-86.1	2.79	0	0	0
0398S00975	323	C	0-22	1.8	0.01	0.31	14	13.8	.	.	.	.
0398S00976	323	2Btk	22-44	3.9	0.01	0.31	29	28.2	.	.	.	.
0398S00977	323	2Ck	44-60	4.9	0.02	0.62	35	34.0	.	.	.	.
0398S01186	375	AB	0-18	2.3	0.01	0.31	19	18.5	.	.	.	.
0398S01187	375	Ck1	18-42	3.3	0.01	0.31	23	22.9	.	.	.	.
0398S01188	375	Ck2	42-60	1.2	0.01	0.31	11	10.6	.	.	.	.
0398S01461	411	2Cy	46-60	3.2	0.3	9.4	28	18.1	.	.	.	.
0398S01647	431	C	0-19	0.64	0.01	0.31	5	5.1	.	.	.	.
0398S01648	431	2Btk	19-26	6.9	0.01	0.31	44	44.2	.	.	.	.
0398S01649	431	3Bky	26-36	11	0.15	4.7	107	102.7	.	.	.	.
0398S01651	435	Btkb	29-39	3.7	0.01	0.31	27	26.8	.	.	.	.
0398S01661	454	Btb	35-45	2.9	0.01	0.31	25	24.5	.	.	.	.
0398S01662	454	C	45-60	1.7	0.01	0.31	13	12.4	.	.	.	.
0398S01735	477	2Btkn	31-46	3.5	0.03	0.94	23	21.6	.	.	.	.
0398S01736	477	2Bck	46-60	3.3	0.07	2.2	22	19.5	.	.	.	.
0398S01988	505	C1	0-46	1.2	0.02	0.62	14	12.9	.	.	.	.
0398S01989	505	C2	46-60	1.5	0.02	0.62	13	12.2	.	.	.	.
0398S02171	544	C1	0-31	1.4	0.01	0.31	12	11.2	.	.	.	.
0398S02172	544	C2	31-60	1.4	0.02	0.62	12	10.9	.	.	.	.

Razito Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00813	217	C	0-41	.	0	0	0
0398S00814	217	Ck	41-60	.	0	0	0
0398S00806	220	C	4-18	.	0	0	0
0398S00807	220	Ck	18-42	.	0	0	0
0398S00808	220	2C	42-60	.	0	0	0
0398S00867	255	AB	0-13	.	0	0	0
0398S00868	255	Ck	13-26	.	0	0	0
0398S00869	255	2Btk	26-43	.	0.2	0	0
0398S00871	257	AC	0-16	.	0	0	0
0398S00872	257	Ck	16-29	.	0	0	0
0398S00873	257	Cy1	29-48	2.4	0.5	0	0
0398S00874	257	Cy2	48-60	1.1	1.1	0	0
0398S00975	323	C	0-22	.	0	0	0
0398S00976	323	2Btk	22-44	.	0	0	0
0398S00977	323	2Ck	44-60	.	0	0	0
0398S01186	375	AB	0-18	.	0	0	0
0398S01187	375	Ck1	18-42	.	0	0	0
0398S01188	375	Ck2	42-60	.	0	0	0
0398S01461	411	2Cy	46-60	.	0.2	0.25	0.05
0398S01647	431	C	0-19	.	0	0	0
0398S01648	431	2Btk	19-26	.	0.5	0	0
0398S01649	431	3Bky	26-36	.	1.3	0.6	0.05
0398S01651	435	Btkb	29-39	.	0.3	0	0
0398S01661	454	Btb	35-45	.	0.3	0	0
0398S01662	454	C	45-60	.	0.2	0	0
0398S01735	477	2Btkn	31-46	.	0.4	0.25	0
0398S01736	477	2Bck	46-60	.	0.5	0	0.02
0398S01988	505	C1	0-46	.	0	0	0
0398S01989	505	C2	46-60	.	0	0	0
0398S02171	544	C1	0-31	.	0	0	0
0398S02172	544	C2	31-60	.	0	0	0

Razito Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S04450	593	2Btkn	30-47	8.2	11.3	38	12	6.2	130	43	68	9	23	SCL
0398S04451	593	2C	47-60	8.7	7.4	39	3.1	1.6	86	56	87	6	7	LS
0398S04536	656	Btb	33-60	8.2	0.67	27	0.9	0.2	6.2	8.4	74	6	20	SCL
0398S04621	668	A	0-5	7.4	0.23	22	1.6	0.24	0.31	0.33	90	2	8	S
0398S04622	668	C	5-60	7.5	0.3	23	1.7	0.29	1.1	1.1	90	2	8	S
0398S05007	834	A	0-6	7.9	0.47	20	3.3	0.36	0.96	0.71	91	3	6	S
0398S05008	834	C1	6-31	8.1	0.45	23	2.5	0.33	1.8	1.6	90	4	6	S
0398S05009	834	C2	31-60	8.4	0.56	24	1	0.21	5.2	6.6	88	4	8	LS
0398S00562	83	A	0-4	7.4	0.39	24	3.93	0.56	0.57	0	84	6	10	LS
0398S00563	83	BC	4-18	7.3	0.37	27	4.56	0.65	0.86	1	84	6	10	LS
0398S00564	83	2Ck	18-32	7.5	0.45	26	2.53	0.55	3.17	3	81	6	13	SL
0398S00857	232	C	0-22	7.4	0.90	26	3.2	0.15	4.9	4	76	9	15	SL
0398S01175	359	AB	0-13	7.9	1.01	27	2.3	0.048	9.4	9	88	3	9	LS
0398S01176	359	Bk	13-27	8	3.23	33	1.1	0.061	33	44	88	4	8	LS
0398S01177	359	Ck	27-39	7.9	10.1	31	19	4.9	100	30	83	7	10	LS
0398S01178	360	AC	0-21	7.5	0.4	26	1.2	0.049	2.4	3	85	5	10	LS
0398S01179	360	C	21-30	8.2	0.92	30	0.13	1	8.7	11	90	2	8	S
0398S01184	373	AC	2-21	7.5	0.4	29	1.4	0.16	1.6	2	75	10	15	SL
0398S01185	373	C	21-34	7.6	0.5	26	0.49	0.027	4	8	80	7	13	SL
0398S01727	471	A	0-5	7.5	0.44	25	3.2	0.34	0.72	1	88	5	7	LS
0398S01728	471	C	5-19	7.8	0.68	27	0.75	0.13	7.4	11	90	3	7	S
0398S01729	471	2Btn	19-31	8	2.99	43	1.9	0.35	41	38	68	13	19	SL
0398S01730	471	2Cky	31-60	7.7	9.85	37	25	3.5	100	26	80	6	14	SL
0398S01731	472	2Btkyn	18-31	7.7	11.6	47	23	2.2	110	31	53	15	32	SCL
0398S04609	632	C	0-32	8	2.26	24	2	0.21	19	18	88	2	10	LS
0398S01484	DH-V	A	0-4	7.4	0.45	25	5.2	0.8	0.6	0	84	6	10	LS
0398S01485	DH-V	Bw	4-12	7.3	0.39	27	5	0.7	0.6	0	84	5	11	LS
0398S01486	DH-V	Ck	12-24	7.4	0.39	29	3.2	0.6	1.9	1	81	6	13	SL
0398S01487	DH-V	2Ck	24-36	7.8	0.61	32	1.9	0.2	5.1	5	64	16	20	SCL

Razito Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S04450	593	2Btkn	30-47	8.4	0.11	3.4	73	69.7	.	.	.	.
0398S04451	593	2C	47-60	4.4	0.07	2.2	40	37.6	.	.	.	.
0398S04536	656	Btb	33-60	5.9	0.01	0.31	53	53	.	.	.	.
0398S04621	668	A	0-5	0.71	0.01	0.31	6	5.4	.	.	.	.
0398S04622	668	C	5-60	0.79	0.01	0.31	7	6.8	.	.	.	.
0398S05007	834	A	0-6	1.3	0.01	0.31	12	11.4	.	.	.	.
0398S05008	834	C1	6-31	1.4	0.01	0.31	14	13.2	.	.	.	.
0398S05009	834	C2	31-60	1.6	0	0	16	15.8	.	.	.	.
0398S00562	83	A	0-4	1.7	0.01	0.31	20	19.5	.	.	.	.
0398S00563	83	BC	4-18	3	0.01	0.31	35	34.2	.	.	.	.
0398S00564	83	2Ck	18-32	3.8	0.01	0.31	43	43	.	.	.	.
0398S00857	232	C	0-22	2.1	0.03	0.94	16	14.9	.	.	.	.
0398S01175	359	AB	0-13	1.9	0.01	0.31	19	19	.	.	.	.
0398S01176	359	Bk	13-27	1.6	0.02	0.62	13	12.8	.	.	.	.
0398S01177	359	Ck	27-39	2.6	0.15	4.7	21	16.2	.	.	.	.
0398S01178	360	AC	0-21	3.5	0.01	0.31	26	25.7	.	.	.	.
0398S01179	360	C	21-30	1.6	0.01	0.31	15	14.4	.	.	.	.
0398S01184	373	AC	2-21	2.9	0.01	0.31	23	23	.	.	.	.
0398S01185	373	C	21-34	2.6	0.01	0.31	20	19.4	.	.	.	.
0398S01727	471	A	0-5	1.3	0.01	0.31	9	8.9	.	.	.	.
0398S01728	471	C	5-19	1	0.01	0.31	7	6.9	.	.	.	.
0398S01729	471	2Btn	19-31	5.4	0.02	0.62	48	47.8	.	.	.	.
0398S01730	471	2Cky	31-60	1.4	0.14	4.4	10	5.6	.	.	.	.
0398S01731	472	2Btkyn	18-31	4.1	0.95	30	44	14.3	.	.	.	.
0398S04609	632	C	0-32	3.4	0.08	2.5	37	34.8	.	.	.	.
0398S01484	DH-V	A	0-4	3.1	0.01	0.31	30	30	0	0	0	0
0398S01485	DH-V	Bw	4-12	5.3	0.01	0.31	31	31	0	0	0	0
0398S01486	DH-V	Ck	12-24	5.5	0.01	0.31	44	43.9	0	0	0	0
0398S01487	DH-V	2Ck	24-36	9.8	0.02	0.62	84	83.5	0	0	0	0

Razito Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04450	593	2Btkn	30-47	.	0.6	0.35	0
0398S04451	593	2C	47-60	.	0.5	0.3	0
0398S04536	656	Btb	33-60	.	0.3	0	0
0398S04621	668	A	0-5	.	0	0	0
0398S04622	668	C	5-60	.	0	0	0
0398S05007	834	A	0-6	.	0	0	0
0398S05008	834	C1	6-31	.	0	0	0
0398S05009	834	C2	31-60	.	0	0	0
0398S00562	83	A	0-4	.	0	0	0
0398S00563	83	BC	4-18	.	0	0	0
0398S00564	83	2Ck	18-32	.	0	0	0
0398S00857	232	C	0-22	.	0	0.25	0
0398S01175	359	AB	0-13	.	0	0	0
0398S01176	359	Bk	13-27	.	0	0	0
0398S01177	359	Ck	27-39	.	0.2	0	0
0398S01178	360	AC	0-21	.	0	0	0
0398S01179	360	C	21-30	.	0	0	0
0398S01184	373	AC	2-21	.	0	0	0
0398S01185	373	C	21-34	.	0	0	0
0398S01727	471	A	0-5	.	0	0	0
0398S01728	471	C	5-19	.	0	0	0
0398S01729	471	2Btn	19-31	.	0.6	0.45	0
0398S01730	471	2Cky	31-60	.	0.6	0.55	0.06
0398S01731	472	2Btkyn	18-31	.	1.1	0.4	0
0398S04609	632	C	0-32	.	0.2	0.3	0
0398S01484	DH-V	A	0-4	0	0	0	0
0398S01485	DH-V	Bw	4-12	0	0	0	0
0398S01486	DH-V	Ck	12-24	0	0	0	0
0398S01487	DH-V	2Ck	24-36	0	0	0	0

Razito Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1586	126B	A, C1, C2	0-41	8.56	2.07	25.0	2.90	0.32	16.8	71.3	13.8	15.0
S-1587	126B	C3	41-60	8.44	4.42	29.5	2.85	0.42	37.8	75.0	10.0	15.0
S-1615	246B	A, 2Cb	0-12	7.96	0.32	30.1	2.06	0.39	0.65	86.3	5.0	8.8
S-1616	246B	2Cb	12-21	8.13	0.43	30.5	1.82	0.47	2.53	72.5	7.5	20.0
S-1617	246B	3Btkb	21-34	8.36	1.10	35.7	1.21	0.48	9.31	40.0	31.3	28.8
S-1618	246B	3Cb	34-60	7.88	4.24	28.6	18.9	7.56	25.0	77.5	6.3	16.3
S-1603	87B	A, C1	0-13	8.12	0.28	31.4	1.64	0.27	1.02	88.8	2.5	8.8
S-1604	87B	C2	13-27	8.25	0.25	28.3	1.70	0.30	0.76	73.8	8.8	17.5
S-1605	87B	Ck	27-35	8.18	0.37	31.5	2.28	0.32	1.07	85.0	5.0	10.0
S-1523	89B	A, C1, C2, C3	0-24	7.30	0.31	31.0	1.46	0.36	0.99	88.8	1.3	10.0
S-1524	89B	Btkyb	24-30	7.45	0.67	32.0	1.21	0.58	4.34	57.5	20.0	22.5
S-1463	121B	Btn	0-6	7.37	0.76	29.7	1.48	0.11	5.70	70.0	13.8	16.3
S-1464	121B	Btky	6-32	7.08	10.70	32.4	19.7	4.80	89.6	76.3	8.8	15.0
S-1465	121B	Crk/R	32-55	7.42	4.05	28.0	3.99	1.06	36.5	90.0	5.0	5.0
S-1510	180B	A	0-4	7.23	0.41	29.9	2.64	0.44	0.51	87.5	8.8	3.8
S-1510R	180B	A	0-4	7.20	0.41	29.5	2.66	0.44	0.52	87.5	7.5	5.0
S-1511	180B	C1	4-16	7.24	0.29	28.3	1.71	0.34	0.68	85.0	2.5	12.5
S-1512	180B	Ck	16-24	7.24	0.36	33.6	1.32	0.35	1.97	70.0	10.0	20.0

Razito Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1586	126B	A, C1, C2	0-41	SL	3.267	0.038	.	.	.	1.18	32.7
S-1587	126B	C3	41-60	SL	2.882	0.027	.	.	.	0.84	28.8
S-1615	246B	A, 2Cb	0-12	LS	1.153	0.032	.	.	.	1.00	11.5
S-1616	246B	2Cb	12-21	SL/SCL	2.882	0.042	.	.	.	1.32	28.8
S-1617	246B	3Btkb	21-34	CL	2.882	0.071	.	.	.	2.22	28.8
S-1618	246B	3Cb	34-60	SL	1.441	0.401	.	.	.	12.5	14.4
S-1603	87B	A, C1	0-13	LS	0.672	0.035	.	.	.	1.09	6.72
S-1604	87B	C2	13-27	SL	3.748	0.036	.	.	.	1.13	37.5
S-1605	87B	Ck	27-35	LS	1.249	0.033	.	.	.	1.03	12.5
S-1523	89B	A, C1, C2, C3	0-24	LS	1.537	0.029	.	.	.	0.91	15.4
S-1524	89B	Btkyb	24-30	SCL	4.517	0.040	.	.	.	1.23	45.2
S-1463	121B	Btn	0-6	SL	5.060	0.030	.	.	.	0.95	50.6
S-1464	121B	Btky	6-32	SL	4.518	0.261	.	.	.	8.15	45.2
S-1465	121B	Crk/R	32-55	S	1.673	0.036	.	.	.	1.12	16.7
S-1510	180B	A	0-4	S	1.384	0.024	.	.	.	0.75	13.8
S-1510R	180B	A	0-4	S/LS	1.153	0.023	.	.	.	0.71	11.5
S-1511	180B	C1	4-16	LS	2.594	0.017	.	.	.	0.53	25.9
S-1512	180B	Ck	16-24	SL/SCL	12.59	0.026	.	.	.	0.83	126

Razito Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1586	126B	A, C1, C2	0-41	31.5	.	.	0.85	0.250	.	<0.015
S-1587	126B	C3	41-60	28.0	.	.	0.95	<0.15	.	<0.015
S-1615	246B	A, 2Cb	0-12	10.5	.	.	<0.50	<0.15	.	<0.015
S-1616	246B	2Cb	12-21	27.5	.	.	0.70	0.350	.	<0.015
S-1617	246B	3Btkb	21-34	26.6	.	.	1.20	0.375	.	<0.015
S-1618	246B	3Cb	34-60	1.88	.	.	1.55	0.325	.	0.021
S-1603	87B	A, C1	0-13	5.62	.	.	0.70	<0.15	.	<0.015
S-1604	87B	C2	13-27	36.3	.	.	0.60	0.275	.	<0.015
S-1605	87B	Ck	27-35	11.5	.	.	<0.50	<0.15	.	<0.015
S-1523	89B	A, C1, C2, C3	0-24	14.5	.	.	0.65	<0.15	.	<0.015
S-1524	89B	Btkyb	24-30	43.9	.	.	1.00	<0.15	.	<0.015
S-1463	121B	Btn	0-6	49.6	.	.	1.20	0.375	.	<0.015
S-1464	121B	Btky	6-32	37.0	.	.	2.40	<0.15	.	<0.015
S-1465	121B	Crk/R	32-55	15.6	.	.	0.95	<0.15	.	<0.015
S-1510	180B	A	0-4	13.1	.	.	0.70	<0.15	.	<0.015
S-1510R	180B	A	0-4	10.8	.	.	0.65	<0.15	.	<0.015
S-1511	180B	C1	4-16	25.4	.	.	0.70	<0.15	.	<0.015
S-1512	180B	Ck	16-24	125	.	.	0.75	<0.15	.	<0.015

Shiprock Series

The soils in the Shiprock series are classified as Coarse-loamy, mixed, superactive, mesic Typic Haplargids. These deep and very deep soils are on mesas, plateaus, fan terraces, and hills. These soils formed in eolian and alluvial sediments derived from sandstone and shale.

Typifying Pedon: Shiprock sandy loam, 0 to 8 percent slopes. Location is in Area 4 South, site #602 at 1,986,097 ft north and 301,365 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 5 inches; brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 4/4) moist; fine, weak granular structure; slightly hard; non-effervescent; non-saline; slightly alkaline (pH 7.5).

Bt- 5 to 17 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate sub-angular blocky parting to weak prismatic structure; hard; common distinct clay films bridging sand grains and lining pores; slightly effervescent; non-saline; slightly alkaline (pH 7.5).

Btk- 17 to 31 inches; yellowish brown (10YR 5/4) sandy loam, dark grayish brown (10YR 4/2) moist; moderate sub-angular blocky structure; very few fine clay films on ped faces and pores; strongly effervescent; few fine irregular calcium carbonate masses; non-saline; moderately alkaline (pH 8.0).

Ck- 31 to 51 inches; light yellowish brown (10YR 6/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard; slightly effervescent; calcium carbonate disseminated; very slightly saline; slightly alkaline (pH 7.7).

Range in Characteristics

Topdressing depth: 0 to 60 or more inches. More than 40 inches in most profiles.
Reaction: Neutral to moderately alkaline.

Salinity (EC, mmhos/cm): Less than 4.0 in most profiles; however, some eroded soils may be as high as 13.0.

Sodicity: SAR is typically < 13, but may be as high as 40 in some strata.

Depth to paralithic contact: 40 to 60 or more inches.

Hue is 10YR for most profiles. C-horizons of some profiles in the survey area have hues of 2.5Y. Value is 4 through 7 (dry) and chroma is 2 through 6 (dry). Limiting factors for topdressing are depth to bedrock and SAR. Many of the eroded profiles of Shiprock are sodium affected and do not provide a suitable topdressing resource.

Shiprock Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S03118	4 S	602	A	0	5	7.5	0.6	24	4.4	0.84	1.4	1	76	8	16
0398S03119	4 S	602	Bt	5	17	7.5	0.58	28	1.6	0.39	5.1	5	76	6	18
0398S03120	4 S	602	Btk	17	31	8	1.39	27	1.8	0.58	12	11	76	10	14
0398S03121	4 S	602	Ck	31	51	7.7	3.53	27	6.1	3.5	25	12	88	3	9

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S03118	4 S	602	A	0	5	SL	2.8	0.01	0.31	23	23	.	.
0398S03119	4 S	602	Bt	5	17	SL	2.7	0.02	0.62	19	18	.	.
0398S03120	4 S	602	Btk	17	31	SL	4.6	0.02	0.62	31	30.4	.	.
0398S03121	4 S	602	Ck	31	51	LS	1.6	0.02	0.62	10	9.6	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S03118	4 S	602	A	0	5	.	.	.	0.2	0	0
0398S03119	4 S	602	Bt	5	17	.	.	.	0.3	0	0
0398S03120	4 S	602	Btk	17	31	.	.	.	0.5	0	0
0398S03121	4 S	602	Ck	31	51	.	.	.	0.7	0	0

Shiprock Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S00858	247	A	0-6	7.4	0.78	28	2.9	0.27	6.4	5	83	7	10	LS
0398S00859	247	Bt	6-15	7.3	0.57	29	2.7	0.30	3.4	3	78	9	13	SL
0398S00860	247	Bk	15-40	7.1	4.23	27	25	7.0	24	6	81	6	13	SL
0398S00861	247	Btkyb	40-50	7.4	13.2	31	27	23	120	23	68	17	15	SL
0398S00862	247	Ck	50-60	7.5	10.4	27	27	17	85	18	78	12	10	SL
0398S01457	400	2Bt	15-22	8.2	1.18	44	1.5	0.47	12	12	84	6	10	LS
0398S01652	423	Bw	0-13	7.3	0.32	26	2.1	0.38	1.5	1	91	4	5	S
0398S01653	423	Btk	13-19	8	0.85	32	2	0.58	8.8	8	83	6	11	LS
0398S01658	451	Bw	0-26	7.4	0.37	28	2.3	0.3	1.6	1	86	6	8	LS
0398S01659	451	Btkb	26-56	7.9	0.86	32	2.1	0.43	8.9	8	76	9	15	SL
0398S01660	451	2Ck	56-60	7.7	1.5	34	1.8	0.39	15	15	73	9	18	SL
0398S01666	456	Bw	0-17	7.8	0.52	27	1.2	0.59	4.4	5	92	3	5	S
0398S01667	456	Btk	17-24	8.5	0.81	31	4.3	0.83	7.2	4	86	4	10	LS
0398S01668	456	Bk	24-60	8.6	2.46	35	2.5	0.4	22	19	83	4	13	SL
0398S01737	478	2Btk	16-26	8.1	0.78	32	0.94	0.3	9.2	12	75	11	14	SL
0398S01738	478	2Bk	26-60	7.9	3.17	31	2.9	1.4	37	25	90	3	7	S
0398S01739	481	Btn	0-8	8.1	1.34	30	0.88	0.19	20	27	83	5	12	LS
0398S01740	481	Bk	8-44	7.7	8.96	30	24	1.2	92	26	88	5	7	LS
0398S01741	481	2Ck	44-60	8	5.95	40	4.5	0.69	64	40	88	3	9	LS
0398S01742	482	Bkyn	0-17	7.6	6.93	26	24	2.2	65	18	83	5	12	LS
0398S02180	553	A	0-4	7.4	0.44	25	1.3	0.34	3.7	4	74	12	14	SL
0398S02181	553	Bw	4-9	7.8	0.54	26	1.3	0.22	5.1	6	82	6	12	SL
0398S02182	553	Btk	9-16	8.2	0.94	32	2.7	0.65	14	11	78	8	14	SL
0398S02183	553	C	16-34	7.8	7.88	28	9.1	5	79	30	86	6	8	LS
0398S04437	574	A	0-4	7.6	0.52	21	4	0.71	1.6	1	76	13	11	SL
0398S04438	574	Bt	4-11	7.6	0.4	24	2.2	0.44	3.5	3	79	8	13	SL
0398S04439	574	Bkyb	11-30	8.1	1.14	47	2.1	0.4	14	13	46	27	27	SCL
0398S04440	574	C	30-60	7.6	6.76	26	27	8	61	15	90	3	7	S
0398S04443	583	Bw	0-11	7.6	0.46	22	3.3	0.59	1.3	0.91	83	10	7	LS
0398S04444	583	Bt	11-22	7.8	0.5	25	1.8	0.39	5.2	5	84	5	11	LS
0398S04445	583	BCk	22-50	8.2	1.02	27	1.1	0.31	13	16	87	4	9	LS

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S00858	247	A	0-6	2.1	0.01	0.31	17	17.1	.	.	.	.
0398S00859	247	Bt	6-15	3.8	0.01	0.31	27	26.3	.	.	.	.
0398S00860	247	Bk	15-40	4.7	0.04	1.3	28	26.9	.	.	.	.
0398S00861	247	Btkyb	40-50	4.5	0.32	10	33	22.9	.	.	.	.
0398S00862	247	Ck	50-60	2.7	0.06	1.9	22	19.8	.	.	.	.
0398S01457	400	2Bt	15-22	6.3	0.02	0.62	58	56.9	.	.	.	.
0398S01652	423	Bw	0-13	0	0.01	0.31	6	5.8	.	.	.	.
0398S01653	423	Btk	13-19	3.7	0.01	0.31	22	22.1	.	.	.	.
0398S01658	451	Bw	0-26	2.5	0.01	0.31	20	19.4	.	.	.	.
0398S01659	451	Btkb	26-56	3.7	0.01	0.31	26	26	.	.	.	.
0398S01660	451	2Ck	56-60	2.3	0.01	0.31	17	16.8	.	.	.	.
0398S01666	456	Bw	0-17	0.58	0.01	0.31	5	4.8	.	.	.	.
0398S01667	456	Btk	17-24	3.6	0.01	0.31	26	25.8	.	.	.	.
0398S01668	456	Bk	24-60	3.4	0.02	0.62	24	23.4	.	.	.	.
0398S01737	478	2Btk	16-26	13	0.01	0.62	112	111.8	.	.	.	.
0398S01738	478	2Bk	26-60	2.3	0.02	0.62	15	14.2	.	.	.	.
0398S01739	481	Btn	0-8	1.7	0.01	0.31	13	13	.	.	.	.
0398S01740	481	Bk	8-44	1.3	0.18	5.6	8	2.8	.	.	.	.
0398S01741	481	2Ck	44-60	3.3	0.04	1.3	25	23.6	.	.	.	.
0398S01742	482	Bkyn	0-17	2.7	0.1	3.1	22	18.5	.	.	.	.
0398S02180	553	A	0-4	4.1	0.01	0.31	37	37.1	.	.	.	.
0398S02181	553	Bw	4-9	5	0.01	0.31	33	32.5	.	.	.	.
0398S02182	553	Btk	9-16	8.5	0.02	0.62	64	63.2	.	.	.	.
0398S02183	553	C	16-34	1.8	0.03	0.94	15	14.2	.	.	.	.
0398S04437	574	A	0-4	2.2	0.01	0.31	21	20.8	.	.	.	.
0398S04438	574	Bt	4-11	2.7	0.01	0.31	20	19.6	.	.	.	.
0398S04439	574	Bkyb	11-30	7.9	0.01	0.31	149	148.4	.	.	.	.
0398S04440	574	C	30-60	1.5	0.12	3.8	11	7.1	.	.	.	.
0398S04443	583	Bw	0-11	1.6	0.01	0.31	13	12.2	.	.	.	.
0398S04444	583	Bt	11-22	2.9	0.01	0.31	23	22.7	.	.	.	.
0398S04445	583	BCk	22-50	3.8	0.02	0.62	35	34.8	.	.	.	.

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00858	247	A	0-6	.	0	0	0
0398S00859	247	Bt	6-15	.	0	0	0
0398S00860	247	Bk	15-40	.	0	0	0
0398S00861	247	Btkyb	40-50	.	0.8	0.25	0
0398S00862	247	Ck	50-60	.	0.5	0	0
0398S01457	400	2Bt	15-22	.	0	0.35	0
0398S01652	423	Bw	0-13	.	0	0	0
0398S01653	423	Btk	13-19	.	0.2	0	0
0398S01658	451	Bw	0-26	.	0	0	0
0398S01659	451	Btkb	26-56	.	0.4	0	0
0398S01660	451	2Ck	56-60	.	1	0	0
0398S01666	456	Bw	0-17	.	0	0	0
0398S01667	456	Btk	17-24	.	0.2	0	0
0398S01668	456	Bk	24-60	.	0.5	0	0
0398S01737	478	2Btk	16-26	.	0.2	0	0
0398S01738	478	2Bk	26-60	.	0.6	0	0
0398S01739	481	Btn	0-8	.	0.5	0.25	0
0398S01740	481	Bk	8-44	.	0.6	0.4	0.04
0398S01741	481	2Ck	44-60	.	0.2	0.4	0.09
0398S01742	482	Bkyn	0-17	.	0.5	0.35	0
0398S02180	553	A	0-4	.	0	0	0
0398S02181	553	Bw	4-9	.	0	0	0
0398S02182	553	Btk	9-16	.	0.3	0	0
0398S02183	553	C	16-34	.	0.8	0.3	0
0398S04437	574	A	0-4	.	0	0	0
0398S04438	574	Bt	4-11	.	0.2	0	0
0398S04439	574	Bkyb	11-30	.	0.8	0	0
0398S04440	574	C	30-60	.	1.2	0	0
0398S04443	583	Bw	0-11	.	0	0	0
0398S04444	583	Bt	11-22	.	0	0	0
0398S04445	583	BCk	22-50	.	0.3	0	0

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S04446	583	2Ck	50-60	8	3.67	25	3	1.3	44	30	92	3	5	S
0398S04523	627	C	0-14	7.6	0.52	24	1.6	0.15	2.7	2.8	82	8	10	LS
0398S04524	627	Btb	14-27	7.7	0.7	23	1.6	0.25	6.2	6.5	76	10	14	SL
0398S04525	627	C	27-60	7.8	0.64	25	1.1	0.1	4.3	5.7	78	10	12	SL
0398S04607	628	Btn	5-21	8.2	2.48	33	1.9	0.38	25	23	72	11	17	SL
0398S04608	628	C	21-39	8	7.76	34	16	2.7	70	23	70	14	16	SL
0398S04541	659	2Bk2	32-51	8.6	3.95	35	1.3	0.5	40	42	84	5	11	LS
0398S04542	660	2Btk	12-27	8.4	1.5	36	5.3	1.84	17	9.1	74	8	18	SL
0398S04543	660	2Bk	27-60	7.8	7.02	27	24	4.05	48	13	88	4	8	LS
0398S04544	662	Bw	0-12	7.5	0.34	22	1.9	0.15	0.45	0.45	86	6	8	LS
0398S04545	662	Btk	12-29	7.8	0.49	23	0.7	0.1	3.3	5.1	82	6	12	SL
0398S04546	662	Bk	29-60	8.2	2.63	34	0.85	0.35	23	29	84	6	10	LS
0398S04625	673	2Btb	37-60	7.5	1.75	34	8.2	1.1	8.7	4	56	18	26	SCL
0398S04631	683	Btkn	0-8	8.1	1.73	24	1.6	0.28	17	17	80	6	14	SL
0398S04632	683	C1	8-21	7.9	9.49	26	20	1.6	90	28	86	4	10	LS
0398S04634	688	Btb	15-30	8.5	1.25	32	0.93	0.29	12	15	82	5	13	SL
0398S04635	689	Bw	0-14	7.8	0.47	24	1.4	0.26	2.9	3.1	90	2	8	S
0398S04636	689	Btknb	14-34	8	8.25	29	13	3.4	81	28	84	2	14	SL
0398S04637	689	C	34-60	8.6	5.07	31	2.4	1.1	46	35	90	2	8	S
0398S04704	709	Btn	5-17	8.1	4.6	33	4.2	0.94	40	25	88	4	8	LS
0398S04705	709	2Cky	17-60	8.4	12.8	31	19	12	120	31	87	3	10	LS
0398S05003	830	Btkb	19-30	8.2	0.61	29	1.3	0.29	5.9	6.5	85	5	10	LS
0398S05004	830	Bkb	30-43	8.6	0.67	25	0.87	0.22	8.8	12	81	6	13	SL
0398S05010	838	Bw	0-19	8	0.42	25	2.3	0.28	1.6	1.4	86	4	10	LS
0398S05011	838	Bt	19-39	8.4	0.51	23	1.5	0.29	5.2	5.6	81	7	12	SL
0398S05012	838	Btk	39-60	8.4	1.25	29	0.79	0.2	13	18	78	10	12	SL
0398S00971	298	2Btk	11-22	7.8	6.09	28	0.97	0.21	5.8	7.6	73	11	16	SL
0398S00972	298	2Bk	22-45	7.9	1.96	30	0.73	0.08	19	30	80	5	15	SL
0398S00973	298	2Ck	45-60	7.9	2.03	42	1.0	0.27	22	27	60	20	20	SCL
0398S04709	718	2Btk1	9-23	8.3	1.32	25	0.97	0.13	14	19	89	3	8	LS
0398S04710	718	3Cky	23-41	8.3	14.2	36	18	4.9	150	43	89	3	8	LS

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S04446	583	2Ck	50-60	2.3	0.04	1.3	19	17.9	.	.	.	.
0398S04523	627	C	0-14	2.1	0.02	0.62	20	19.5	.	.	.	.
0398S04524	627	Btb	14-27	2.7	0.01	0.31	27	26.5	.	.	.	.
0398S04525	627	C	27-60	2.2	0.02	0.62	21	20.6	.	.	.	.
0398S04607	628	Btn	5-21	3.5	0.03	0.94	38	37.4	.	.	.	.
0398S04608	628	C	21-39	3.5	0.08	2.5	37	34.4	.	.	.	.
0398S04541	659	2Bk2	32-51	4.2	0.03	0.94	33	32.5	.	.	.	.
0398S04542	660	2Btk	12-27	3.6	0.02	0.62	32	31.8	.	.	.	.
0398S04543	660	2Bk	27-60	3.4	0.1	3.1	27	24	.	.	.	.
0398S04544	662	Bw	0-12	1.4	0.01	0.31	12	11.6	.	.	.	.
0398S04545	662	Btk	12-29	2.6	0.01	0.31	21	20.8	.	.	.	.
0398S04546	662	Bk	29-60	5.6	0.02	0.62	50	49.2	.	.	.	.
0398S04625	673	2Btb	37-60	2.7	0.03	0.94	28	26.8	.	.	.	.
0398S04631	683	Btkn	0-8	4.7	0.03	0.94	48	46.8	.	.	.	.
0398S04632	683	C1	8-21	4	0.34	11	40	29.5	.	.	.	.
0398S04634	688	Btb	15-30	3.8	0.01	0.31	35	34.3	.	.	.	.
0398S04635	689	Bw	0-14	0.91	0.01	0.31	7	7	.	.	.	.
0398S04636	689	Btknb	14-34	2.1	0.09	2.8	18	14.9	.	.	.	.
0398S04637	689	C	34-60	0.86	0.04	1.3	6	5.1	.	.	.	.
0398S04704	709	Btn	5-17	1.5	0.03	0.94	13	12.4	.	.	.	.
0398S04705	709	2Cky	17-60	1.5	0.39	12	13	1.1	.	.	.	.
0398S05003	830	Btkb	19-30	2.3	0.01	0.31	19	18.4	.	.	.	.
0398S05004	830	Bkb	30-43	3.3	0	0	25	25	.	.	.	.
0398S05010	838	Bw	0-19	1.9	0.01	0.31	16	15.2	.	.	.	.
0398S05011	838	Bt	19-39	2.6	0.01	0.31	23	22.4	.	.	.	.
0398S05012	838	Btk	39-60	2.7	0.01	0.31	21	20.2	.	.	.	.
0398S00971	298	2Btk	11-22	12	0.01	0.31	96	95.8	.	.	.	.
0398S00972	298	2Bk	22-45	4.6	0.01	0.31	33	32.3	.	.	.	.
0398S00973	298	2Ck	45-60	6.2	0.02	0.62	49	48.7	.	.	.	.
0398S04709	718	2Btk1	9-23	2.9	0.01	0.31	26	25.3	.	.	.	.
0398S04710	718	3Cky	23-41	2.9	0.17	5.3	24	19	.	.	.	.

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04446	583	2Ck	50-60	.	0.5	0	0
0398S04523	627	C	0-14	.	0.2	0	0
0398S04524	627	Btb	14-27	.	0.2	0	0
0398S04525	627	C	27-60	.	0	0	0
0398S04607	628	Btn	5-21	.	0.4	0	0
0398S04608	628	C	21-39	.	0.4	0.25	0
0398S04541	659	2Bk2	32-51	.	0.7	0.3	0.03
0398S04542	660	2Btk	12-27	.	0.7	0.25	0
0398S04543	660	2Bk	27-60	.	0.4	0	0
0398S04544	662	Bw	0-12	.	0	0	0
0398S04545	662	Btk	12-29	.	0.2	0	0
0398S04546	662	Bk	29-60	.	0.5	0	0
0398S04625	673	2Btb	37-60	.	0.2	0.25	0
0398S04631	683	Btkn	0-8	.	0.3	0.35	0
0398S04632	683	C1	8-21	.	0.8	0.35	0
0398S04634	688	Btb	15-30	.	0.4	0.25	0
0398S04635	689	Bw	0-14	.	0	0	0
0398S04636	689	Btknb	14-34	.	0.4	0	0
0398S04637	689	C	34-60	.	0.6	0	0.04
0398S04704	709	Btn	5-17	.	0.4	0	0
0398S04705	709	2Cky	17-60	.	1.8	0	0
0398S05003	830	Btkb	19-30	.	0	0	0
0398S05004	830	Bkb	30-43	.	0	0	0
0398S05010	838	Bw	0-19	.	0	0	0
0398S05011	838	Bt	19-39	.	0.2	0	0
0398S05012	838	Btk	39-60	.	0.4	0	0
0398S00971	298	2Btk	11-22	.	0	0	0
0398S00972	298	2Bk	22-45	.	0	0	0
0398S00973	298	2Ck	45-60	.	0	0	0
0398S04709	718	2Btk1	9-23	.	0.3	0.25	0
0398S04710	718	3Cky	23-41	.	2.8	0	0

Shiprock Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S05000	825	AB	0-13	7.9	0.74	23	3	0.46	4.8	3.7	84	8	8	LS
0398S05001	825	2Btkn	13-28	8.5	1.01	26	0.89	0.26	14	19	86	4	10	LS
0398S05002	825	2Bk	28-44	8.6	2.15	26	1.3	0.47	24	25	80	6	14	SL

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S05000	825	AB	0-13	2.1	0.01	0.31	18	17.5	.	.	.	.
0398S05001	825	2Btkn	13-28	4	0.01	0.31	29	29.1	.	.	.	.
0398S05002	825	2Bk	28-44	5.5	0.02	0.62	43	42.4	.	.	.	.

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S05000	825	AB	0-13	.	0	0	0
0398S05001	825	2Btkn	13-28	.	0.4	0	0
0398S05002	825	2Bk	28-44	.	0.4	0	0

Shiprock Series Additional Laboratory Data Area 5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1535	1B	A, C1	0-18	7.28	0.36	27.8	1.84	0.40	1.21	80.0	5.0	15.0
S-1536	1B	Btkb, C3, C4, C5	18-43	7.54	1.06	26.6	1.24	0.50	7.70	72.5	10.0	17.5
S-1537	1B	C6	43-60	7.24	3.04	29.1	6.14	3.32	20.1	77.5	5.0	17.5
S-1581	5B	A, Bw	0-11	8.27	0.32	31.1	1.66	0.35	1.13	77.5	11.3	11.3
S-1582	5B	Bt, Btk	11-30	8.77	2.21	38.5	0.90	0.55	19.1	58.8	23.8	17.5
S-1583	5B	C	30-60	8.12	6.93	31.6	14.0	10.53	50.9	82.5	8.8	8.8
S-1596	16B	A	0-4	8.10	0.50	29.4	3.52	0.58	1.07	83.8	8.8	7.5
S-1597	16B	Bt	4-10	8.24	0.33	29.5	1.73	0.45	1.64	71.3	13.8	15.0
S-1598	16B	Btk	10-25	8.64	0.62	28.7	0.61	0.26	5.57	52.5	25.0	22.5
S-1579	16B	Ck	25-36	7.85	4.83	38.5	19.2	8.39	27.7	70.0	15.0	15.0
S-1580	16B	C2	36-60	7.85	4.83	28.9	20.3	8.47	25.2	82.5	7.5	10.0
S-1580R	16B	C2	38-60	7.92	4.83	28.7	20.2	8.47	25.1	83.8	6.3	10.0
S-1547	55B	A, Bt, Btk	0-24	7.52	0.58	26.3	3.85	0.53	1.49	70.0	10.0	20.0
S-1548	55B	Cky	24-60	7.21	3.64	32.5	17.4	3.71	21.5	67.5	20.0	12.5
S-1589	102B	A, B	0-13	8.48	0.53	35.5	0.69	0.22	4.70	85.0	8.8	6.3
S-1590	102B	Btk, C1, C2	13-57	8.30	13.10	25.0	20.8	8.21	109	70.0	16.3	13.8
S-1590R	102B	Btk, C1, C2	13-57	8.32	13.20	23.5	20.8	8.23	109	72.5	15.0	12.5
S-1549	110B	C	36-53	7.47	1.73	36.9	2.33	0.55	12.7	57.5	17.5	25.0
S-1485	150B	A	0-2	7.28	0.58	26.8	3.91	0.58	0.77	77.5	12.5	10.0
S-1486	150B	Bt	2-9	7.24	0.32	29.7	1.80	0.32	0.90	77.5	10.0	12.5
S-1487	150B	C	9-19	7.23	0.35	28.4	1.63	0.33	1.49	81.3	7.5	11.3
S-1488	150B	Ck	19-35	7.48	0.56	29.9	1.18	0.32	3.81	77.5	11.3	11.3
S-1513	226B	A	0-5	7.45	0.52	23.3	2.34	0.41	1.75	85.0	2.5	12.5
S-1514	226B	Bw	5-14	6.94	0.30	27.7	1.19	0.21	1.18	82.5	2.5	15.0
S-1515	226B	Bt1b	14-29	7.37	0.49	24.9	0.70	0.18	3.91	67.5	10.0	22.5
S-1516	226B	Bt2b	29-56	7.23	2.41	40.5	5.09	1.97	16.4	55.0	10.0	35.0
S-1517	226B	C	56-60	7.33	2.50	30.0	5.69	2.34	16.5	77.5	5.0	17.5
S-1504	231B	A	0-3	7.18	0.39	29.9	2.44	0.37	0.71	67.5	17.5	15.0
S-1505	231B	Bt	3-16	7.48	0.38	29.8	0.82	0.12	2.84	76.3	8.8	15.0
S-1506	231B	Ck, C2	16-60	7.07	5.29	30.4	19.9	6.62	32.3	72.5	12.5	15.0
S-1507	235B	A	0-5	7.21	0.48	24.2	2.50	0.42	1.34	80.0	12.5	7.5
S-1508	235B	Bw	5-12	6.97	0.38	28.0	1.81	0.26	1.41	77.5	11.3	11.3
S-1489	235B	Bt	12-23	7.26	0.32	31.8	1.20	0.21	1.77	72.5	15.0	12.5
S-1490R	235B	Btk1	23-36	7.41	0.79	30.2	1.08	0.22	6.35	58.8	23.8	17.5
S-1490	235B	Btk1	23-36	7.34	0.81	27.4	1.12	0.22	6.39	58.8	25.0	16.3
S-1491	235B	C1	36-52	7.19	3.79	27.2	22.6	5.81	18.0	82.5	7.5	10.0

Shiprock Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1535	1B	A, C1	0-18	SL	4.228	0.022	.	.	.	0.70	42.3
S-1536	1B	Btkb, C3, C4, C5	18-43	SL	10.48	0.031	.	.	.	0.97	105
S-1537	1B	C6	43-60	SL	2.691	0.037	.	.	.	1.16	26.9
S-1581	5B	A, Bw	0-11	SL	4.324	0.031	.	.	.	0.96	43.2
S-1582	5B	Bt, Btk	11-30	SL	11.82	0.044	.	.	.	1.36	118
S-1583	5B	C	30-60	LS	3.651	0.124	.	.	.	3.87	36.5
S-1596	16B	A	0-4	LS	3.171	0.030	.	.	.	0.94	31.7
S-1597	16B	Bt	4-10	SL	9.609	0.032	.	.	.	0.99	96.1
S-1598	16B	Btk	10-25	SCL	22.49	0.046	.	.	.	1.44	225
S-1579	16B	Ck	25-36	SL	6.535	0.177	.	.	.	5.53	65.3
S-1580	16B	C2	36-60	LS	1.826	0.087	.	.	.	2.73	18.3
S-1580R	16B	C2	38-60	LS	1.826	0.085	.	.	.	2.67	18.3
S-1547	55B	A, Bt, Btk	0-24	SL/SCL	9.416	0.046	.	.	.	1.45	94.2
S-1548	55B	Cky	24-60	SL	0.287	3.282	3.259	0.001	0.022	103	2.87
S-1589	102B	A, B	0-13	LS	2.691	0.026	.	.	.	0.82	26.9
S-1590	102B	Btk, C1, C2	13-57	SL	2.594	0.243	.	.	.	7.59	25.9
S-1590R	102B	Btk, C1, C2	13-57	SL	2.594	0.245	.	.	.	7.66	25.9
S-1549	110B	C	36-53	SCL	3.651	0.053	.	.	.	1.66	36.5
S-1485	150B	A	0-2	SL	2.263	0.023	.	.	.	0.73	22.6
S-1486	150B	Bt	2-9	SL	5.921	0.018	.	.	.	0.57	59.2
S-1487	150B	C	9-19	LS	3.214	0.031	.	.	.	0.98	32.1
S-1488	150B	Ck	19-35	SL	10.35	0.023	.	.	.	0.71	103
S-1513	226B	A	0-5	LS	1.057	0.027	.	.	.	0.84	10.6
S-1514	226B	Bw	5-14	SL	1.441	0.025	.	.	.	0.78	14.4
S-1515	226B	Bt1b	14-29	SCL	2.401	0.021	.	.	.	0.67	24.0
S-1516	226B	Bt2b	29-56	SCL/SC	2.209	0.036	.	.	.	1.11	22.1
S-1517	226B	C	56-60	SL	2.978	0.031	.	.	.	0.96	29.8
S-1504	231B	A	0-3	SL	3.76	0.041	.	.	.	1.29	37.6
S-1505	231B	Bt	3-16	SL	4.482	0.030	.	.	.	0.92	44.8
S-1506	231B	Ck, C2	16-60	SL	6.106	0.162	.	.	.	5.05	61.1
S-1507	235B	A	0-5	LS	2.767	0.026	.	.	.	0.82	27.7
S-1508	235B	Bw	5-12	SL	7.881	0.025	.	.	.	0.78	78.8
S-1489	235B	Bt	12-23	SL	17.25	0.024	.	.	.	0.74	172
S-1490R	235B	Btk1	23-36	SL	27.61	0.039	.	.	.	1.21	276
S-1490	235B	Btk1	23-36	SL	29.15	0.038	.	.	.	1.19	291
S-1491	235B	C1	36-52	LS	1.925	0.078	.	.	.	2.44	19.3

Shiprock Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1535	1B	A, C1	0-18	41.6	.	.	0.50	<0.15	.	<0.015
S-1536	1B	Btkb, C3, C4, C5	18-43	104	.	.	1.30	<0.15	.	<0.015
S-1537	1B	C6	43-60	25.8	.	.	1.15	<0.15	.	<0.015
S-1581	5B	A, Bw	0-11	42.3	.	.	0.50	<0.15	.	<0.015
S-1582	5B	Bt, Btk	11-30	117	.	.	0.90	0.300	.	<0.015
S-1583	5B	C	30-60	32.6	.	.	1.60	0.250	.	0.024
S-1596	16B	A	0-4	30.8	.	.	0.50	<0.15	.	<0.015
S-1597	16B	Bt	4-10	95.1	.	.	0.70	0.300	.	<0.015
S-1598	16B	Btk	10-25	223	.	.	1.15	0.250	.	<0.015
S-1579	16B	Ck	25-36	59.8	.	.	2.20	0.325	.	<0.015
S-1580	16B	C2	36-60	15.5	.	.	1.90	0.250	.	<0.015
S-1580R	16B	C2	38-60	15.6	.	.	1.80	0.250	.	<0.015
S-1547	55B	A, Bt, Btk	0-24	92.7	.	.	0.55	<0.15	.	<0.015
S-1548	55B	Cky	24-60	-99.7	0.03	2.84	1.25	<0.15	.	<0.015
S-1589	102B	A, B	0-13	26.1	.	.	0.50	<0.15	.	<0.015
S-1590	102B	Btk, C1, C2	13-57	18.4	.	.	3.00	0.400	.	<0.015
S-1590R	102B	Btk, C1, C2	13-57	18.3	.	.	2.80	0.375	.	<0.015
S-1549	110B	C	36-53	34.8	.	.	0.90	<0.15	.	<0.015
S-1485	150B	A	0-2	21.9	.	.	<0.50	<0.15	.	<0.015
S-1486	150B	Bt	2-9	58.6	.	.	<0.50	<0.15	.	<0.015
S-1487	150B	C	9-19	31.2	.	.	<0.50	<0.15	.	<0.015
S-1488	150B	Ck	19-35	103	.	.	<0.50	<0.15	.	<0.015
S-1513	226B	A	0-5	9.7	.	.	0.60	<0.15	.	<0.015
S-1514	226B	Bw	5-14	13.6	.	.	0.65	<0.15	.	<0.015
S-1515	226B	Bt1b	14-29	23.3	.	.	0.85	<0.15	.	<0.015
S-1516	226B	Bt2b	29-56	21.0	.	.	1.35	0.300	.	0.018
S-1517	226B	C	56-60	28.8	.	.	0.75	<0.15	.	0.020
S-1504	231B	A	0-3	36.3	.	.	1.05	<0.15	.	<0.015
S-1505	231B	Bt	3-16	43.9	.	.	1.45	<0.15	.	<0.015
S-1506	231B	Ck, C2	16-60	56.0	.	.	2.55	<0.15	.	<0.015
S-1507	235B	A	0-5	26.9	.	.	0.85	<0.15	.	<0.015
S-1508	235B	Bw	5-12	78.0	.	.	1.00	<0.15	.	<0.015
S-1489	235B	Bt	12-23	172	.	.	<0.50	<0.15	.	<0.015
S-1490R	235B	Btk1	23-36	275	.	.	0.85	<0.15	.	<0.015
S-1490	235B	Btk1	23-36	290	.	.	0.85	<0.15	.	<0.015
S-1491	235B	C1	36-52	16.8	.	.	1.45	<0.15	.	<0.015

Shiprock Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	Sand %	Silt %	Clay %
S-1497	237B	A	0-6	7.18	0.31	26.7	2.05	0.30	0.58	87.5	3.8	8.8
S-1498	237B	Bw	6-17	7.34	0.27	26.6	1.37	0.19	0.94	85.0	7.5	7.5
S-1479	237B	Bt	17-24	7.30	0.30	29.6	0.76	0.13	2.16	81.3	7.5	11.3
S-1480R	237B	Btk	24-31	7.45	0.50	36.6	0.88	0.17	3.83	72.5	8.8	18.8
S-1480	237B	Btk	24-31	7.39	0.51	39.3	0.82	0.18	3.92	72.5	8.8	18.8
S-1481	237B	C1, C2, C3	31-60	7.45	2.34	26.0	9.18	2.38	13.7	85.0	7.5	7.5
S-1624	298B	A, Bw	0-11	8.21	0.47	25.8	2.83	0.53	0.99	76.3	11.3	12.5
S-1625	298B	Btk	11-24	8.21	0.46	28.1	1.91	0.66	2.03	72.5	7.5	20.0
S-1626	298B	C	24-54	8.09	1.47	30.1	4.22	2.62	8.44	81.3	6.3	12.5

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	Class	$CaCO_3$ %	Tot S %	Sulfate S %	Pyr S %	Org S %	Acid Pot tn/1000tn	Neut Pot tn/1000tn
S-1497	237B	A	0-6	LS	1.384	0.021	.	.	.	0.65	13.8
S-1498	237B	Bw	6-17	LS	2.557	0.024	.	.	.	0.74	25.6
S-1479	237B	Bt	17-24	LS	2.443	0.028	.	.	.	0.87	24.4
S-1480R	237B	Btk	24-31	SL	3.484	0.032	.	.	.	0.99	34.8
S-1480	237B	Btk	24-31	SL	3.575	0.031	.	.	.	0.96	35.7
S-1481	237B	C1, C2, C3	31-60	LS	4.518	0.036	.	.	.	1.14	45.2
S-1624	298B	A, Bw	0-11	SL	1.728	0.035	.	.	.	1.08	17.3
S-1625	298B	Btk	11-24	SL/SCL	6.535	0.034	.	.	.	1.07	65.3
S-1626	298B	C	24-54	SL	4.036	0.040	.	.	.	1.26	40.4

Shiprock Series Additional Laboratory Data Area 5 (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	A-B Pot tn/1000tn	Pyr A Pot tn/1000tn	Pyrs A-B tn/1000tn	Boron ppm	Tot Se ppm	AB-DTPA Se ppm	Sol Se ppm
S-1497	237B	A	0-6	13.2	.	.	<0.50	<0.15	.	<0.015
S-1498	237B	Bw	6-17	24.8	.	.	<0.50	<0.15	.	<0.015
S-1479	237B	Bt	17-24	23.6	.	.	<0.50	<0.15	.	<0.015
S-1480R	237B	Btk	24-31	33.9	.	.	0.75	<0.15	.	<0.015
S-1480	237B	Btk	24-31	34.8	.	.	0.55	<0.15	.	<0.015
S-1481	237B	C1, C2, C3	31-60	44.0	.	.	0.75	<0.15	.	<0.015
S-1624	298B	A, Bw	0-11	16.2	.	.	0.60	<0.15	.	<0.015
S-1625	298B	Btk	11-24	64.3	.	.	0.70	<0.15	.	<0.015
S-1626	298B	C	24-54	39.1	.	.	0.75	<0.15	.	<0.015

Sogzie Series

The soils in the Sogzie series are classified as Coarse-loamy, mixed, superactive, mesic Typic Calciargids. The Sogzie series consists of deep and very deep, well drained soils that formed in eolian material, alluvium, and residuum derived from sandstone and siltstone. Sogzie soils are on summits of mesas, undulating plateaus, and dipslopes of cuestas.

Typifying Pedon: Sogzie, 0 to 8 percent slopes. Pedon description taken from Sogzie Survey, Soil Conservation Service, 1980.

A- 0 to 5 inches; reddish yellow (5YR 6/6) loamy fine sand, yellowish red (5YR 5/6) moist; weak very thick platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine pores; slightly effervescent; slightly alkaline (pH 7.5); clear wavy boundary. (3 to 10 inches thick)

Bt_1- 5 to 12 inches; yellowish red (5YR 5/6) very fine sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few medium and fine roots; common fine and very fine pores; few thin clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 7.9); gradual wavy boundary. (5 to 9 inches thick)

Bt_2- 12 to 21 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; few fine and very fine pores; few thin clay films on faces of peds and lining pores; strongly effervescent; moderately alkaline (pH 7.9); gradual wavy boundary. (7 to 11 inches thick)

Btk_1- 21 to 39 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; weak coarse prismatic structure parting to weak medium

subangular blocky; hard, friable, slightly sticky and nonplastic; few fine roots; few medium and common fine and very fine pores; few thin clay films on faces of peds and lining pores; strongly effervescent, secondary calcium carbonates segregated as few fine irregularly shaped accumulations on faces of peds; moderately alkaline (pH 8.0); clear irregular boundary. (16 to 24 inches thick)

Btk_2- 39 to 70 inches; pink (5YR 7/3) very fine sandy loam, reddish brown (5YR 5/4) moist; weak medium subangular blocky structure; very hard, firm, slightly sticky and nonplastic; few fine roots; common fine and very fine pores; few thin clay films on faces of peds and lining pores; violently effervescent, secondary calcium carbonates segregated as common medium irregularly shaped accumulations on faces of peds; moderately alkaline (pH 8.1).

The solum is 40 to 60 inches thick. The A horizon has a hue ranging from 5YR to 7.5YR. The Bt and Btk1 horizons ranges from very fine sandy loam to fine sandy loam. The lower Btk horizons range from 5YR to 7.5YR and from very fine sandy loam to fine sandy loam. The 2BCk horizon ranges from 5YR to 10YR and from fine sandy loam to loamy fine sand to loamy sand.

The range of topdressing depth is 40 to 60 inches. Suitable topdressing material is sandy eolian deposits on the surface.

Stumble Series

The soils in the Stumble series are classified as Mixed, mesic Typic Torripsamments. These very deep, somewhat excessively drained soils formed in mixed sandy alluvium and eolian deposits on fan skirts, fan pediments, alluvial fans, terraces, and valley sides.

Typifying Pedon: Stumble loamy very fine sand, 0 to 15 percent slopes. Location is in Area 4 South, site #579 at 1,990,036 ft north and 300,963 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 4 inches; light yellowish brown (2.5Y 6/4) loamy very fine sand, light olive brown (2.5Y 5/4) moist; fine weak granular structure; slightly hard; friable; non-effervescent; non-saline; neutral.

C_1- 4 to 51 inches; light yellowish brown (2.5Y 6/4) fine sand, light olive brown (2.5Y 5/3) moist; massive; soft, very friable; non-effervescent; non-saline; slightly alkaline (pH 7.8).

C_2- 51-63 inches; light yellowish brown (2.5Y 6/3) gravelly coarse sand, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable; non-effervescent; non-saline; slightly alkaline (pH 7.6).

Range in Characteristics

Topdressing depth: 24 to 60 or more inches.

Reaction: Neutral to moderately alkaline

Salinity (EC, mmhos/cm): < 2.0 in most profiles but occasionally as much as 8.5 in the lower parts of some profiles.

Sodicity: SAR is typically <13.0.

Depth to paralithic contact: 40 to 60 or more inches.

Coarse fragments: 0 to 90 percent (dominantly pebbles and gravels). Gravelly materials typically exist in lower part of the profile.

Hue is 2.5Y or 10YR, value is 3 through 8 (dry) and chroma is 3 through 6 (dry). Commonly 1 discontinuity in profile. Topdressing is limited by depth to bedrock and rock content.

Stumble Series Typifying Pedon Laboratory Data

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S04514	4 S	579	C1	4	51	7.8	1.1	29	2.2	0.2	7.3	6.7	90	4	6
0398S04515	4 S	579	C2	51	60	7.6	1.65	22	5.2	0.6	11	6.2	96	0	4

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S04514	4 S	579	C1	4	51	S	1.2	0.01	0.31	13	12.2	.	.
0398S04515	4 S	579	C2	51	60	S	1.6	0.03	0.94	16	14.9	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S04514	4 S	579	C1	4	51	.	.	.	0	0	0
0398S04515	4 S	579	C2	51	60	.	.	.	0	0	0

Stumble Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S01654	447	2Cy	20-40	7.2	3.53	27	25	2.2	16	4	91	1	8	S
0398S01655	447	2Ck	40-54	8	0.75	29	1.2	0.74	6.8	7	93	2	5	S
0398S01983	497	Bw	0-11	7.1	0.4	29	2.7	0.41	1.3	1	85	6	9	LS
0398S01984	497	Bc	11-24	7.2	0.42	27	1.8	0.37	2.4	2	83	7	10	LS
0398S01985	497	2Ck	24-44	7.7	1.24	30	0.59	0.15	12	20	83	6	11	LS
0398S04520	625	A	0-5	7.4	0.4	21	2.4	0.2	0.95	0.83	88	5	7	LS
0398S04521	625	C	5-28	7.5	0.32	25	1.8	0.15	0.8	0.81	94	0	6	S
0398S04522	625	2Ck	28-60	7.7	2.71	24	8.6	2.2	22	9.3	90	4	6	S
0398S04529	646	2Ck	29-60	8.3	0.89	26	1.2	0.25	8.3	9.7	82	5	13	SL
0398S04618	666	Bw	0-14	7.4	0.45	23	2.9	0.35	0.63	0.5	86	4	10	LS
0398S04619	666	2Ck	14-30	7.5	0.38	24	1.8	0.31	1.5	1.4	88	2	10	LS
0398S04620	666	2C	30-60	8.2	1.08	28	0.66	0.21	8.8	13	88	2	10	LS
0398S04641	697	A	0-6	7.8	0.49	27	3.5	0.52	0.97	0.68	92	2	6	S
0398S04642	697	C1	6-32	7.9	0.38	28	1.7	0.28	1.7	1.7	95	0	5	S
0398S04643	697	C2	32-49	8.4	1.92	28	1.2	0.56	16	17	94	1	5	S
0398S04644	697	2C	49-60	8.5	8.56	35	8.6	3.9	83	33	80	6	14	SL

Stumble Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S01654	447	2Cy	20-40	2	0.06	1.9	23	20.6	.	.	.	.
0398S01655	447	2Ck	40-54	0.69	0.02	0.62	9	8.1	.	.	.	.
0398S01983	497	Bw	0-11	2.1	0.01	0.31	16	15.6	.	.	.	.
0398S01984	497	Bc	11-24	2.7	0.01	0.31	21	20.6	.	.	.	.
0398S01985	497	2Ck	24-44	4.5	0.02	0.62	33	32.5	.	.	.	.
0398S04520	625	A	0-5	1.6	0.01	0.31	15	14.7	.	.	.	.
0398S04521	625	C	5-28	1.6	0.01	0.31	14	13.5	.	.	.	.
0398S04522	625	2Ck	28-60	2.1	0.04	1.3	20	19	.	.	.	.
0398S04529	646	2Ck	29-60	6.1	0.03	0.94	61	59.9	.	.	.	.
0398S04618	666	Bw	0-14	2	0.01	0.31	16	15.5	.	.	.	.
0398S04619	666	2Ck	14-30	5.2	0.02	0.62	53	52.1	.	.	.	.
0398S04620	666	2C	30-60	1.9	0.01	0.31	17	16.2	.	.	.	.
0398S04641	697	A	0-6	0.98	0.01	0.31	9	8.2	.	.	.	.
0398S04642	697	C1	6-32	0.94	0.01	0.31	8	7.3	.	.	.	.
0398S04643	697	C2	32-49	0.91	0.01	0.31	8	7.3	.	.	.	.
0398S04644	697	2C	49-60	2	0.09	2.8	17	14.4	.	.	.	.

Stumble Series Additional Laboratory Data Area 4 South (Continued)

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01654	447	2Cy	20-40	.	0.3	0	0
0398S01655	447	2Ck	40-54	.	0	0	0
0398S01983	497	Bw	0-11	.	0	0	0
0398S01984	497	Bc	11-24	.	0	0	0
0398S01985	497	2Ck	24-44	.	0.5	0	0
0398S04520	625	A	0-5	.	0	0	0
0398S04521	625	C	5-28	.	0	0	0
0398S04522	625	2Ck	28-60	.	0.2	0	0
0398S04529	646	2Ck	29-60	.	0.3	0	0
0398S04618	666	Bw	0-14	.	0	0	0
0398S04619	666	2Ck	14-30	.	0	0	0
0398S04620	666	2C	30-60	.	0.2	0	0
0398S04641	697	A	0-6	.	0	0	0
0398S04642	697	C1	6-32	.	0.2	0	0
0398S04643	697	C2	32-49	.	0.7	0	0
0398S04644	697	2C	49-60	.	2.7	0	0

Tsaya Series

The soils in the Tsaya series are classified as Loamy-skeletal, mixed, superactive, calcareous, mesic Lithic Torriorthents. These shallow and very shallow, well-drained soils occur on hill slopes, ridges, and mesas. The soils are formed in residuum and alluvium derived from sandstone and shale.

Typifying Pedon: Tsaya extremely channery clay loam, 0 to 8 percent slopes. Location is in Area 4 South, site #156 at 1,978,169 ft north and 296,476 ft east (New Mexico West, State Plane Coordinates).

A- 0 to 3 inches; brown (10YR 4/3) extremely channery clay loam, dark grayish brown (10YR 4/2) moist; weak granular structure; soft, friable; violently effervescent; calcium carbonate disseminated; non-saline; slightly alkaline (pH 7.4).

Ck- 3 to 8 inches; yellowish brown (10YR 5/4) channery clay loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard; 35 percent channers; violently effervescent; calcium carbonate disseminated; calcium carbonate equivalent 20 percent; non-saline; neutral (pH 7.3).

R- 8 inches; sandstone.

Range in Characteristics

Topdressing depth: 0 to 20 inches.

Reaction: Neutral to moderately alkaline.

Salinity: Non-saline.

Depth to paralithic contact: 2 to 20 inches.

Coarse fragments: 15 to 95 percent.

Topdressing is limited by depth to bedrock and quantity of coarse fragments.

Tsaya Series Typifying Pedon Laboratory

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %
0398S00664	4 S	156	A	0	3	7.4	0.33	30	2.35	0.36	0.78	1	41	26	33
0398S00665	4 S	156	Ck	3	8	7.3	0.49	30	3.11	0.34	1.39	1	38	34	28

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Texture USDA	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %
0398S00664	4 S	156	A	0	3	CL	8	0.02	0.62	94	93.5	.	.
0398S00665	4 S	156	Ck	3	8	CL	20	0.01	0.31	207	206.8	.	.

Lab ID	Area	Sample Site	Soil Horizon	Upper Depth (in)	Lower Depth (in)	Pyritic Sulfur %	AB Pry. S t/kt	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S00664	4 S	156	A	0	3	.	.	.	0	0.4	0
0398S00665	4 S	156	Ck	3	8	.	.	.	0	0.7	0

Tsaya Series Additional Laboratory Data Area 4 South

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	pH s.u.	EC mmhos/cm	Sat %	Ca meq/l	Mg meq/l	Na meq/l	SAR	Sand %	Silt %	Clay %	Texture USDA
0398S01469	DH-C	AC	0-10	7.4	1.38	28	8.2	1.5	5.4	2	54	27	19	SL
0398S01478	DH-I	AC	0-7	8.1	1.77	31	2.4	0.7	18	14	31	41	28	CL
0398S01483	DH-K	C	0-7	7.6	0.89	36	5.1	1.3	2.8	2	61	21	18	SL

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	CaCO3 %	Sulfur Total %	AB Total S t/kt	NP t/kt	ABP Total S t/kt	SO4 %	Organic Sulfur %	Pyritic Sulfur %	AB Pry. S t/kt
0398S01469	DH-C	AC	0-10	17	0.01	0.31	158	157.5	0	0	0	0
0398S01478	DH-I	AC	0-7	16	0.01	0.31	155	155.1	0	0	0	0
0398S01483	DH-K	C	0-7	12	0.01	0.31	137	136.9	0	0	0	0

Lab ID	Sample Site	Soil Horizon	Sample Depth (in)	ABP Pry. S t/kt	Boron Sol. mg/kg	Se Total mg/kg	Se Sol. mg/kg
0398S01469	DH-C	AC	0-10	0	0	0	0
0398S01478	DH-I	AC	0-7	0	0	0	0
0398S01483	DH-K	C	0-7	0	0	0.25	0

Uffens Series

The soils in the Uffens series are classified as Fine-loamy, mixed, superactive, mesic Typic Natrargids. These deep well drained, sodium-affected soils are in valleys and on alluvial fans, mesas and plateaus. The soils formed in alluvium derived from shale.

Typifying Pedon: Uffens sand clay loam, 0 to 8 percent slopes. Pedon description was taken from Uffens series, Soil Conservation Service, 1980.

E- 0 to 1/2 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine pores; strongly effervescent; strongly alkaline (pH 8.7); clear smooth boundary. (1/2 to 6 inches thick)

Btn_1- 1/2 to 3 inches; light brownish gray (2.5Y 6/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium columnar structure that parts to weak fine blocky; very hard, firm, slightly sticky and plastic; few fine roots; many fine vesicular pores; common thin clay films on faces of peds; strongly effervescent; very strongly alkaline (pH 9.3); clear smooth boundary. (2 to 13 inches thick)

Btn_2- 3 to 10 inches; very pale brown (10YR 7/3) sandy clay loam, brown (10YR 5/3) moist; weak medium prismatic structure that parts to weak medium blocky; very hard, firm, sticky and plastic; few fine roots; few fine tubular pores; many thin clay films on faces of peds; strongly effervescent; very strongly alkaline (pH 9.3); clear smooth boundary. (4 to 10 inches thick)

C_1- 10 to 27 inches; very pale brown (10YR 7/3) sandy clay loam, brown (10YR 5/3) moist; weak coarse blocky structure; very hard, firm, sticky and plastic; common fine roots; many fine tubular pores; strongly effervescent; strongly alkaline (pH 8.9); gradual smooth boundary. (3 to 17 inches thick)

C_2- 27 to 54 inches; light gray (10YR 7/2) sandy clay loam, grayish brown (10YR 5/2) moist; massive; very hard, firm, sticky and plastic; few fine

roots; common fine and medium tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (18 to 30 inches)

C_3- 54 to 57 inches; light gray (2.5YR 7/2) silty clay, grayish brown (2.5YR 5/2) moist; weak medium prismatic structure; extremely hard, firm, sticky and plastic; few fine roots; few fine vesicular pores; moderately effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 14 inches thick)

2C- 57 to 70 inches; light brownish gray (10YR 6/2) sand, light brownish gray (10YR 6/2) moist; single grain; loose; few fine roots; few fine pores; moderately effervescent; strongly alkaline (pH 8.5).

The solum is 8 to 25 inches thick. The exchangeable sodium is 25 to 75 percent. The A horizon is loamy sand to clay. It has a hue ranging from 2.5Y to 7.5YR. The Bt horizon is sandy clay loam or 2.5Y. The C horizon ranges from loamy sand to clay and the hue from 7.5YR to 2.5Y.

The range of topdressing depth is 0 to 20 inches. Suitable topdressing material is sandy eolian deposits on the surface. The limiting factors for topdressing are SAR and dry consistence.

Appendix E

Topdressing by Delineation

Appendix E Topdressing By Delineation

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
BA-1	Area 5	0	35.8	0	0.275
BA-130	Area 5	0	11.3	0	0.087
BA-131	Area 5	0	3.0	0	0.023
BA-15	Area 5	0	53.9	0	0.414
BA-152	Area 5	0	5.4	0	0.042
BA-153	Area 5	0	9.0	0	0.070
BA-154	Area 5	0	2.0	0	0.016
BA-155	Area 5	0	0.9	0	0.007
BA-156	Area 5	0	1.1	0	0.008
BA-16	Area 5	0	17.5	0	0.135
BA-175	Area 5	0	0.5	0	0.004
BA-176	Area 5	0	2.2	0	0.017
BA-188	Area 4 South	0	11.2	0	0.086
BA-197	Area 4 South	0	14.1	0	0.108
BA-22	Area 5	0	115.0	0	0.884
BA-233	Area 4 South	0	17.2	0	0.132
BA-235	Area 4 South	0	19.3	0	0.148
BA-243	Area 4 South	0	79.4	0	0.611
BA-261	Area 4 South	0	312.0	0	2.399
BA-262	Area 4 South	0	47.1	0	0.362
BA-276	Area 4 South	0	74.9	0	0.576
BA-283	Area 4 South	0	6.9	0	0.053
BA-325	Area 4 South	0	25.2	0	0.194
BA-326	Area 4 South	0	4.2	0	0.032
BA-327	Area 4 South	0	0.3	0	0.002
BA-35	Area 5	0	232.7	0	1.789
BA-375	Area 4 South	0	4.5	0	0.034
BA-386	Area 5	0	3.7	0	0.029
BA-389	Area 4 South	0	3.1	0	0.024
BA-390	Area 4 South	0	26.5	0	0.204
BA-391	Area 4 South	0	5.9	0	0.045
BA-392	Area 4 South	0	1.5	0	0.012
BA-393	Area 4 South	0	0.2	0	0.001
BA-395	Area 4 South	0	1.7	0	0.013
BA-396	Area 4 South	0	0.4	0	0.003
BA-397	Area 4 South	0	0.3	0	0.002
BA-398	Area 4 South	0	0.4	0	0.003
BA-400	Area 5	0	108.9	0	0.837
BA-401	Area 5	0	23.4	0	0.180
BA-83	Area 5	0	174.8	0	1.344

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
BA-85	Area 5	0	69.5	0	0.535
Bb-258	Area 4 South	54	298.1	2163941	2.292
Bc-10	Area 5	28	22.7	85538	0.175
Bc-13	Area 5	22	3.6	10622	0.028
Bc-111	Area 5	28	17.4	65563	0.134
Bc-121	Area 5	27	106.3	385803	0.817
Bc-125	Area 5	24	61.7	199085	0.474
Bc-136	Area 5	28	31.3	117672	0.240
Bc-195	Area 4 South	36	3.2	15404	0.024
Bc-209	Area 4 South	21	19.2	54272	0.148
Bc-216	Area 4 South	25	55.0	184980	0.423
Bc-224	Area 4 South	14	8.4	15858	0.065
Bc-227	Area 4 South	10	6.1	8248	0.047
Bc-238	Area 4 South	21	2.7	7512	0.020
Bc-244	Area 4 South	35	1.8	8377	0.014
Bc-265	Area 4 South	23	168.9	522245	1.299
Bc-277	Area 4 South	20	2.3	6222	0.018
Bc-279	Area 4 South	19	1.1	2851	0.009
Bc-280	Area 4 South	21	4.8	13685	0.037
Bc-298	Area 4 South	20	1.0	2606	0.007
Bc-378	Area 5	32	4.3	18318	0.033
Bc-379	Area 5	28	11.6	43587	0.089
Bc-44	Area 5	29	34.3	133751	0.264
Bc-46	Area 5	29	12.7	49489	0.098
Bc-77	Area 5	28	118.3	445438	0.910
Bc-94	Area 5	29	11.6	45230	0.089
Bl-133	Area 5	39	4.4	22985	0.034
Bl-41	Area 5	53	31.2	222616	0.240
Bl-52	Area 5	50	22.5	151237	0.173
Bl-54	Area 5	60	10.9	88073	0.084
Bl-87	Area 5	52	22.9	160233	0.176
Bn-100	Area 5	0	13.9	0	0.107
Bn-117	Area 5	0	2.3	0	0.018
Bn-140	Area 5	0	47.1	0	0.362
Bn-160	Area 5	0	3.4	0	0.026
Bn-178	Area 4 South	26	6.5	22758	0.050
Bn-210	Area 4 South	10	20.1	27077	0.155
Bn-236	Area 4 South	19	2.2	5510	0.017
Bn-240	Area 4 South	0	105.0	0	0.807
Bn-284	Area 4 South	0	0.8	0	0.006

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Bn-290	Area 4 South	0	17.4	0	0.134
Bn-291	Area 4 South	0	5.3	0	0.041
Bn-299	Area 4 South	0	59.9	0	0.461
Bn-31	Area 5	0	142.2	0	1.094
Bn-310	Area 4 South	0	9.9	0	0.076
Bn-315	Area 4 South	6	49.9	40222	0.383
Bn-32	Area 5	0	0.3	0	0.002
Bn-33	Area 5	0	0.2	0	0.002
Bn-338	Area 4 South	0	15.8	0	0.122
Bn-354	Area 4 South	0	1.9	0	0.014
Bn-361	Area 4 South	0	96.7	0	0.743
Bn-38	Area 5	12	9.3	15072	0.072
Bn-40	Area 5	12	34.4	55522	0.265
Bn-56	Area 5	0	14.1	0	0.108
Dk-116	Area 5	36	11.4	55009	0.087
Dk-132	Area 5	54	1.6	11583	0.012
Dk-151	Area 5	60	17.1	137650	0.131
Dk-162	Area 5	60	3.6	28683	0.027
Dk-167	Area 5	50	1.7	11608	0.013
Dk-196	Area 4 South	41	16.9	93403	0.130
Dk-205	Area 4 South	43	9.0	52079	0.069
Dk-232	Area 4 South	54	26.3	190905	0.202
Dk-247	Area 4 South	60	1.8	14313	0.014
Dk-251	Area 4 South	50	23.6	158854	0.182
Dk-297	Area 4 South	33	6.4	28458	0.049
Dk-323	Area 4 South	60	1.4	11102	0.011
Dk-329	Area 4 South	60	4.1	32797	0.031
Dk-373	Area 4 South	60	1.2	9647	0.009
Dk-387	Area 5	60	3.1	25225	0.024
Dk-72	Area 5	60	21.1	169895	0.162
Fa-102	Area 5	0	2.0	0	0.015
Fa-103	Area 5	0	10.3	0	0.079
Fa-107	Area 5	0	6.0	0	0.046
Fa-108	Area 5	0	0.6	0	0.005
Fa-109	Area 5	0	9.7	0	0.075
Fa-112	Area 5	0	3.2	0	0.025
Fa-128	Area 5	0	1.2	0	0.010
Fa-134	Area 5	0	5.5	0	0.042
Fa-149	Area 5	0	5.1	0	0.039
Fa-17	Area 5	0	50.1	0	0.385

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Fa-183	Area 4 South	6	4.0	3257	0.031
Fa-2	Area 5	0	96.2	0	0.740
Fa-206	Area 4 South	9	19.8	23957	0.152
Fa-372	Area 4 South	8	1.7	1779	0.013
Fa-376	Area 4 South	0	0.1	0	0.001
Fa-49	Area 5	0	26.5	0	0.204
Fa-53	Area 5	9	47.7	57736	0.367
Fa-58	Area 5	0	16.8	0	0.129
Fa-61	Area 5	0	15.6	0	0.120
Fa-63	Area 5	0	32.8	0	0.252
Fa-64	Area 5	0	4.4	0	0.034
Fa-65	Area 5	0	6.4	0	0.050
Fa-66	Area 5	0	10.9	0	0.084
Fa-67	Area 5	0	2.3	0	0.018
Fa-68	Area 5	0	8.2	0	0.063
Fa-69	Area 5	0	15.0	0	0.115
Fa-70	Area 5	0	22.3	0	0.172
Fa-71	Area 5	0	18.4	0	0.142
Fa-78	Area 5	13	15.5	27114	0.119
Fa-79	Area 5	0	11.6	0	0.089
Fa-8	Area 5	0	27.0	0	0.208
Fa-81	Area 5	0	3.1	0	0.024
Fa-82	Area 5	0	16.4	0	0.126
Fa-86	Area 5	8	79.6	85626	0.612
Fr-104	Area 5	60	4.9	39516	0.038
Fr-187	Area 4 South	0	5.3	0	0.041
Fr-194	Area 4 South	51	4.4	29859	0.033
Fr-198	Area 4 South	17	2.5	5617	0.019
Fr-242	Area 4 South	48	3.4	22070	0.026
Fr-307	Area 4 South	29	24.6	95742	0.189
Fr-314	Area 4 South	45	18.4	111620	0.142
Fr-330	Area 4 South	60	20.4	164373	0.157
Fr-349	Area 4 South	0	5.6	0	0.043
Fr-364	Area 4 South	35	14.8	69451	0.113
Fr-394	Area 4 South	60	1.4	11564	0.011
Fr-98	Area 5	60	3.7	29715	0.028
Fv-161	Area 5	34	1.8	8361	0.014
Fv-215	Area 4 South	45	46.4	280771	0.357
Gr-222	Area 4 South	19	7.4	18952	0.057
Gr-223	Area 4 South	47	9.2	58203	0.071

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Gr-237	Area 4 South	28	44.6	168004	0.343
Gr-34	Area 5	60	5.6	45225	0.043
Gr-385	Area 5	60	2.6	20911	0.020
Hf-101	Area 5	0	8.4	0	0.064
Hf-11	Area 5	0	10.1	0	0.077
Hf-139	Area 5	0	201.6	0	1.550
Hf-14	Area 5	0	10.0	0	0.077
Hf-148	Area 5	0	15.4	0	0.119
Hf-21	Area 5	0	6.8	0	0.052
Hf-218	Area 4 South	13	16.9	29581	0.130
Hf-24	Area 5	0	45.9	0	0.353
Hf-245	Area 4 South	13	7.6	13249	0.058
Hf-25	Area 5	0	15.4	0	0.118
Hf-29	Area 5	0	99.2	0	0.762
Hf-3	Area 5	0	18.9	0	0.145
Hf-304	Area 4 South	0	34.1	0	0.262
Hf-318	Area 4 South	0	37.4	0	0.287
Hf-334	Area 4 South	0	33.1	0	0.255
Hf-347	Area 4 South	0	2.0	0	0.015
Hf-348	Area 4 South	0	0.8	0	0.006
Hf-355	Area 4 South	0	16.6	0	0.128
Hf-371	Area 4 South	0	5.0	0	0.039
Hf-388	Area 4 South	0	0.6	0	0.005
Hf-39	Area 5	0	49.0	0	0.377
Hf-42	Area 5	0	7.7	0	0.059
Hf-43	Area 5	0	328.8	0	2.528
Hf-5	Area 5	0	35.2	0	0.271
Hf-6	Area 5	0	10.0	0	0.077
Hf-76	Area 5	0	103.8	0	0.798
Hf-88	Area 5	0	4.4	0	0.034
Hf-95	Area 5	0	9.3	0	0.071
Hk-383	Area 5	0	102.6	0	0.789
Hk-55	Area 5	0	16.6	0	0.128
Hk-59	Area 5	0	9.3	0	0.071
Jc-211	Area 4 South	0	8.4	0	0.065
Jc-256	Area 4 South	0	13.6	0	0.104
Jc-275	Area 4 South	24	27.0	87075	0.207
Jc-306	Area 4 South	0	1.3	0	0.010
Jc-322	Area 4 South	0	2.4	0	0.019
Jc-324	Area 4 South	0	8.1	0	0.062

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Jc-331	Area 4 South	0	2.6	0	0.020
Jc-342	Area 4 South	6	4.0	3255	0.031
Jc-359	Area 4 South	0	6.7	0	0.051
Jf-212	Area 4 South	41	24.8	136713	0.191
Jf-259	Area 4 South	27	60.6	220058	0.466
Jf-333	Area 4 South	29	6.2	24333	0.048
Jf-343	Area 4 South	33	22.4	99204	0.172
Jf-358	Area 4 South	60	29.5	237857	0.227
Jg-164	Area 5	57	0.0	122	0.000
Jg-165	Area 5	55	201.9	1492700	1.552
Jg-166	Area 5	57	7.6	58400	0.059
Jg-249	Area 4 South	55	7.0	51915	0.054
Jg-250	Area 4 South	55	0.5	3354	0.003
Jg-370	Area 4 South	55	18.0	133246	0.139
Mc-110	Area 5	11	4.0	5895	0.031
Mc-113	Area 5	17	6.6	15097	0.051
Mc-114	Area 5	18	22.9	55391	0.176
Mc-115	Area 5	16	39.9	85833	0.307
Mc-118	Area 5	12	11.5	18473	0.088
Mc-119	Area 5	18	9.2	22172	0.070
Mc-124	Area 5	17	3.3	7447	0.025
Mc-129	Area 5	10	2.8	3764	0.022
Mc-141	Area 5	11	9.6	14124	0.073
Mc-142	Area 5	14	3.2	6072	0.025
Mc-150	Area 5	20	44.2	118807	0.340
Mc-180	Area 4 South	23	1.8	5658	0.014
Mc-185	Area 4 South	14	5.3	10067	0.041
Mc-19	Area 5	17	149.7	342136	1.151
Mc-213	Area 4 South	6	14.6	11807	0.113
Mc-217	Area 4 South	19	1.3	3285	0.010
Mc-220	Area 4 South	9	0.4	538	0.003
Mc-230	Area 4 South	13	29.0	50699	0.223
Mc-27	Area 5	16	164.5	353897	1.265
Mc-28	Area 5	10	13.3	17897	0.102
Mc-294	Area 4 South	21	4.0	11326	0.031
Mc-332	Area 4 South	25	13.9	46600	0.107
Mc-336	Area 4 South	9	6.5	7855	0.050
Mc-337	Area 4 South	10	2.4	3246	0.019
Mc-340	Area 4 South	25	6.6	22044	0.050
Mc-374	Area 4 South	16	1.8	3959	0.014

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Mc-377	Area 5	16	14.2	30546	0.109
Mc-399	Area 5	16	10.6	22903	0.082
Mc-51	Area 5	12	114.0	183850	0.876
Mc-60	Area 5	17	120.3	274854	0.925
Mc-62	Area 5	18	26.2	63283	0.201
Mc-73	Area 5	16	27.8	59845	0.214
Mc-74	Area 5	16	10.9	23341	0.083
Mc-75	Area 5	16	25.0	53851	0.192
Mc-90	Area 5	14	6.0	11351	0.046
MF-123	Area 5	0	18.0	0	0.138
MF-126	Area 5	0	58.3	0	0.448
MF-135	Area 5	0	6.6	0	0.051
MF-225	Area 4 South	6	33.9	27343	0.261
MF-36	Area 5	0	549.3	0	4.224
MF-37	Area 5	0	0.3	0	0.002
MF-45	Area 5	0	31.4	0	0.242
MF-48	Area 5	0	56.9	0	0.438
Mq-179	Area 4 South	53	2.0	14196	0.015
Mq-186	Area 4 South	29	2.7	10586	0.021
Mq-300	Area 4 South	60	40.9	330289	0.315
Mq-313	Area 4 South	60	8.6	69403	0.066
Pc-168	Area 5	0	1.0	0	0.007
Pc-169	Area 5	0	85.6	0	0.658
Pc-182	Area 4 South	7	3.6	3369	0.028
Pc-214	Area 4 South	0	23.3	0	0.179
Pc-239	Area 4 South	7	12.9	12112	0.099
Pc-241	Area 4 South	0	3.6	0	0.028
Pc-252	Area 4 South	0	106.8	0	0.821
Pc-253	Area 4 South	0	0.3	0	0.002
Pc-254	Area 4 South	0	0.0	0	0.000
Pc-266	Area 4 South	0	83.9	0	0.645
PF-181	Area 4 South	0	88.2	0	0.678
PF-204	Area 4 South	0	3.7	0	0.028
PF-221	Area 4 South	0	12.6	0	0.097
PF-341	Area 4 South	0	9.0	0	0.069
PF-367	Area 4 South	8	33.4	35931	0.257
PF-368	Area 4 South	0	93.4	0	0.718
Ph-171	Area 5	0	10.9	0	0.084
Ph-207	Area 4 South	0	17.1	0	0.132
Ph-234	Area 4 South	9	29.6	35775	0.227

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Ph-263	Area 4 South	0	38.7	0	0.297
Ph-274	Area 4 South	0	818.9	0	6.296
Ph-287	Area 4 South	0	106.1	0	0.816
Ph-305	Area 4 South	0	43.5	0	0.335
Ph-321	Area 4 South	0	13.0	0	0.100
Ph-369	Area 4 South	0	15.8	0	0.122
Po-380	Area 5	13	8.1	14109	0.062
Po-381	Area 4 South	0	1.1	0	0.008
Po-99	Area 5	12	2.3	3753	0.018
Ps-170	Area 5	0	122.2	0	0.940
Ps-184	Area 4 South	0	21.1	0	0.162
Ps-189	Area 4 South	0	1.4	0	0.011
Ps-192	Area 4 South	20	1.4	3865	0.011
Ps-200	Area 4 South	0	12.8	0	0.098
Ps-208	Area 4 South	0	34.0	0	0.262
Ps-219	Area 4 South	0	3.7	0	0.028
Ps-231	Area 4 South	0	68.4	0	0.526
Ps-255	Area 4 South	0	40.7	0	0.313
Ps-267	Area 4 South	0	12.3	0	0.094
Ps-268	Area 4 South	0	0.3	0	0.002
Ps-269	Area 4 South	0	28.6	0	0.220
Ps-270	Area 4 South	0	20.5	0	0.158
Ps-271	Area 4 South	0	3.3	0	0.025
Ps-272	Area 4 South	0	0.0	0	0.000
Ps-273	Area 4 South	0	18.9	0	0.145
Ps-303	Area 4 South	0	14.0	0	0.108
Ps-320	Area 4 South	0	39.7	0	0.305
Ps-96	Area 5	0	0.5	0	0.004
Pt-382	Area 5	0	15.3	0	0.118
Pt-384	Area 5	0	35.1	0	0.270
Rm-12	Area 5	30	176.4	711511	1.356
Rm-122	Area 5	24	0.7	2375	0.006
Rm-127	Area 5	24	1.3	4180	0.010
Rm-143	Area 5	32	12.6	54233	0.097
Rm-147	Area 5	12	6.2	9957	0.047
Rm-159	Area 5	37	28.8	143430	0.222
Rm-18	Area 5	35	20.3	95312	0.156
Rm-201	Area 4 South	19	2.6	6529	0.020
Rm-23	Area 5	32	56.9	244982	0.438
Rm-26	Area 5	24	9.6	31113	0.074

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Rm-278	Area 4 South	33	8.4	37309	0.065
Rm-282	Area 4 South	31	6.0	24917	0.046
Rm-285	Area 4 South	19	3.3	8482	0.026
Rm-296	Area 4 South	27	8.1	29490	0.062
Rm-302	Area 4 South	26	6.7	23246	0.051
Rm-57	Area 5	18	26.2	63359	0.201
Rm-9	Area 5	12	71.3	115036	0.548
Rm-93	Area 5	21	23.3	65787	0.179
RO-228	Area 4 South	0	1.3	0	0.010
RO-295	Area 4 South	0	18.3	0	0.141
RO-328	Area 4 South	0	0.7	0	0.006
Rz-105	Area 5	35	19.1	89667	0.147
Rz-106	Area 5	46	28.4	175702	0.218
Rz-145	Area 5	49	28.4	187360	0.219
Rz-146	Area 5	46	21.3	131490	0.163
Rz-157	Area 5	61	7.5	61901	0.058
Rz-177	Area 4 South	44	8.7	51735	0.067
Rz-190	Area 4 South	48	4.1	26206	0.031
Rz-191	Area 4 South	43	1.6	9050	0.012
Rz-199	Area 4 South	49	13.0	85853	0.100
Rz-202	Area 4 South	40	2.0	10939	0.016
Rz-257	Area 4 South	60	0.0	164	0.000
Rz-288	Area 4 South	54	106.8	775692	0.821
Rz-289	Area 4 South	58	36.8	286664	0.283
Rz-30	Area 5	52	3.4	23585	0.026
Rz-301	Area 4 South	60	9.0	72585	0.069
Rz-309	Area 4 South	54	55.3	401215	0.425
Rz-311	Area 4 South	60	22.9	184996	0.176
Rz-312	Area 4 South	60	0.1	571	0.001
Rz-317	Area 4 South	60	26.9	216610	0.206
Rz-335	Area 4 South	60	2.4	19068	0.018
Rz-339	Area 4 South	60	5.0	40052	0.038
Rz-350	Area 4 South	59	66.8	529960	0.514
Rz-352	Area 4 South	57	0.9	6817	0.007
Rz-353	Area 4 South	57	4.0	30657	0.031
Rz-356	Area 4 South	56	25.5	191639	0.196
Rz-360	Area 4 South	60	56.4	455145	0.434
Rz-7	Area 5	49	194.0	1277703	1.491
Rz-91	Area 5	60	7.1	57190	0.055
Rz-97	Area 5	44	6.7	39367	0.051

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
SB-120	Area 5	41	136.5	752190	1.049
SB-138	Area 5	34	180.5	825152	1.388
SB-144	Area 5	30	246.1	992759	1.892
SB-20	Area 5	39	237.1	1243134	1.823
SB-229	Area 4 South	33	105.0	465720	0.807
SB-4	Area 5	47	201.8	1274958	1.551
SB-89	Area 5	37	66.1	328919	0.508
SB-92	Area 5	34	171.6	784186	1.319
Sd-281	Area 4 South	26	8.8	30833	0.068
Sd-286	Area 4 South	19	20.5	52260	0.157
Sd-308	Area 4 South	13	13.2	23096	0.102
Sd-319	Area 4 South	8	4.5	4871	0.035
Sd-345	Area 4 South	22	1.6	4785	0.012
Sd-351	Area 4 South	23	5.8	17970	0.045
Sd-357	Area 4 South	17	51.8	118391	0.398
Sd-365	Area 4 South	17	37.2	84940	0.286
Sh-137	Area 5	60	2.6	20649	0.020
Sh-158	Area 5	67	1.9	16973	0.014
Sh-163	Area 5	49	1.3	8437	0.010
Sh-193	Area 4 South	40	2.0	10653	0.015
Sh-203	Area 4 South	51	7.1	48412	0.054
Sh-248	Area 4 South	60	10.8	87341	0.083
Sh-292	Area 4 South	51	14.3	98148	0.110
Sh-293	Area 4 South	51	1.5	9972	0.011
Sh-344	Area 4 South	60	5.3	42774	0.041
Sh-363	Area 4 South	50	18.7	126011	0.144
Sh-47	Area 5	27	18.9	68762	0.146
Sh-50	Area 5	60	8.2	66253	0.063
Sh-80	Area 5	52	31.9	223204	0.245
Sh-84	Area 5	60	61.4	495387	0.472
St-316	Area 4 South	53	69.0	491773	0.531
St-346	Area 4 South	52	26.5	185351	0.204
St-362	Area 4 South	50	7.3	49196	0.056
St-366	Area 4 South	36	40.3	195072	0.310
Ts-172	Area 5	0	2.0	0	0.016
Ts-173	Area 5	0	0.0	0	0.000
Ts-174	Area 5	0	2.7	0	0.021
Ts-226	Area 4 South	0	14.0	0	0.107
Ts-246	Area 4 South	0	27.0	0	0.208
Ts-260	Area 4 South	0	6.5	0	0.050

Appendix E Continued

Map Unit	Mine Area	Topdessing Depth	Area Acres	Volume of Topdressing (bcy)	Percent of Survey
Ts-264	Area 4 South	0	12.8	0	0.099

Navajo Mine Extension Project
Soil Survey

Presented to

BHP Navajo Coal Company

Navajo Mine Extension Project

August 2008

Navajo Mine Extension Project
Soil Survey

Prepared by

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Presented to

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August 2008

EXECUTIVE SUMMARY

A soil survey for the Navajo Mine Extension Project (NMEP) was completed by Buchanan Consultants, Ltd. in March 2008. The survey was conducted to describe the soils of the area and additionally to provide an estimate of available topdressing resources. The total area is 13,006 acres and is generally located south of Pinabete Arroyo and north of Brimhall Wash.

The survey was produced by combining two soil surveys, one from Area 4 South, completed in 1998 and one from Area 5 completed in 2008. Approximately 5,412 acres of Area 4 South are included in the NMEP survey and contain an estimated 12,158,588 bcy of topdressing. Area 5 is an area of 7,594 acres and has an estimated 17,012,036 bcy of topdressing. The NMEP soil survey (Areas 4 South and 5) has an estimated total volume of 29,170,624 bcy of topdressing. This total volume amounts to an average depth for replacement of topdressing for the combined area (Areas 4 South and 5) of nearly 17 inches.

Table of Contents

EXECUTIVE SUMMARY i
INTRODUCTION 1
GENERAL NATURE OF THE SURVEY AREA 1
SOIL SURVEY PROCEDURES 2
RESULTS 7
Soil Series Classification 7
Map Units 13
NMEP Soil Survey (Areas 4 South and 5) 13
Mapping Unit Descriptions for NMEP Soil Survey 15
Topdressing Availability 25
Area 4 South 26
Area 5 27
NMEP Soil Survey (Areas 4 South and 5) 28
PRIME FARMLAND DETERMINATION 29
Investigation of Prime Farmland 29
Results of Investigation 29
Conclusion 30
LITERAURE CITED 31

List of Tables

Table 1 Topsoil and Topsoil Substitute Suitability Criteria for the Southwestern United States 5
Table 2 Hydrologic Group and Family Classification of Each Soil Series Identified in the Navajo Mine Extension Project 8
Table 3 Key to Soils of the Navajo Mine Extension Project 10

List of Tables (Continued)

Table 4 Mapping Units Used for the Navajo Mine Extension Project soil survey 14

Table 5 Area, Percent of Survey Area, and Volume of Topdressing Available from Each Soil Mapping Unit Located in Area 4 South 26

Table 6 Area, Percent of Survey Area, and Volume of Topdressing Available from Each Soil Mapping Unit Located in Area 5 28

Table 7 Total Volume of Available Topdressing and Area for NMEP (Areas 4 South and 5) 29

List of Exhibits

Exhibit 1 Area 4 South Soils Map With Sample Locations

Exhibit 2 Area 5 Soils Map With Sample Locations

Exhibit 3 NMEP Soils Map (Area 4 South and Area 5)

List of Appendices

Appendix A Laboratory Procedures

Appendix B Soil Profile Descriptions

Appendix C Sample Locations with Topdressing and Depth to Bedrock

Appendix D Soil Series Descriptions

Appendix E Topdressing by Delineation

Appendix F Prime Farmland Letters

INTRODUCTION

This soil survey was completed by Buchanan Consultants, Ltd. (BCL) to determine the soil resources of the Navajo Mine Extension Project (NMEP). The primary objective was to determine the location and amount of salvageable topdressing material for the NMEP. The topdressing material is used for reclamation of disturbed lands resulting from surface coal mining operations.

The soil resources for the NMEP were determined by combining two soil surveys, both completed by BCL. The soil resources for the NMEP are described from a 1998 soil survey for Area 4 South and a 2008 survey for Area 5. These two soil surveys combined describe the soil resources for the NMEP, an area of 13,006 acres.

The NMEP soil survey is to be used as a planning tool and not to define precise site-specific unit delineations. The intent is for it to be used in obtaining mining permits and for general planning in the mine operations. It provides a supplement to on-site investigations of the various soil types described in the survey. Soils information provided in this report is intended to describe the location and quantity of suitable topdressing for reclamation of disturbed areas. The estimates given for the kinds of soil, amount of topdressing, soil depth, and extent of mapping units are greatly affected by the homogeneity of the soils. In general, the estimates are expected to vary by no more than 20 percent.

GENERAL NATURE OF THE SURVEY AREA

The NMEP soil survey is located within the Colorado Plateau physiographic province (Fenneman, 1931; Hunt, 1956). The Colorado Plateau has within its borders a wide diversity of topography, geologic materials, soils, and vegetation. The general terrain in the vicinity of the NMEP is characterized by rough and broken topography, badlands, plateaus, and mesas, intermingled with escarpments, and valleys or washes. Many of the soils in the survey area are formed from alluvium and eolian sediments derived from shale and sandstone from the Fruitland formation. Some soils have a residual component. Most of the soils in the survey area have been forming only since the late-

Pleistocene and during the Holocene Era. It is very common to find buried soils that date back to the Pleistocene Era. The annual precipitation for the survey area averages between 6 and 7 inches and the mean annual air temperature near 51^{o} F (11^{o} C). Therefore, the survey is described as having an aridic moisture regime and a mesic temperature regime.

An order 3 soil survey of the NMEP area was issued in November 1980 as the Soil Survey of San Juan County New Mexico, Eastern Part (USDA, 1980). The Natural Resources Conservation Service (NRCS) soil survey was presented at scales of 1:24,000 and 1:63,360. Copies of the survey are available from the United States Department of Agriculture (USDA) state office in Albuquerque, NM or from the local office in Aztec, NM. Many of the soil series names used in the NMEP survey are the same as those used in the 1980 soil survey. Additional series were used for the NMEP survey which mainly came from other NRCS soil surveys in Arizona, Colorado, New Mexico, and Utah.

SOIL SURVEY PROCEDURES

The NMEP soil survey was created by combining previously completed soil surveys each developed with the same field procedures. In those surveys, transects were distributed to provide a pattern for the location of soil test sites. Transects were oriented so that the major soil types were traversed. A combination of aerial photos from the National Aerial Photography Program (NAPP) and from BHP Navajo Coal Company (BNCC) were used to delineate major soil types. The NAPP photos were taken on September 24, 1991 at a scale of 1:15,840 and the BNCC photos were taken on April 5, 1985 at a scale of 1:6,000 and on February 26, 1998 at a scale of 1:24,000.

Aerial photographs of each area were studied stereoscopically. This examination provided predictions about the types and boundaries of soils. Tentative soil delineations were drawn on the photographs. Predictions of soil types and boundaries were then verified at test sites located in the field. As a group of transects and associated test sites were completed, delineations on aerial photographs were either verified or changed to reflect field observations. An attempt was made to place one or more test sites within

each major map unit delineation. The miscellaneous areas (Badlands and Rock Outcrops) were visited but few, if any test pits, were described or sampled. These are relatively easy areas to identify on aerial photographs and additionally, neither area provides suitable topdressing resources.

Soil test pits were positioned along transects or on unique landscapes representing the major soil types. The spacing of test pits was determined by the complexity of soils within an area. In complex areas test pits were described at close intervals and in homogeneous areas they were more widely spaced. Generally, test pits were positioned at close intervals (approximately 500 ft apart) along transects in Area 4 South and were more widely spaced in Area 5. The wider spacing in Area 5 is a result of both the homogeneity of the soils and the Scientist's familiarity with the soil types and associated landscapes. At each test pit, a soil profile was excavated with a backhoe or with a hand auger. Excavations were completed to a depth of approximately 60 inches or to bedrock, whichever was more shallow. At some test pit sites, excavation was unnecessary because the soil type and its suitability for use as topdressing could be accurately predicted from the surfaces. The Natrargids are an example of these soil types. At excavated sites, a soil profile description was written or a record was made of depth of suitable topdressing, depth to bedrock, and soil type. Profile descriptions included depth, texture, consistence, structure, effervescence, color, visible salts, and quantity of coarse fragments for each soil horizon. Also included were soil type (series), depth of suitable topdressing, current vegetation, parent material, physiography, slope, aspect, degree of erosion, and any other information pertinent to pedon classification and topsoil suitability determinations (Soil Survey Division Staff, 1993).

Soil samples were collected from selected soil profiles that represented either extensive soil components, soils that could not be classified in the field, or potential topdressing. Samples from Area 4 South were analyzed by Inter-Mountain Laboratories (IML) and samples from Area 5 were analyzed by Green Analytical Laboratories (GAL) for pH, electrical conductivity (EC), saturation percent (SP%), calcium, magnesium, sodium, sodium adsorption ratio (SAR), texture with percent sand, percent silt, and percent clay,

percent carbonate, acid-base potential (ABP), hot-water-soluble boron, hot-water-soluble selenium, and total selenium. The methods of soil analysis used by IML and GAL are referenced in Appendix A. Topdressing Suitability for the Southwestern United States (OSM, 1999) was used to evaluate the suitability of all soil samples, Table 1. It was beyond the scope of this soil survey to determine the suitability of topdressing (regolith) resources that may have existed below the depth of test pit excavations. These deep regolith materials are expected to occur in some mapping units and they may be a resource of additional topdressing material.

After mapping was complete for an area, soil map unit delineations were adjusted and transferred from aerial photographs to orthophotographs. The delineations were then digitized using ArcGIS. The base map scale for this survey was 1:15,840. Enlargement of the map scale for presentation does not provide additional mapping detail beyond the scale of the base map.

Table 1 Topsoil and Topsoil Substitute Suitability Criteria for the Southwestern United States* (OSM, 1999)

Parameter	Material Quality		
	Good	Marginal	Unsuitable
pH	6.0-8.4	5.5-6.0	< 5.5
EC mmhos/cm (1)	< 4.0	4.0-12.0	> 12.0
SAR (2) sl and coarser l and cl 40% clay	 <12.0 <10.0 <8.0	 12.0-18.0 10.0-16.0 8.0-14.0	 > 18.0 > 16.0 > 14.0
Texture (3)	ls, sl, l, sil, with 35% c	s, lcs, cl, sicl, with 45% c	> 45% c
Saturation %	25-80	25-80	<25 or >80
CaCo3 %	0-15	15-30	30
Coarse Fragments (4) < 3 inch % > 3 inch %	 15 3	 15-35 3-10	 35 10
Erosion Factor (5)	< .37	< .37	
Acid-base potential	+5 T CaCo3 Equiv./1000T	+0 T CaCo3 Equiv./1000T	-5 T CaCo3 Equiv./1000T
Boron	5 ppm	5 ppm	>5 ppm
Selenium (Total)		≤ 0.8 ppm	> 0.8 ppm
Selenium (extractable)		≤ 0.15 ppm	> 0.15 ppm

* These suitability criteria may be modified on a case by case basis if sufficient data are submitted to support the modifications and the submitted data technically represent the site specific nature of the modification.

1. When EC is less than 2.0, then SAR's can not be >18.

2. SAR values can be modified if adequate data is submitted to support proposed modifications.

3. ls=loamy sand; lcs=loamy coarse sand; sl=sandy loam; l=loam; sil=silt loam; scl=sandy clay loam; s=sand; cl=clay loam; sicl=silty clay loam; cl=clay.

4. For topsoil substitutes/supplements, percentage can be increased if it is shown that the higher percentage will increase slope stability and/or vegetation establishment. Suitabilities will be determined on a site specific basis.

5. For each material proposed to reclaim slopes $\geq$ 25% (4h:lv), a K factor must be determined from the results of appropriate physical and chemical analyses, as outlined in the National Soils Handbook (SCS, 1983). Material suitability will be determined using the Revised Universal Soil Loss Equation (Renard, ARS, 1990).

The location of each soil profile was plotted on the orthophoto soil maps. Each profile location is numbered within its respective area. Therefore, each different survey area in the NMEP starts with a profile numbered 1. Once the survey for a group of soil profiles was completed, the map unit delineations were plotted on the aerial photos.

Topdressing availability was calculated for each map unit delineation as a volume estimated from the product of mean depth (feet) of suitable material and area (square feet) of the delineation. Mean depths less than 6 inches were entered as 0 inches because it is operationally unfeasible to remove surface soils less than 6 inches thick. These volumes were summed to provide the quantity of topdressing material available from each map unit. A total volume of topdressing was produced for each of the three separate soil survey areas. The total volumes of topdressing for Areas 4 South and 5 were combined to represent the total topdressing volume for the NMEP mine area.

The extent and proportion of each map unit in the NMEP are shown on detailed soils maps Exhibit 1. *Area 4 South Soils Map with Sample Locations*, Exhibit 2. *Area 5 Soils Map with Sample Locations*, and Exhibit 3. *NMEP Soils Map (Area 4 South and Area 5)*. Each map unit delineation on the soils maps (Exhibit 1, Exhibit 2, and Exhibit 3) represents an area on the landscape and consists of one or more soils for which the map unit is named. A map unit symbol is assigned to each delineation to identify the soil mapping unit name.

RESULTS

The soils of the NMEP are highly complex and variable. In most cases, the geomorphic surfaces have been influenced by constructional and erosional processes, thus resulting in a high occurrence of buried and truncated soils. Nearly all of the soils have developed under the influence of erosion as indicated by the frequency of moderate and severely eroded surfaces. Additionally, many profiles are described with lithologic discontinuities. A total of 702 soil profiles were described for Area 4 South and 299 soil profiles were described for Area 5, Appendix B. The location of each profile with northing and easting coordinates, soil type, depth of topdressing, and depth to bedrock is given in Appendix C. The coordinate system used to designate each profile was the State Plane New Mexico West, North American Datum 1927.

Soil Series Classification

The 26 soil series identified in the NMEP soil survey are either Aridisols or Entisols in an Aridic moisture regime and a Mesic temperature regime. Each series is classified to the family level (Soil Survey Staff, 2006) and each assigned a hydrologic group (Soil Survey Staff, 2008), Table 2. The series descriptions, Appendix D, are developed from soils within the survey or from NRCS surveys and each have laboratory data included with the description. Two series (Sogzie and Uffens) occur only as inclusions in the mapping units and were not sampled because they are of such limited extent. The laboratory data were used to classify the soils and determine topdressing suitability. All of the soil series used are included in the Key to Soils of the Navajo Mine Extension Project, Table 3. This key was used to separate the various soil types for the NMEP soil survey.

In the 1998 (Area 4 South) Soil Survey, Beebe Variant was used to describe Beebe soils with high sodicity. Since that time, the range of characteristics for the Beebe series have been revised, (05/2006, Soil Survey Staff, 2008). The revision includes soils with high sodium levels (exchangeable sodium 20 to 70%). Therefore, for the NMEP survey, the Beebe Variant designation has been replaced with the Beebe series which is representative of soils with high sodicity.

Also, in the 1998 (Area 4 South) Soil Survey, Shiprock Variant was used to describe soils having a particle-size control section with 18 to 27% clay and no calcic horizon. The Shiprock series lacked the calcic horizon, however was described with a coarse-loamy control section. Thus the Shiprock Variant was created. Since 1998, the Doak series was revised, (07/2006, Soil Survey Staff, 2008) to include soils with 18 to 35% clay in the particle-size control section and lacked the calcic horizon. Therefore, for the NMEP survey, the Shiprock Variant designation has been replaced with the Doak series which is representative of soils having a fine loamy (18 to 35% clay) control section and that lack a calcic horizon.

Table 2 Hydrologic Group and Family Classification of Each Soil Series Identified in the Navajo Mine Extension Project.

Series	Taxonomic Classification of Soils	Hydrologic Group
Badlands	Miscellaneous land type	D
Bacobi	Fine-loamy, mixed, superactive, mesic Typic Haplargids	C
Beebe	Sandy, mixed, mesic Typic Torrifluvents	A
Benally	Fine-loamy, mixed, active, mesic Typic Natrigypsids	D
Blancot	Fine-loamy, mixed, superactive, mesic Ustic Haplargids	B
Chipeta	Clayey, mixed, calcareous, mesic, shallow Typic Torriorthents	D
Doak	Fine-loamy, mixed, active, mesic Typic Haplargids	B
Fajada	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D
Farb	Loamy, mixed, calcareous, mesic Lithic Torriorthents	D

Table 2 Continued

Series	Taxonomic Classification of Soils	Hydrologic Group
Fruitland	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torriorthents	B
Fruitvale	Fine-loamy, mixed, active, mesic Typic Argigypsids	B
Gilco	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents	B
Grieta	Fine-loamy, mixed, superactive, mesic Typic Calciargids	B
Hoskay	Fine, mixed, superactive, mesic Vertic Natrigypsids	D
Huerfano	Loamy, mixed, superactive, mesic, shallow Typic Natrargids	D
Jocity	Fine-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents	B
Mayqueen	Coarse-loamy, mixed, superactive, mesic Typic Haplargids	B
Monierco	Loamy, mixed, superactive, mesic, shallow Typic Haplargids	D
Muff	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D
Patel	Fine, mixed, active, mesic Typic Natrargids	D
Persayo	Loamy, mixed, active, calcareous, mesic, shallow Typic Torriorthents	D
Razito	Sandy, mixed, mesic Typic Torripsamments	A
Rock Outcrop	Miscellaneous land type	D
Shiprock	Coarse-loamy, mixed, superactive, mesic Typic Haplargids	B
Sogzie	Coarse-loamy, mixed, superactive, mesic Typic Calciargids	B
Stumble	Mixed, mesic Typic Torripsamments	A
Tsaya	Loamy-skeletal, mixed, superactive, calcareous, mesic Lithic Torriorthents	D
Uffens	Fine-loamy, mixed, superactive, mesic Typic Natrargids	D

Table 3 Key to Soils of the Navajo Mine Extension Project.

SOIL LACKS DIAGNOSTIC EPIPEDON OR SUBSURFACE HORIZONS

ENTISOL

1.	<35% rock fragments, loamy fine sand or coarser texture to a depth of 1m or a lithic or paralithic contact.	**Psamments**
2.	Deeper then 25 cm, and either 0.2 percent organic carbon at a depth of 125 cm below the mineral soil surface or an irregular decrease in organic-carbon content.	**Fluvents**
3.	Other Entisols.	**Orthents**

Psamments

Deep (contact > 50cm to lithic or paralithic)

Formed in Eolian or Alluvial deposits, color 10YR or 2.5Y	Razito
Formed in Eolian or Alluvial deposits, color 10YR or 2.5Y with gravely substratum	Stumble

Fluvents

Deep (contact > 50cm to lithic or paralithic)

Sandy (loamy fine sand or coarser) Color 10YR or 2.5 Y	Beebe
Fine-loamy (18%-35% clay)	Jocity
Coarse-loamy (<18% clay but non-sandy)	Gilco

Table 3 Continued

Orthents

Lithic or paralithic (contract < 50cm to bedrock)

Loamy-skeletal

(>35% rock fragments) Tsaya

Loamy

(5%-18% clay) Farb

Loamy

(18%-35% clay) Persayo

Clayey

(>35% clay) Chipeta

Deep (contact > 50cm to lithic or paralithic)

Coarse-loamy

(5%-18% clay) Fruitland

DIAGNOSTIC SUBSURFACE HORIZON PRESENT

ARIDISOLS

1. Gypsic horizon **Gypsids**
2. Argillic or Natric horizon **Argids**

Gypsids

Natric horizon

Fine Hoskay

Fine-loamy Benally

Argillic horizon

Fine-loamy Fruitvale

Table 3 Continued

Argids

Natric horizon	
(SAR > 13 within 40cm)	*Natrargids*
Calcic horizon	*Calciargids*
Other argids	*Haplargids*

Natrargids

Paralithic contact < 50cm	Huerfano
Paralithic contact from 50 to 100 cm	
Fine-loamy, accumulations of gypsum or carbonates	Fajada
Fine-loamy, no accumulations of gypsum or carbonates	Muff
Fine, accumulations of gypsum or carbonates	Patel
Paralithic contact > 100 cm	
Fine-loamy, no accumulations of gypsum	Uffens

Calciargids

Coarse-loamy	Sogzie
Fine-loamy	Grieta

Table 3 Continued

Haplargids

Lithic or Paralithic contact < 50cm	Monierco
Lithic or Paralithic contact	
from 50 to 100 cm	Bacobi
Lithic or Paralithic contact > 100cm	
Coarse-loamy, sandy in upper	
25cm and lacks a Bk horizon	Mayqueen
Coarse-loamy	
Bk horizon but not calcic	Shiprock
Fine-loamy	
lacks a Bk horizon	Blancot
Fine-loamy	
Bk horizon but not calcic	Doak

Map Units

NMEP Soil Survey (Areas 4 South and 5)

A total of 32 mapping units were described using 26 soil series, and 2 miscellaneous land types (Badlands and Rock Outcrop) for the NMEP soil survey, Table 4. Twenty-four of the 32 mapping units were consociations, 5 were complexes and 3 were undifferentiated units. In Areas 4 South and 5, the Natrargids were mapped by soil type (series) as consociations, complexes, or undifferentiated units. Some of these sodium affected soils have a surface deposition of sandy eolian material suitable as a source of topdressing. The map components used to name the majority of the map units were phases of soil series, using surface texture, depth of suitable topdressing, and slope as phase criteria. A description of each soil mapping unit, including the proportion and distribution of named components and inclusions follows.

Table 4 Mapping Units used for the Navajo Mine Extension Project soil survey

BA	Badlands
Bb	Beebe loamy sand, 0 to 3% slopes
Bc	Bacobi sandy loam, 0 to 15% slopes
Bl	Blancot sandy clay loam, 0 to 5% slopes
Bn	Benally sandy clay loam, 0 to 3% slopes
Dk	Doak sandy loam, 0 to 5% slopes
Fa	Farb sandy loam, 0 to 15% slopes
Fr	Fruitland sandy loam, 0 to 15% slopes
Fv	Fruitvale-Doak sandy loams, 0 to 5% slopes
Gr	Grieta sandy loam, 0 to 8% slopes
Hf	Huerfano clay loam, 0 to 8% slopes
Hk	Hoskay clay loam 0 to 3% slopes
Jc	Jocity sandy loam 0 to 3% slopes
Jf	Jocity-Fruitland sandy loams, 0 to 3% slopes
Jg	Jocity-Gilco complex, 0 to 3% slopes
Mc	Monierco sandy loam, 0 to 15% slopes
MF	Muff and Fajada soils, 0 to 3% slopes
Mq	Mayqueen loamy sand, 0 to 8% slopes
Pc	Patel-Chipeta clays, 0 to 10% slopes
PF	Persayo, Farb, and Rock outcrop soils, 0 to 50% slopes
Ph	Patel-Huerfano complex, 0 to 10% slopes
Po	Patel sandy loam, 0 to 5% slopes,
Ps	Persayo clay loam 0 to 15% slopes
Pt	Patel clay, 0 to 3% slopes
Rm	Razito loamy sand, moderately deep, 0 to 5% slopes
RO	Rock Outcrop
Rz	Razito loamy sand, 0 to 8% slopes
SB	Shiprock, Bacobi and Mayqueen sandy loams, 0 to 5% slopes
Sd	Shiprock sandy loam, very hard, 0 to 8% slopes
Sh	Shiprock sandy loam, 0 to 8% slopes
St	Stumble loamy fine sand, 0 to 15% slopes
Ts	Tsaya loam, 0 to 15% slopes

Mapping Unit Descriptions for NMEP Soil Survey

BA - Badlands. This miscellaneous area consists of barren shale uplands that are dissected by intermittent drainages and gullies. Also included are very steep to nearly vertical rock outcrops of sandstone and shale. This unit is mostly void of vegetation except some atriplex species and annuals that occur on micro-sites with eolian and alluvial accumulations. The slopes range from 0 to 100 percent. Included in this unit are small areas of Huerfano, Chipeta, and Patel soils. Badlands are unstable, and most disturbances cause severe water erosion and a high soil blowing hazard. This unit has no usable topdressing material and occupies 1,526 acres or 11.7 percent of the survey area.

Bb - Beebe, loamy sand, 0 to 3 percent slopes. This map unit occurs on flood plains and channel bottoms. These soils have formed from either alluvium or eolian derived primarily from sandstone. Slopes are level to nearly level. Soils in this unit are highly susceptible to frequent flooding. The vegetation is mainly alkali sacaton, galleta, black greasewood, and rabbitbrush. This unit is over 80 percent Beebe and less than 20 percent inclusions. Included in this unit are small areas of Fruitland soils intermingled with Gilco, Jocity, and, to a lesser extent, Huerfano soils. The depth of suitable topdressing ranges from 0 to 60 inches. This unit occupies 298 acres or 2.3 percent of the survey area.

Bc - Bacobi sandy loam, 0 to 15 percent slopes. This map unit is on mesas and plateaus. Slopes are nearly level to moderately steep. Soils have formed from alluvium and eolian materials derived predominantly from sandstone and shale. The native vegetation is mainly galleta, alkali sacaton, shadscale, and broom snakeweed. This unit is about 75 percent Bacobi, 15 percent Monierco, and 10 percent inclusions from adjacent mapping units. Included in this unit are small areas of Shiprock, Doak, Grieta, and Razito moderately deep soils. The Bacobi soils in this unit are moderately deep and generally provide from 10 to 40 inches of topdressing material. This unit occupies 710 acres or 5.5 percent of the survey area.

Bl - Blancot sandy clay loam, 0 to 5 percent slopes. This map unit is on fans, valleys, terraces and mesas. Soils have formed in alluvium derived predominantly from sandstone

and shale. This unit is 75 to 90 percent Blancot, sandy clay loam, and Blancot, sandy loam. Blancot soils are on fans and in upland valleys, and occur with inclusions on terraces and mesas. Included in this unit are areas of Doak sandy loam (5 percent) and small areas of Shiprock, Grieta, and deep Natrargids. These additional included areas individually make up less than 15 percent of the total acreage. The Blancot soils in this unit are deep and generally provide from 36 to 60 inches of topdressing material. These soils represent some of the most suitable topdressing resources in the survey area. This unit occupies 92 acres or 0.7 percent of the survey area.

Bn - Benally sandy clay loam, 0 to 3 percent slopes. This unit occurs on mesas and plateaus in the concave to level areas between sand ridges or on the nearly level areas of valley floors. These soils have formed in either mixed alluvium or residuum derived primarily from carbonaceous shale. The native vegetation is primarily atriplex species and annuals with alkali sacaton occurring in micro-sites occupied with eolian accumulations of sand. Most delineations either lack vegetation or are sparsely vegetated. This unit is about 75 percent Benally, 0 to 3 percent slopes with 10 percent Uffens, Fajada, and similar soils. The remaining area consists of inclusions of Muff, Patel, and Persayo soils. The depth of suitable topdressing generally ranges from 0 to 30 inches, but typically is 0 inches. This unit occupies 659 acres or 5.1 percent of the survey area.

Dk - Doak sandy loam, 0 to 5 percent slopes. This map unit occurs on mesas and terraces as deep, well developed soils. Slopes are nearly level to gently sloping. These soils are similar to the Shiprock soils but have fine loamy particle size control sections. Doak soils were formed from alluvial and eolian sediments. The vegetation is mainly galleta, alkali sacaton, broom snakeweed, and atriplex species. This unit is about 80 percent Doak, 10 percent Shiprock and similar soils, and 10 percent Blancot and similar soils. The depth of suitable topdressing generally ranges from 27 to 60 inches and is controlled by depth to bedrock or highly contrasting substrata. These soils represent some of the most suitable topdressing resources in the survey area. This unit occupies 150 acres or 1.1 percent of the survey area.

Fa - Farb sandy loam, 0 to 15 percent slopes. These shallow, nearly level to moderately steep soils are located on mesas, hills, ridges, and breaks. These soils are formed in residuum, colluvium, and alluvium derived from sandstone or shale. The current vegetation is mostly galleta, alkali sacaton, sand dropseed, broom snakeweed, and atriplex species. This unit is about 80 percent Farb and similar soils, 5 percent Huerfano and similar soils, and 5 percent Rock Outcrop. The depth of suitable topdressing generally ranges from 0 to 20 inches. This unit occupies 596 acres or 4.6 percent of the survey area.

Fr - Fruitland sandy loam, 0 to 15 percent slopes. This unit occurs on upland fans and on terraces. These soils are deep and well drained. They have formed in eolian and alluvial sediments derived predominantly from sandstone. The vegetation is largely alkali sacaton, sand dropseed, black greasewood, and atriplex species. This unit is about 75 percent Fruitland soils and 15 percent Shiprock, Sogzie, and similar soils. The remaining soils include Beebe, Benally, and other soils of minor extent. The depth of suitable topdressing ranges from 0 to 60 inches and is restricted by depth to bedrock or highly contrasting and limiting substrata. This unit occupies 109 acres or 0.8 percent of the survey area.

Fv - Fruitvale-Doak sandy loams, 0 to 5 percent slopes. This complex of soils is on mesas and upland valleys with undulating slopes. These deep soils formed predominately in alluvium derived from mixed sources. The vegetation is mainly alkali sacaton, galleta, and atriplex species. This unit is nearly 60 percent Fruitvale and similar soils, 30 percent Doak, and 10 percent Huerfano and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 24 to 44 inches and is restricted by depth to bedrock or sodium affected substrata. This unit occupies 48 acres or 0.4 percent of the survey area.

Gr - Grieta sandy loam, 0 to 8 percent slopes. This map unit is found on older stable landscapes where the soils have a well developed calcic layer and occur on mesas and plateaus. Slopes are level to moderately sloping. Soils have developed from both eolian alluvium derived from sandstone and shale. Vegetation is primarily galleta, alkali sacaton,

and shadscale. Grieta soils occupy about 75 percent of the unit. Inclusions are Doak, Sogzie and soils from adjoining map units, Bacobi, Shiprock, and Monierco. The depth of suitable topdressing generally ranges from 10 to 60 inches. This unit occupies 69 acres or 0.5 percent of the survey area.

Hf - Huerfano clay loam, 0 to 8 percent slopes. These shallow, well drained, sodium affected soils are on mesas and alluvial plains. Slopes are level to gently sloping. These soils have formed in alluvium and residuum derived from carbonaceous shale and siltstones. The current vegetation includes atriplex species and alkali sacaton; however, perennial vegetation is absent in most areas of this unit. This unit is about 80 percent Huerfano soils, 10 percent Benally and similar soils, and 10 percent Patel and similar soils. The depth of suitable topdressing in this unit ranges from 0 to 20 inches but is typically 0 inches. Sodium absorption ratio and clay content severely restrict the use of soils in this unit for topdressing. This unit occupies 1,134 acres or 8.7 percent of the survey area.

Hk - Hoskay clay loam, 0 to 3 percent slopes. This unit occurs on mesas and or on the nearly level areas of valley floors. These soils have formed in either mixed alluvium or residuum derived primarily from carbonaceous shale. The native vegetation is primarily atriplex species and annuals with alkali sacaton occurring in micro-sites occupied with eolian accumulations of sand. Most delineations either lack vegetation or are sparsely vegetated. This unit is about 75 percent Hoskay, 0 to 3 percent slopes with 10 percent Fajada, Benally, and similar soils. The depth to suitable topdressing in this unit is severely limited by the occurrence of sodium affected, clayey parent materials. The depth of suitable topdressing is generally 0 inches. This unit occupies 128 acres or 1.0 percent of the survey area.

Jc - Jocity sandy loam, 0 to 3 percent slopes. This map unit is on flood plains and alluvial fans. These soils are primarily formed in alluvium from mixed sources. The vegetation is mainly galleta, alkali sacaton, black greasewood, and atriplex species. This unit is about 75 percent Jocity and 5 percent Fruitland, Gilco, and similar soils. The remaining soils are inclusions from adjacent map units. The available topdressing from this unit is controlled

by depth to sodium affected, skeletal textured substrata, and occasionally depth to bedrock and ranges from 0 to 60 inches of suitable material. The map unit occupies a total of 74 acres or 0.6 percent of the survey area.

Jf - Jocity-Fruitland sandy loams, 0 to 3 percent slopes. This map unit is on flood plains and streams terraces on level to nearly level slopes. It is also associated with coppice dune areas located along ephemeral stream banks dominated by shrubs. This unit is susceptible to occasional flooding. The native vegetation is mainly alkali sacaton, galleta, black greasewood, and atriplex species. This unit is about 60 percent Jocity soils and 30 percent Fruitland sandy loam soils. The remaining areas of this unit are inclusions of Razito moderately deep soils intermingled with Beebe soils. The depth of topdressing ranges from 0 to 60 inches for these soils and is restricted by depth to sodium affected substrata or to bedrock. This unit occupies 143 acres or 1.1 percent of the survey area.

Jg - Jocity-Gilco complex, 0 to 3 percent slopes. This unit is found as deep alluvial deposits on flood plains. The soils range in texture from sandy to clay loam and are formed from recent alluvium along drainages. These are some of the youngest soils in the survey area. This unit is nearly 45 percent Gilco soils, 40 percent Jocity soils, and 15 percent Blancot, Fruitland, and similar soils. Jocity soils average more than 18 percent clay in the control section and Gilco averages less than 18 percent clay. The components of this map unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included soils consist mainly of Fruitland, Stumble, and Blancot, each generally averaging less than 5 percent of a delineation. When the soils are not sodium affected, they provide a suitable source of topdressing. The depth of topdressing ranges from 0 to 60 inches for these soils. This unit occupies 235 acres or 1.8 percent of the survey area.

Mc - Monierco sandy loam, 0 to 15 percent slopes. These shallow well drained soils are on mesas, ridges, and plateaus. They formed in alluvial and eolian materials overlying sedimentary rock on nearly level to moderately steep slopes. The current vegetation is mainly galleta, alkali sacaton, and shadscale. This unit is nearly 75 percent Monierco soils, 15 percent Bacobi soils, and 5 percent Persayo and similar soils. The remaining soils are

inclusions from adjacent map units. The depth of suitable topdressing generally ranges from 0 to 20 inches and is controlled by depth to bedrock. This unit occupies 927 acres or 7.1 percent of the survey area.

MF - Muff and Fajada soils, 0 to 3 percent slopes. This undifferentiated unit is on eroded, nearly level areas of mesas and alluvial plains. These soils formed in residuum and alluvial derived primarily from carbonaceous shale. The vegetation is atriplex species and annuals with alkali sacaton occurring in areas with slight eolian accumulations of sand. This unit is sparsely vegetated. This unit is about 45 percent Muff and about 35 percent Fajada soils with less than 15 percent Monierco and similar soils. Inclusions are primarily Benally and similar soils. The components of this map unit are either intricately intermingled or not present in every delineation, thus it is impractical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 0 to10 inches, but typically is 0 inches. Topdressing availability is severely restricted by the occurrence of sodium affected, clayey substrata. This unit occupies 755 acres or 5.8 percent of the survey area.

Mq - Mayqueen loamy sand, 0 to 8 percent slopes. These deep and very deep soils are on stabilized dunes on mesas and valleys. This map unit is primarily formed from stabilized eolian material derived primarily from sandstone. The vegetation is mainly galleta, sand dropseed, alkali sacaton, and atriplex species. The Mayqueen soils occupy over 80 percent of the unit. The major included soils are Razito, Shiprock, and Sogzie, approximately 5 percent each. The depth of suitable topdressing generally ranges from 20 to 60 inches and is controlled by depth to bedrock and highly contrasting, limiting subsurface horizons. This unit occupies 54 acres or 0.4 percent of the survey area.

Pc - Patel-Chipeta clays, 0 to 10 percent slopes. These shallow and moderately deep, clayey, sodium affected soils area on severely eroded, nearly level to strongly sloping, areas of mesas. These soils formed in alluvium and residuum derived from carbonaceous shale. The vegetation is atriplex species, alkali sacaton, and annuals; however, the area generally lacks vegetation. This unit is nearly 50 percent Patel clay soils with 35 percent Chipeta clay soils. Inclusions are Huerfano and similar soils, and miscellaneous areas of Rock Outcrop

and Badlands. The major components of this map unit are so intricately intermingled it was not practical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 0 to 20 inches, but typically is 0 inches. This unit occupies 321 acres or 2.5 percent of the survey area.

PF - Persayo, Farb, and Rock Outcrop soils, 0 to 50 percent slopes. This undifferentiated map unit is on hills, ridges, and mesas. Slopes range from nearly level to very steep. These soils formed in residuum derived mainly from sandstone and shale. The vegetation is primarily galleta, alkali sacaton, and atriplex species. This unit is about 45 percent Persayo and similar soils, 35 percent Farb and similar soils, and 20 percent Rock Outcrop and Badlands. The components of this map unit are so intricately intermingled it was not practical to map them separately at the scale used. Salvageable topdressing depth in this unit ranges from 0 to 20 inches. Topdressing availability is severely limited because of complex, steep slopes and depth to bedrock. This unit occupies 240 acres or 1.8 percent of the survey area.

Ph - Patel-Huerfano complex, 0 to 10 percent slopes. These shallow, sodium affected soils are on severely eroded, nearly level to strongly sloping areas of mesas and alluvial plains. These soils formed in alluvium and residuum derived primarily from carbonaceous shale. The vegetation is atriplex species, alkali sacaton, and annuals; however, this unit mostly lacks perennial vegetation. This unit is nearly 60 percent Patel clay, 25 percent Huerfano and similar soils, 10 percent Benally and similar soils, and 5 percent miscellaneous areas. The major components of this map unit are so intricately intermingled, it was not practical to map them separately at the scale used. The depth of suitable topdressing in this unit ranges from 0 to 20 inches. However, the occurrence of clayey, sodium affected strata severely restricts availability of topdressing from this unit. This unit does not contain suitable topdressing resources and occupies 1,094 acres or 8.4 percent of the survey area.

Po - Patel sandy loam, 0 to 5 percent slopes. This map unit is on gently sloping areas of flood plains and alluvial fans. The sandy loam surface is recent sandy alluvium deposited

over Patel and similar soils. These soils formed primarily in alluvium derived from mixed sources. The vegetation is mostly alkali sacaton, galleta, atriplex species, and annuals. These soils are found in limited extent throughout the survey area. This unit is nearly 80 percent Patel sandy loam soils. Persayo and similar soils account for more than 10 percent of the inclusions. The remaining inclusions are soils from adjacent map units. The depth of suitable topdressing in this unit generally ranges from 0 to 12 inches. The depth of suitable topdressing is controlled by depth of the sandy alluvium and sodium affected substrata. This unit does not contain suitable topdressing resources and occupies 11 acres or 0.1 percent of the survey area.

Ps - Persayo clay loam, 0 to 15 percent slopes. This map unit is on mesas, hills, and ridges. Slopes cover a wide range of classes from level to strongly sloping. These shallow, well drained soils formed in residuum and alluvium derived from carbonaceous shale, siltstone, and sandstone. Vegetation is mainly alkali sacaton, galleta, and atriplex species. This unit is about 75 percent Persayo, 15 percent Huerfano and similar soils, and 10 percent Patel and similar soils. The depth of topdressing in this unit ranges from 0 to 20 inches and is controlled by depth to bedrock and sodium affected strata. This unit occupies 444 acres or 3.4 percent of the survey area.

Pt - Patel clay, 0 to 3 percent slopes. These moderately deep, clayey, sodium affected soils are on severely eroded areas of mesas and valleys with nearly level slopes. These soils formed in alluvium and residuum derived predominately from carbonaceous shale. The current vegetation is mainly atriplex species, alkali sacaton, and annuals; however, the majority of the area represented by this unit lacks vegetation. This unit is nearly 90 percent Patel clay with inclusions of Huerfano and Badlands. The depth of suitable topdressing in this unit generally ranges from 0 to 20 inches. However, the occurrence of sodium affected strata severely restricts availability of topdressing from this unit. This unit occupies 50 acres or 0.4 percent of the survey area.

Rm - Razito loamy sand, moderately deep, 0 to 5 percent slopes. This unit consists of moderately deep, excessively drained soils on mesas and backslopes formed in eolian sands.

The dominant landform for these soils are wind oriented, longitudinal sand ridges. The vegetation is primarily Indian ricegrass, alkali sacaton, galleta, sand dropseed, broom snakeweed, and atriplex species. This unit is nearly 75 percent Razito loamy sand, moderately deep, 10% Stumble soils, and 5% Shiprock and similar soils. Inclusions are mainly dissimilar soils, such as Huerfano, from adjacent map units. The available topdressing material generally ranges from 20 to 40 inches and is controlled by depth to bedrock or sodium affected substrata. This unit occupies 469 acres or 3.6 percent of the survey area.

RO - Rock Outcrop. This miscellaneous area consists of exposures of barren sandstone on cliffs, breaks, bluffs and ridges. Slope is 0 to 100 percent. This unit is mostly void of vegetation; however, some atriplex species and annuals occur on micro sites with eolian and alluvial accumulations. Included in this unit are small areas of Farb, Persayo, and Huerfano soils. This unit has almost no suitable topdressing material. This unit occupies 20 acres or 0.2 percent of the survey area.

Rz - Razito loamy sand, 0 to 8 percent slopes. This unit consists of deep, excessively drained soils on mesas and backslopes formed in eolian sands. The dominant landform for these soils are wind oriented, longitudinal sand ridges. The vegetation is primarily Indian ricegrass, alkali sacaton, galleta, sand dropseed, broom snakeweed, and atriplex species. The Razito soils occupy over 75 percent of the unit. The major inclusion is Mayqueen soils occupying nearly 15 percent of the unit. These soils are similarly managed as Razito soils. Other inclusions are Shiprock, Sogzie, and Stumble soils. The available topdressing material generally ranges from 40 to 60 inches. This unit occupies 764 acres or 5.9 percent of the survey area.

SB - Shiprock, Bacobi, and Mayqueen sandy loams, 0 to 5 percent slopes. This undifferentiated map unit is on gently sloping areas of mesas, plateaus, and terraces. These soils formed in eolian and alluvial sediments derived from sandstone and shale. The vegetation is predominately galleta, alkali sacaton, sand dropseed, Indian ricegrass, broom snakeweed, and atriplex species. This map unit is about 35 percent Shiprock and similar

soils, 30 percent Bacobi and similar soils, 25 percent Mayqueen and similar soils, 5 percent Fruitvale and similar soils, and 5 percent Benally and similar soils. The components of this unit are so intricately intermingled and unpredictable in the landscape that it was not practical to map them separately at the scale used. The depth of suitable topdressing generally ranges from 10 to 60 inches and is mainly controlled by depth to bedrock. This map unit occupies 1,345 acres or 10.3 percent of the survey area.

Sd - Shiprock sandy loam, very hard, 0 to 8 percent slopes. This map unit occurs on mesas and terraces as deep, well developed soils. The soils and vegetation are similar to Shiprock soils but the substrata are very hard or extremely hard. Typically, the sodium levels in the substrata exceed the topsoil suitability limits. Consistence is strongly associated with the sodicity and therefore is used to characterize this phase of Shiprock soils. Topdressing depth is limited by material that is either very hard or extremely hard. The map unit is about 70 percent Shiprock very hard soils with inclusions of Bacobi, Grieta, Mayqueen, Sogzie, and Razito. The depth of suitable topdressing generally ranges from 0 to 30 inches. This unit occupies 143 acres or 1.1 percent of the survey area.

Sh - Shiprock sandy loam, 0 to 8 percent slopes. The soils are formed in alluvium and eolian material derived from sandstone and shale. This map unit is on mesas and plateaus. The vegetation is mostly galleta, alkali sacaton, sand dropseed, broom snakeweed, rabbitbrush, and atriplex species. The unit is over 75 percent Shiprock soils. Included in this map unit are Grieta and Sogzie soils with minor areas of Doak and Mayqueen soils. These soils represent some of the most suitable sources of topdressing material. The depth of suitable topdressing generally ranges from 40 to 60 inches and is mainly controlled by depth to bedrock or highly contrasting, limiting substrata. This map unit occupies 186 acres or 1.4 percent of the survey area.

St - Stumble loamy fine sand, 0 to 15 percent slopes. This map unit occurs on sides of valleys and alluvial fans. Soils have formed in sandy alluvium and eolian deposits derived from sandstone and shale. The current vegetation is predominately sand dropseed, galleta, Indian ricegrass, broom, snakeweed, rabbitbrush, and atriplex species. This unit is 80

percent Stumble, loamy fine sand. Included are limited areas of Razito and Mayqueen soils. Although the soils are sandy, they generally provide 15 to 60 inches of suitable topdressing material. Depth of suitable topdressing is controlled by depth to bedrock or skeletal textured substrata. This unit occupies 143 acres or 1.1 percent of the survey area.

Ts - Tsaya loam, 0 to 15 percent slopes. This unit is on nearly level to strongly sloping areas of mesas, hills, and ridges. These shallow soils formed in residuum derived mainly from sandstone. Vegetation is mostly atriplex species and annuals with sparse stands of alkali sacaton and galleta occurring in eolian accumulations. This map unit is about 60 percent Tsaya and similar soils and 10 percent Rock Outcrop. Included soils of limited extent are Chipeta clay, Patel clay, Huerfano, and Jocity. Soil material in this unit generally ranges in depth from 0 to 20 inches, but typically are not suitable for use as topdressing because of high rock content and sodium hazard. This unit occupies 65 acres or 0.5 percent of the survey area.

Topdressing Availability

One of the purposes of this soil survey was to determine the soil resources available as topdressing material for the reclamation of disturbed areas for the NMEP. One objective was to map the soils at a large enough scale to produce mapping units of similar soil types. It is assumed that if similar soils can be mapped together, then characteristics of a few samples within the unit can be extrapolated for the entire unit. The assumption is valid for homogeneous areas or areas where small delineations can be made to maintain homogeneous components. The scale used in this survey allowed delineations of 0.5 acres. In areas of very heterogeneous soils, the delineations tend to be smaller and more samples are required to describe the soils than in homogeneous areas where the delineations tend to be larger. The available topdressing was determined for each map unit delineation. The volume amount is expressed as bank cubic yards (bcy), Appendix E.

Area 4 South

In Area 4 South, the total estimated topdressing volume available is 12,158,588 bcy, Table 5. A total of 702 test sites were described in the survey area or approximately 1 site per 7.7 acres. Approximately 40% of the area (Badlands, Huerfano clay loam, 0 to 8% slopes, Muff and Fajada soils, 0 to 3% slopes, Patel-Chipeta clays, 0 to 10% slopes, Patel-Huerfano complex, 0 to 10% slopes, and Patel sandy loam, 0 to 5% slopes) contribute about 1% of the topdressing volume. Nearly 60% of the topdressing comes from 4 mapping units (Beebe loamy sand, 0 to 3% slopes, Bacobi sandy loam, 0 to 15% slopes, Jocity-Fruitland sandy loams, 0 to 3% slopes, and Stumble loamy fine sand, 0 to 15% slopes) that account for approximately 20% of the area. The available topdressing provides an average of nearly 17 inches of material that could be replaced over the 5,412 acre area.

Table 5 Area, Percent of Survey Area, and Volume of Topdressing Available from Each Soil Mapping Unit Located in Area 4 South

Soil Mapping Unit	Area (ac)	Percent of Area	Volume of Topdressing (bcy)
Badlands	656.1	12.1	0
Beebe loamy sand, 0 to 3% slopes	298.1	5.5	2,147,911
Bacobi sandy loam, 0 to 15% slopes	274.6	5.1	838,701
Benally sandy clay loam, 0 to 3% slopes	391.4	7.2	96,649
Doak sandy loam, 0 to 5% slopes	90.7	1.7	590,491
Farb sandy loam, 0 to 15% slopes	25.6	0.5	27,662
Fruitland sandy loam, 0 to 15% slopes	100.8	1.9	508,230
Fruitvale-Doak sandy loams, 0 to 5% slopes	46.4	0.9	279,523
Grieta sandy loam, 0 to 8% slopes	61.3	1.1	244,041
Huerfano clay loam, 0 to 8% slopes	154.1	2.9	42,831
Jocity sandy loam, 0 to 3% slopes	74.2	1.4	90,330
Jocity-Fruitland sandy loams, 0 to 3% slopes	143.5	2.7	721,212
Jocity-Gilco complex, 0 to 3% slopes	25.5	0.5	187,144
Monierco sandy loam, 0 to 15% slopes	87.7	1.6	177,758
Muff and Fajada soils, 0 to 3% slopes	33.9	0.6	28,710
Mayqueen loamy sand, 0 to 8% slopes	54.3	1.0	424,475
Patel-Chipeta clays, 0 to 10% slopes	234.4	4.3	15,240

Table 5 Continued

Soil Mapping Unit	Area (ac)	Percent of Area	Volume of Topdressing (bcy)
Persayo, Farb, and Rock outcrop soils, 0 to 50% slopes	240.3	4.4	37,278
Patel-Huerfano complex, 0 to 10% slopes	1082.7	20.0	34,980
Patel sandy loam, 0 to 5% slopes	1.1	< 0.1	0
Persayo clay loam, 0 to 15% slopes	321.0	5.9	3,865
Razito loamy sand, moderately deep, 0 to 5% slopes	35.0	0.7	129,066
Rock Outcrop	20.3	0.4	0
Razito loamy sand, 0 to 8% slopes	448.1	8.3	3,390,198
Shiprock, Bacobi, and Mayqueen sandy loams, 0 to 5% slopes	105.0	1.9	465,720
Shiprock sandy loam, very hard, 0to 8% slopes	143.4	2.7	333,875
Shiprock sandy loam, 0 to 8% slopes	59.7	1.1	423,259
Stumble loamy fine sand 0 to 15%	143.2	2.6	919,439
Tsaya loam, 0 to 15% slopes, very rocky	60.3	1.1	0
Total	5412.0	100.0	12,158,588

Area 5

In Area 5 the total estimated topdressing volume available is 17,012,036 bcy, Table 6. A total of 299 test sites were described in the survey area or approximately 1 site per 25 acres. Approximately 40% of the area (Badlands, Benally sandy clay loam, 0 to 3% slopes, Huerfano clay loam, 0 to 8% slopes, Patel clay, 0 to 3% slopes, Muff and Fajada soils, 0 to 3% slopes, Patel-Chipeta clays, 0 to 10% slopes, Patel-Huerfano complex, 0 to 10% slopes, Patel sandy loam, 0 to 5% slopes, and Hoskay clay loam, 0 to 3% slopes) contribute less than 1% of the topdressing volume. Nearly 50% of the topdressing comes from 2 mapping units (Razito loamy sand, 0 to 8% slopes, and Shiprock, Bacobi and Mayqueen sandy loams, 0 to 5% slopes) that account for approximately 20% of the area.

The available topdressing provides an average of approximately 17 inches of material over the 7,594 acre area.

NMEP Soil Survey (Areas 4 South and 5)

The NMEP soil survey (Areas 4 South and 5) is estimated to have available a total of nearly 30 million bcy of topdressing, Table 7. This amount averages a depth of nearly 17 inches of topdressing for the survey area. If a 10% loss is considered, the amount of suitable topdressing for NMEP area is projected to be about 14 inches. The soil resources of the NMEP area based on reclamation from nearby areas, is of sufficient volume for future reclamation. The sources are largely provided (more than 50%) from approximately 25% of the area.

Table 6 Area, Percent of Survey Area, and Volume of Topdressing Available from Each Soil Mapping Unit Located in Area 5

Soil Mapping Unit	Area (ac)	Percent of Area	Volume of Topdressing (bcy)
Badlands	870.6	11.5	0
Bacobi sandy loam, 0 to 15% slopes	435.7	5.7	1,587,855
Blancot sandy clay loam, 0 to 5% slopes	92.0	1.2	645,143
Benally sandy clay loam 0 to 3% slopes	267.3	3.5	70,594
Doak sandy loam 0 to 5% slopes	59.5	0.8	439,606
Farb sandy loam, 0 to 15% slopes	570.8	7.5	172,401
Fruitland sandy loam, 0 to 15% slopes	8.6	0.1	69,231
Fruitvale-Doak sandy loams, 0 to 5% slopes	1.8	< 0.1	8,361
Grieta sandy loam, 0 to 8% slopes	8.2	0.1	66,136
Huerfano clay loam, 0 to 8% slopes	979.8	12.9	0
Hoskay clay loam 0 to 3% slopes	128.5	1.7	0
Jocity-Gilco complex, 0 to 3% slopes	209.5	2.8	1,540,572
Monierco sandy loam, 0 to 15% slopes	839.5	11.0	1,762,893
Muff and Fajada soils, 0 to 3% slopes	720.9	9.5	0
Patel-Chipeta clays, 0 to 10% slopes	86.5	1.1	0
Patel-Huerfano complex, 0 to 10% slopes	10.9	0.1	0
Patel sandy loam, 0 to 5% slopes	10.4	0.1	17,862
Persayo clay loam, 0 to 15% slopes	122.7	1.6	0
Patel clay, 0 to 3% slopes	50.4	0.7	0

Table 6 Continued

Soil Mapping Unit	Area (ac)	Percent of Area	Volume of Topdressing (bcy)
Razito loamy sand, moderately deep, 0 to 5% slopes	433.7	5.7	1,529,371
Razito loamy sand, 0 to 8% slopes	315.8	4.2	2,032,006
Shiprock, Bacobi and Mayqueen sandy loams, 0 to 5% slopes	1239.6	16.3	6,170,339
Shiprock sandy loam, 0 to 8% slopes	126.2	1.7	899,665
Tsaya loam, 0 to 15% slopes, very rocky	4.8	0.1	0
Total	7594.0	100.0	17,012,036

Table 7 Total Volume of Available Topdressing in Area for NMEP (Areas 4 South and 5)

Area	Acres	Topdressing Volume bcy
4 South	5,412	12,158,588
5	7,594	17,012,036
NMEP	13,006	29,170,624

PRIME FARMLAND DETERMINATION

Investigation of Prime Farmland

An investigation was conducted to determine whether lands within the NMEP soil survey were classified as prime farmland. Allen Maez, District Conservationist from the NRCS was asked to determine if the survey area contained prime farmland and to write a letter regarding the investigation.

Results of Investigation

1. The area within the NMEP survey area has not been historically used as crop land.

2. The area within the NMEP survey area has an average annual precipitation of six inches and has no naturally sub-irrigated lands.
3. The area within the NMEP survey area has no soil mapping units that can be classified as prime farmland under the definition of prime farmland by the USDA-NRCS (7 CFR 657.5)
4. Letter from Allen Maez, District Conservationist USDA-NRCS that verifies there is no prime farmland within the NMEP survey area, Appendix F.

Conclusion

Based on the conditions (1-4) discussed above, it is concluded there is no prime farmland within the NMEP survey area.

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