



United States
Department
of Agriculture



Natural
Resources
Conservation
Service

In cooperation
with
New Mexico
Agricultural
Experiment
Station
And
City of Santa
Fe, Santa Fe
County,
National Park
Service, and
Department of
Defense

Soil Survey of Santa Fe County Area, New Mexico



How To Use This Soil Survey

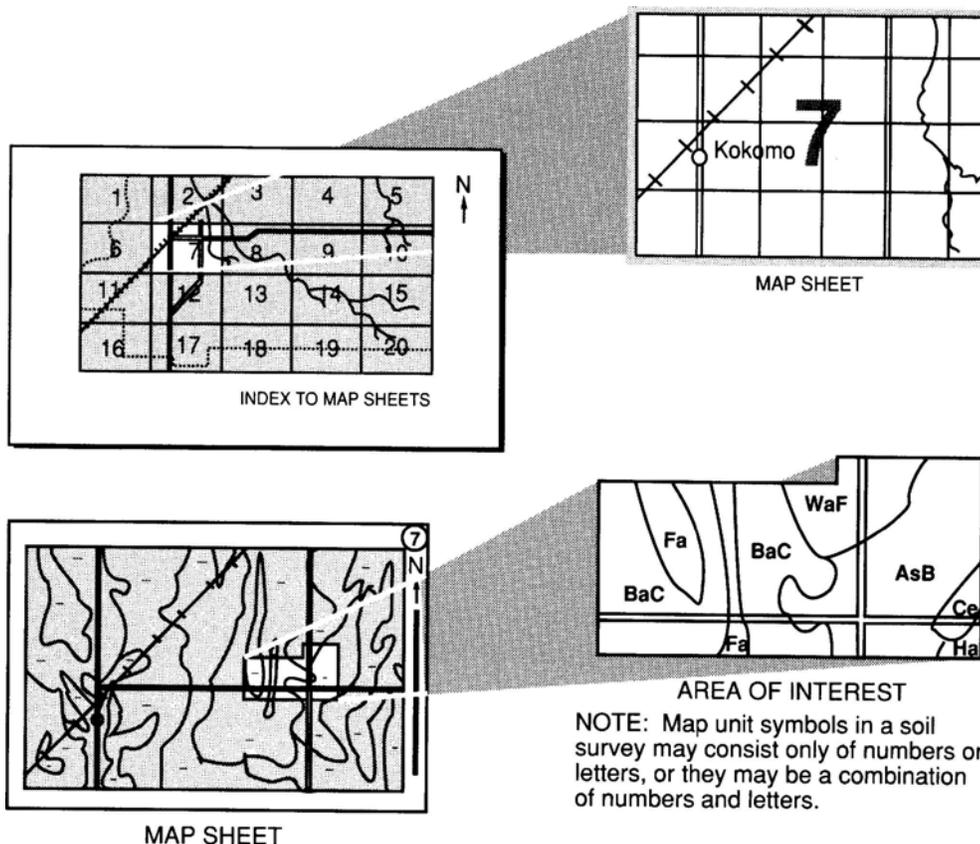
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in September, 2005. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. This survey was made cooperatively by the Natural Resources Conservation Service, the National Park Service, and the New Mexico Agricultural Experiment Station.

Only climate tables are included in this survey. Since publication of the soil survey, more data on soil properties may have been collected, new interpretations developed, or existing interpretive criteria modified. Current data tables can be access through the Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov>.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Cover: Typical area of map unit 208—Alire-Urban land complex, 2 to 8 percent slopes. The homes in this area are all Santa Fe or Southwest style architecture, typified by flat roofs, earth tone stucco walls, and viega ceilings. The Sangre de Cristo Mountains are in the background, toward the left is Santa Fe Baldy, which at 12,622 feet elevation, is the highest peak in Santa Fe County.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is <http://www.nrcs.usda.gov>

Contents

How To Use This Soil Survey	i
Foreword	xi
General Nature of the Survey Area	2
History and Development.....	3
Physiography, Geology, and Geomorphology	4
Climate	5
Climate Data	6
Table 1.—Temperature and Precipitation.....	7
Table 2.—Freeze Date in Spring and Fall	8
Table 3.—Growing Season	8
Table 4.—Temperature and Precipitation.....	10
Table 5.—Freeze Date in Spring and Fall	11
Table 6.—Growing Season	11
Table 7.—Temperature and Precipitation.....	13
Table 8.—Freeze Date in Spring and Fall	14
Table 9.—Growing Season	14
How this Survey Was Made.....	15
Detailed Soil Map Units	19
100—Panky loam, 1 to 4 percent slopes	20
101—Zozobra-Jaconita complex, 5 to 25 percent slopes	22
102—Khapo sandy loam, 3 to 8 percent slopes.....	24
103—Zepol silt loam, 0 to 2 percent slopes, flooded.....	26
104—Chupe-Riverwash complex, 1 to 3 percent slopes, flooded.....	28
105—Dumps, sanitary landfill	30
106—Pits	31
107—Riverwash, flooded.....	32
108—Zia fine sandy loam, 0 to 2 percent slopes	33
109—Tetilla loam, 1 to 5 percent slopes	35
110—Calabastas loam, 1 to 3 percent slopes.....	37
111—Khapo fine sandy loam, 1 to 3 percent slopes.....	39
112—Riovista gravelly loamy sand, 0 to 1 percent slopes	40
113—Delvalle-Urban land complex, 0 to 2 percent slopes	42
114—Devargas-Urban land complex, 1 to 3 percent slopes.....	44
115—Panky-Urban land complex, 1 to 4 percent slopes	46
116—Arents-Urban land-Orthents complex, 1 to 60 percent slopes.....	48
117—Agua Fria-Paraje complex, 1 to 8 percent slopes	50
118—Golondrina-Paraje complex, 8 to 45 percent slopes.....	53
119—Vitrina-Haozous complex, 5 to 15 percent slopes, flooded.....	56
120—Quarteles-Rock outcrop complex, 25 to 90 percent slopes	58
121—El Rancho silt loam, 1 to 3 percent slopes.....	60
122—Cuyamungue-Riverwash complex, 0 to 2 percent slopes, flooded.....	62
123—Koshare very fine sandy loam, 2 to 8 percent slopes	65
124—Camelrock silty clay loam, 0 to 2 percent slopes.....	67
125—Mirada-Bosquecito complex, 0 to 2 percent slopes, flooded	69
126—Walkibout-Innacutt complex, 2 to 80 percent slopes, flooded	72
127—Ojito-Koshare-Quarteles complex, 5 to 50 percent slopes	75

Detailed Soil Map Units	Cont.
128—Koshare-Urban land complex, 2 to 8 percent slopes	78
129—El Rancho-Urban land complex, 1 to 3 percent slopes.....	80
130—Jalalosa very fine sandy loam, 0 to 2 percent slopes, flooded	82
131—Jaconita-Xenmack complex, 25 to 60 percent slopes	84
132—Depolvo-Sueleros complex, 2 to 15 percent slopes	86
133—Chupe fine sandy loam, 1 to 3 percent slopes.....	89
134—Bosquecito fine sandy loam, 0 to 2 percent slopes, flooded.....	91
135—Tsinat gravelly loam, 1 to 6 percent slopes.....	93
136—Churipa very cobbly sandy loam, 5 to 15 percent slopes	95
137—Medrano extremely gravelly loam, 5 to 65 percent slopes	97
138—Andanada very gravelly loam, 5 to 15 percent slopes	99
139—Ildefonso-Rock outcrop-Rubble land complex, 30 to 70 percent slopes	101
140—Truehill very cobbly loam, 25 to 45 percent slopes	103
141—Truehill-Penistaja family-Rock outcrop complex, 4 to 50 percent slopes	105
142—Parida gravelly loam, 3 to 10 percent slopes	107
143—Scogg very fine sandy loam, 0 to 2 percent slopes, flooded	108
144—Los Alamos fine sandy loam, 1 to 5 percent slopes	109
145—Romberg very gravelly sandy loam, 25 to 55 percent slopes	111
200—Predawn loam, 1 to 4 percent slopes.....	112
201—Tanoan-Encantado complex, 5 to 25 percent slopes	114
202—Alire loam, 2 to 6 percent slopes.....	117
203—Buckhorse-Altazano complex, 2 to 8 percent slopes, flooded.....	119
204—Altazano loamy sand, 0 to 2 percent slopes, flooded	121
205—Nazario gravelly loam, 2 to 8 percent slopes	123
206—Encantado very cobbly sandy loam, 25 to 45 percent slopes.....	125
207—Urban land.....	127
208—Alire-Urban land complex, 2 to 8 percent slopes	128
209—Dondiego-Urban land complex, 1 to 3 percent slopes.....	130
210—Urban land-Buckhorse-Altazano complex, 2 to 8 percent slopes	132
211—Tanoan-Encantado-Urban land complex, 5 to 25 percent slopes.....	134
212—Junebee gravelly sandy loam, 5 to 15 percent slopes	137
213—Levante-Riverwash complex, 1 to 3 percent slopes, flooded	139
214—Nazario-Urban land complex, 2 to 8 percent slopes	141
215—Predawn-Urban land complex, 1 to 4 percent slopes	143
216—Dondiego loam, 1 to 3 percent slopes	145
217—Ohke sandy loam, 1 to 3 percent slopes.....	146
218—Pedregal very gravelly loam, 2 to 15 percent slopes	147
219—Ohke sandy loam, 2 to 8 percent slopes.....	149
220—Horcado-Nazario complex, 2 to 35 percent slopes	150
221—Latierra-Lamesilla-Levante complex, 2 to 15 percent slopes, flooded	152
222—Sipapu-Yuzarra-Kachina complex, 5 to 65 percent slopes.....	155
223—Kachina fine sandy loam, 5 to 15 percent slopes	158
224—Portillo extremely gravelly sandy loam, 25 to 50 percent slopes	160
225—Encantado-Resolana complex, 35 to 70 percent slopes	162
226—Crucitas gravelly fine sandy loam, 2 to 10 percent slopes.....	164
300—Arnor gravelly sandy loam, 2 to 8 percent slopes	166
301—Enmedio-Atalaya-Rock outcrop complex, 5 to 60 percent slopes	168
302—Setonville-Antonchico complex, 3 to 15 percent slopes	170
303—Morenda, Fiesta, and Espanola soils, 1 to 85 percent slopes, flooded	172

Detailed Soil Map Units.....	Cont.
304—Legate-Yohalem-Zarmand complex, 5 to 50 percent slopes	176
305—Chimayo-Rock outcrop-Quapaw complex, 50 to 90 percent slopes	179
306—Adellern gravelly sandy loam, 50 to 90 percent slopes	181
307—Urban land-Ustorthents-Ustarents complex, 1 to 65 percent slopes	183
308—Enmedio-Zafarano-Rock outcrop complex, 35 to 60 percent slopes	185
309—Lazaro complex, 5 to 45 percent slopes	187
310—Santa Fe-Rock outcrop complex, 25 to 45 percent slopes	189
400—Chiminet-Canuela-Rock outcrop complex, 2 to 20 percent slopes	191
401—Rock outcrop-Abrojo-Chiminet complex, 25 to 65 percent slopes	195
402—Navajita complex, 2 to 15 percent slopes	198
403—Piojillo paragravelly ashy loamy coarse sand, 3 to 15 percent slopes	200
404—Totavi ashy loamy coarse sand, 1 to 3 percent slopes	201
405—Espiritu-Pedregal complex, 3 to 50 percent slopes	203
406—Rock outcrop-Zacaton-Chiminet complex, 25 to 60 percent slopes	206
407—Rock outcrop-Chiminet complex, 20 to 50 percent slopes	209
408—Adornado very paragravelly ashy coarse sandy loam, 8 to 15 percent slopes	211
409—Hackroy-Nyjack complex, 2 to 12 percent slopes	213
410—Chiminet-Canuela-Rock outcrop complex, low precipitation, 3 to 20 percent slopes	216
412—Canuela-Hackroy complex, 1 to 8 percent slopes	220
413—Armenta very paragravelly ashy coarse sand, 3 to 20 percent slopes	222
414—Metate loam, 0 to 3 percent slopes	224
500—Sedillo very gravelly loam, 2 to 6 percent slopes	226
501—Truehill extremely gravelly loam, 25 to 55 percent slopes	229
502—Khapo fine sandy loam, 1 to 3 percent slopes	231
503—Espinosa very gravelly coarse sandy loam, 5 to 40 percent slopes	232
504—Sandoval-Badland complex, 15 to 45 percent slopes	233
505—Puertecito-Paraje complex, 15 to 50 percent slopes	236
506—Ildefonso-Sandoval complex, 5 to 35 percent slopes	239
507—Ildefonso extremely gravelly sandy loam, 5 to 15 percent slopes	241
508—Charalito-Riverwash complex, 1 to 3 percent slopes, flooded	242
509—Puertecito-Wandurn-Rock outcrop complex, 30 to 60 percent slopes	244
510—Cerrillos-Sedillo complex, 1 to 5 percent slopes	247
511—Wandurn-Alchonzo-Rubble land complex, 35 to 90 percent slopes	250
512—Cochiti extremely cobbly loam, 15 to 35 percent slopes	252
513—Pedregal very cobbly loam, 8 to 15 percent slopes	254
514—Pegasus extremely cobbly loam, 20 to 50 percent slopes	256
515—Pastorius very cobbly loam, 3 to 5 percent slopes	257
516—Cerrillos fine sandy loam, 1 to 4 percent slopes	258
517—Puertecito extremely gravelly fine sandy loam, 15 to 25 percent slopes	260
518—Rock outcrop-Skyvillage complex, 5 to 35 percent slopes	261
519—Cumacho fine sandy loam, 2 to 8 percent slopes	263
520—Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes	266

Detailed Soil Map Units	Cont.
521—Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, flooded	270
522—Penistaja family fine sandy loam, 1 to 3 percent slopes	273
523—Kech-Cerropelon-Rock outcrop complex, 5 to 50 percent slopes	274
524—Zia-Gullied land complex, 2 to 10 percent slopes	276
525—Hagerman-Cabreros complex, 2 to 6 percent slopes	278
526—Penistaja family-Truehill complex, 3 to 15 percent slopes	280
527—Musofare-Asparas complex, 20 to 50 percent slopes	283
528—Penistaja family loam, 3 to 8 percent slopes	285
530—Jaralosa-Chupe-Riverwash complex, 0 to 1 percent slopes, flooded	286
531—Sena very fine sandy loam, 0 to 2 percent slopes	289
532—Galiseto silty clay loam, 0 to 2 percent slopes	291
534—Oelop-Charalito complex, 1 to 3 percent slopes	292
550—Pits, mine	294
600—Hyer-Witt complex, 1 to 3 percent slopes	295
601—Harvey loam, 3 to 12 percent slopes	297
602—Palma fine sandy loam, 3 to 8 percent slopes	298
603—Lazarus silt loam, 0 to 2 percent slopes, flooded	299
604—Desario-Espadon complex, 5 to 50 percent slopes	300
605—Lazarus-Manzano complex, 0 to 8 percent slopes, flooded	303
606—Pastura-Nala complex, 3 to 15 percent slopes	305
607—Davishat-Palma complex, 1 to 8 percent slopes	308
608—Davishat loamy very fine sand, 3 to 8 percent slopes	310
610—Arojomil-Tapia complex, 1 to 5 percent slopes	311
611—Spyglass silt loam, 0 to 2 percent slopes	313
612—Trofes loam, 0 to 2 percent slopes	315
613—Kinsell silt loam, 0 to 2 percent slopes, flooded	317
614—Tamarindo loam, 1 to 3 percent slopes	319
615—Kwahe-Stanley complex, 0 to 1 percent slopes, ponded	320
616—Triane silty clay loam, 1 to 3 percent slopes	322
617—Ranchos fine sandy loam, 3 to 8 percent slopes	323
618—Davishat-Chupadera complex, 3 to 8 percent slopes	324
619—Villario-Puertecito complex, 25 to 45 percent slopes	326
621—Kech-Horchata complex, 1 to 8 percent slopes	328
622—Arojomil silt loam, 1 to 3 percent slopes	330
623—Clovis loam, 3 to 8 percent slopes	332
624—Clovis very fine sandy loam, 1 to 3 percent slopes	333
625—Raydawn very cobbly sandy loam, 15 to 35 percent slopes	334
626—Horchata loam, 3 to 8 percent slopes	335
627—Palabria-Frajillo complex, 1 to 8 percent slopes	336
628—Nala gravelly sandy loam, 3 to 8 percent slopes	338
629—Frajillo-Chilerojo complex, 5 to 15 percent slopes	340
630—Tamarindo loam, 3 to 8 percent slopes	342
632—Travessilla-Raydawn-Sandoval-Rock outcrop complex, 5 to 45 percent slopes	343
700—Aliante-Altega complex, 1 to 10 percent slopes	346
701—Sabroso-Verano complex, 35 to 65 percent slopes	349
702—Estrada-Chacuaco complex, 2 to 8 percent slopes	351
703—Estrada loam, 2 to 15 percent slopes	354
704—Aliante loam, 0 to 3 percent slopes	356
705—Margosa-Condesa complex, 2 to 8 percent slopes	357

Detailed Soil Map Units	Cont.
706—Verano-Altezita complex, 45 to 90 percent slopes.....	359
707—Altezita-Esquila-Rock outcrop complex, 2 to 10 percent slopes.....	363
708—Uva-Herrada complex, 3 to 15 percent slopes.....	365
709—Moriartche clay loam, 0 to 3 percent slopes.....	367
710—Predawn fine sandy loam, 1 to 4 percent slopes.....	368
711—Fangio-Ortiz complex, 15 to 50 percent slopes.....	370
712—Altega very fine sandy loam, 3 to 8 percent slopes.....	375
713—Lomapedro-Skyute complex, 2 to 10 percent slopes.....	377
715—Lomapedro gravelly sandy clay loam, 25 to 50 percent slopes.....	380
717—Glorieta-Ribera complex, 1 to 15 percent slopes.....	382
718—Bernal-Cueva complex, 10 to 50 percent slopes.....	385
W—Water.....	388
Use and Management of the Soils	389
Rangeland.....	389
Forest Management.....	390
Classification of the Soils	391
Soil Series.....	392
Abrojo Series.....	392
Adellern Series.....	392
Adomado Series.....	392
Agua Fria Series.....	392
Alchonzo Series.....	392
Aliante Series.....	392
Alire Series.....	392
Altazano Series.....	392
Altega Series.....	392
Altezita Series.....	392
Andanada Series.....	392
Antonchico Series.....	392
Armenta Series.....	392
Arnor Series.....	392
Arojomil Series.....	392
Asparas Taxadjunct.....	392
Atalaya Series.....	392
Bernal Series.....	392
Bosquecito Series.....	392
Buckhorse Series.....	392
Cabrerros Series.....	392
Camelrock Series.....	392
Canuela Series.....	392
Cerrillos Series.....	392
Ceropelon Series.....	392
Chacuaco Series.....	392
Charalito Series.....	392
Chilerojo Series.....	392
Chimayo Series.....	392
Chiminet Series.....	392
Chupadera Series.....	392
Chupe Series.....	392
Churipa Series.....	392
Cielito Series.....	392
Clovis Series.....	392
Cochiti Series.....	392

Soil Series.....	Cont.
Condesa Series.....	392
Crucitas Series.....	392
Cueva Series.....	392
Cumacho Series.....	392
Cuyamungue Series.....	392
Davishat Series.....	392
Delvalle Series.....	392
Depolvo Series.....	392
Desario Series.....	392
Devargas Series.....	392
Dondiego Series.....	392
El Rancho Series.....	392
Encantado Series.....	392
Enmedio Series.....	392
Espanola Series.....	392
Espinos Series.....	392
Esquila Series.....	392
Estrada Series.....	392
Fangio Series.....	392
Fiesta Series.....	392
Frajillo Series.....	392
Glorieta Series.....	392
Golondrina Series.....	392
Hagerman Series.....	392
Haozous Series.....	393
Harvey Series.....	393
Herrada Series.....	393
Horcado Series.....	393
Horchata Series.....	393
Hyer Series.....	393
Ildfonso Series.....	393
Innacutt Series.....	393
Jaconita Series.....	393
Junebee Series.....	393
Kachina Series.....	393
Kech Series.....	393
Khapo Series.....	393
Kinsell Series.....	393
Koshare Series.....	393
Kwahe Series.....	393
Lamesilla Series.....	393
Latierra Series.....	393
Lazaro Series.....	393
Lazarus Series.....	393
Legate Series.....	393
Levante Series.....	393
Lomapedro Series.....	393
Los Alamos Series.....	393
Manzano Series.....	393
Margosa Series.....	393
Medrano Series.....	393
Metate Series.....	393
Mirada Series.....	393

Soil Series.....	Cont.
Morenda Series.....	393
Moriartche Series.....	393
Musofare Series.....	393
Nala Series.....	393
Navajita Series.....	393
Nazario Series.....	393
Netoma Series.....	393
Nyjack Series.....	393
Oelop Series.....	393
Ohke Series.....	393
Ojito Series.....	393
Ortiz Series.....	393
Palma Series.....	393
Paraje Series.....	393
Parida Series.....	393
Pastorius Series.....	393
Pastura Taxadjunct.....	393
Pedregal Series.....	393
Pegasus Series.....	393
Penistaja Series.....	393
Piojillo Series.....	393
Portillo Series.....	393
Predawn Series.....	393
Puertecito Series.....	393
Quapaw Series.....	393
Quarteles Series.....	393
Ranchos Series.....	393
Raydawn Series.....	393
Resolana Series.....	393
Ribera Series.....	393
Riovista Series.....	393
Romberg Series.....	393
Sabroso Series.....	393
Sandoval Series.....	393
Santa Fe Series.....	393
Scogg Series.....	393
Sedillo Series.....	393
Sena Series.....	393
Sipapu Series.....	393
Skyute Series.....	393
Skyvillage Series.....	393
Spyglass Series.....	393
Stanley Series.....	393
Sueleros Series.....	394
Tamarindo Series.....	394
Tanbark Series.....	394
Tanoan Series.....	394
Tapia Series.....	394
Tetilla Series.....	394
Totavi Series.....	394
Travessilla Series.....	394
Triane Series.....	394
Truehill Series.....	394

Soil Series	Cont.
Tsinat Series	394
Uva Series.....	394
Verano Series	394
Villario Series	394
Walkibout Series	394
Wandurn Series	394
Witt Series.....	394
Xenmack Series	394
Yohalem Series.....	394
Yuzarra Series	394
Zacaton Series	394
Zafarano Series.....	394
Zarmand Series.....	394
Zepol Series	394
Zia Series	394
Zozobra Series.....	394
Formation of the Soils	395
Factors of Soil Formation.....	395
Parent Material.....	395
Living Organisms	396
Topography	397
Climate	397
Time	398
References	399
Glossary	401

Issued 2009

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the New Mexico Cooperative Extension Service.

DENNIS L. ALEXANDER
State Conservationist
Natural Resources Conservation Service

Soil Survey of Santa Fe County Area, New Mexico

By Charles D. Hibner, Natural Resources Conservation Service

Fieldwork by Charles D. Hibner, Joseph V. Chiaretti, Aaron J. Miller, Charles A. Ferguson, Jason L. Nemecek, Stephani A. Schmit, Jennifer M. Puttere, Lee A. Gray, Jennifer M. Vantol, and Kelly J. Ponte, Natural Resources Conservation Service

Range fieldwork by Christine A. Bishop and Quinn H. Hodgson.

Quality assurance by William W. Johnson, Alan C. Terrell, Thomas W. Hahn, and Wayne J. Gabriel, United States Department of Agriculture, Natural Resources Conservation Service

In cooperation with the
New Mexico Agricultural Experiment Station, City of Santa Fe, Santa Fe County, National Park Service,
and Department of Defense

This soil survey updates the Soil Survey of Santa Fe Area, New Mexico published in 1975 (USDA, SCS). This document supercedes the Santa Fe Area, New Mexico Soil Survey, dated 2008. It provides additional information that shows the soils in greater detail.

The survey area is in north central New Mexico (fig. 1) and includes all of Santa Fe County except for lands administered by the U.S. Forest Service, which are geographically in the northeast and west central part of the county. The survey covers an area of 951,000 acres, or about 1,500 square miles. The survey area is bordered by the U.S. Forest Service on the northwest and northeast side, by Rio Arriba County to the north, Los Alamos County on the far northwest corner, Sandoval County to the west, Bernallio County on the southwest corner, Torraine County to the south, and San Miguel County to the east.

The survey area includes portions of three Major Land Resource Areas (MLRA's): New Mexico and Arizona Plateaus and Mesas—MLRA 36, Southern Rocky Mountains—MLRA 48A, and Pecos-Canadian Plains and Valleys—MLRA 70. (23)

Within the survey area, some in part, are seven pueblo reservations, including Tesuque, Pojoaque, Nambe, San Ildefonso, Santa Clara, Santo Domingo, and Cochiti.

Elevations range from a low of 5,380 feet where the Rio Grande enters U.S. Forest Service land in White Rock Canyon, to a high point of 9,121 feet on top of Atalaya Mountain in the eastern side of the survey area, just east of Santa Fe. Most stream systems in Santa Fe County flow from the east, out of the Sangre De Cristo Mountains, feeding into the Rio Grande river which flows from the northwest. The Santa Cruz River flows through Chimayo and Espanola in the northern part of the survey. The Nambe River and Rio En Medio combine to form the Pojoaque River, and flows through the towns of Nambe, Pojoaque, Jacona, Jaconita, and El Rancho. Rio Tesuque flows through the town of Tesuque in a northwesterly direction until entering the Pojoaque River just west of the town of Pojoaque. The Santa Fe River flows westward through Santa Fe, Agua Fria, and La Cienega before entering the Rio Grande River at Cochiti Reservoir. Glorieta Creek flows southward from Glorieta

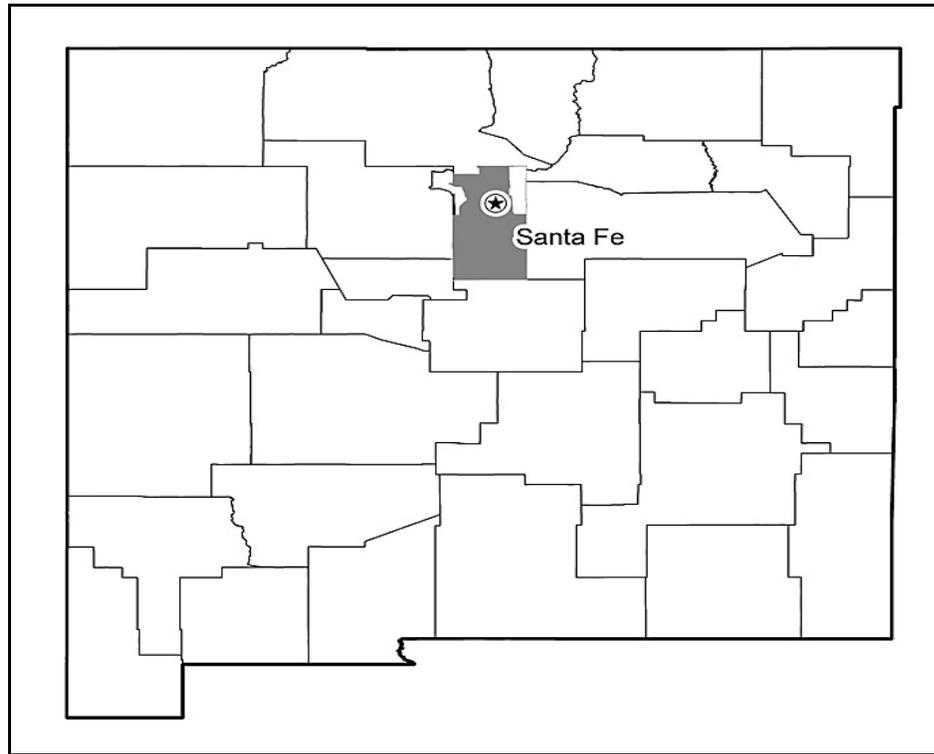


Figure 1.—Location of Santa Fe Area, New Mexico.

Baldy to the town of Glorieta, where it flows eastward until it joins the Pecos River just east of the survey boundary. Galisteo Creek is semi-perennial and flows southwestward from Glorieta Baldy before turning westward at the town of Galisteo.

Soil scientists have determined that there are about 172 different kinds of soils in the survey area that comprise a total of 182 individual map units. Of these 172 soils, 134 are new series proposed within the survey boundary. The soils vary widely in their texture, color, natural drainage, slope, and other characteristics. The climate in which these soils occur also varies widely. The soils in the northern portion of the survey area are at the lowest elevations. These soils, which are gently sloping to rolling with steep breaks occurring in some areas, support mostly scattered juniper with the exception of the riparian areas along the perennial/semi-perennial streams and along the Rio Grande. These areas support a variety of deciduous/evergreen trees that often form a closed canopy.

The soils in the eastern portion of the survey area exist at higher elevations and are generally steeply sloping and high in rock fragments. These soils occur in climates with enough soil moisture to foster the growth of woodland and forest plant communities.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent survey areas. These discrepancies are the result of different scales and intensities of mapping, varying knowledge of the soils, modifications in soil series concepts, or the extent of soils within the survey area.

General Nature of the Survey Area

This section contains general information concerning the Santa Fe County area. It briefly discusses the history and development; physiography, geology, and geomorphology; and climate of the survey area.

History and Development

Although Paleo-Indian and Archaic peoples' nomadic wanderings may have occurred near and in the Santa Fe County area as early as 8,000 and 10,000 B.C., the earliest evidence of human occupation of the area by Archaic-phase hunter-gatherers is around 1750 B.C. (12) Evidence is sporadic up to and during the Developmental Pueblo Phase of 600 to 1100 A.D, however, there was a major influx of humans during the Coalition Phase beginning about 1075 A.D. (12), probably from groups migrating from the Chaco Canyon, Aztec, and Mesa Verde areas. Santa Fe itself was originally occupied by a number of Pueblo Indian villages with founding dates between 1050 and 1150 A.D. The Classic Phase ranging from 1200 to 1600 A.D marks the time period of the widest range of artifacts discovered. During this period, the first appearance of glazed pottery instead of carbon-painted pottery occurred. (12) This, as well as differences in technology, patterns of settlement, and social organization, indicates that a different population replaced the Coalition-phase settlers south of Frijoles Canyon during this time period. This group is classed as Uto-Aztecan and uses the Keres native language. They presently live in the pueblos of Cochiti, Santo Domingo, and San Felipe, as well as other southern pueblos west of the Rio Grande. (12) The original Coalition-phase settlers that continued to occupy land north of Frijoles are of the Kiowa-Tanoan family, and speak the Tewa native language. They are now located in the northern pueblos of Nambe, Pojoaque, Tesuque, San Ildefonso, Santa Clara, and San Juan. It would appear that this total abandonment of the Pajarito Plateau to the Rio Grande Valley floor occurred before 1600 A.D. and prior to the earliest Spanish expeditions into the area (Coronado in 1540 and Onate in 1598). (12) The east end of Frijoles Canyon close to the survey boundary was reoccupied briefly during the Pueblo Revolt of 1680. (12)

Spanish settlements occurred in the Rio Grande Valley and Santa Fe in the late 1500's, Juan de Onate establishing the first Spanish capital at the Tewa village of Ohke (San Juan) just north of present day Española in 1598. This was later moved to San Gabriel in 1600, which is at the confluence of the Rio Grande and Rio Chama, then established in Santa Fe in 1610 by Governor Pedro de Peralta, making Santa Fe the second oldest continuously occupied European city in the USA. It is the highest elevation capital city (7,000 feet) and also is the oldest capital city.

Following the pueblo revolt of 1680, the Spanish settlers were driven from Santa Fe and indeed from New Mexico, and spent the next 12 years around the area of El Paso, Texas. Re-conquest of Santa Fe occurred in 1692, when Don Diego de Vargas, with many of the ousted settlers, journeyed up the Camino Real and re-settled Santa Fe. Don Diego then began to expand outside of Santa Fe, and the village of Santa Cruz became colonized around 1695, and a group of families also settled in the area of present day Chimayo about the same time period.

At the same time as Mexico declared independence from Spain, the old Santa Fe Trail was established in 1821 and traveled westward from Kansas City, terminating at the Santa Fe Plaza. Although explored by Rivera in 1765 and attempted by Escalante in 1776, the first documented round trips of the Old Spanish Trail did not occur until 1829. It originated in Santa Fe and traveled northward or northwestward before turning west through Colorado and Utah toward the west coast at Los Angeles. A later trail was developed that took a more westward route that straddled the Arizona-Utah line and joined the Old Spanish Trail southwest of Green River, Utah.

A skirmish of the Civil War was fought in Santa Fe County near the town of Glorieta in 1862.

The railroad arrived into the Lamy area, just south of Santa Fe in the late 1800's. A spur was then created that traveled northward to Santa Fe, and continued

northward through the town of Española to Antonito, Colorado. This northward spur was called "The Chili Line".

Physiography, Geology, and Geomorphology

Santa Fe County encompasses several major physiographic provinces within its boundaries: the Espanola Basin, Galisteo Basin, and Estancia Basin part of the Basin and Range physiographic province, the Glorieta Slope part of the Pecos Valley section of the Great Plains physiographic province, and the southwestern Sangre de Cristo part of the Southern Rocky Mountains province. (11, 15)

The oldest rocks in the survey area, located in the northeast, are the Precambrian age granite, gneiss, and schist that form the core of the Sangre de Cristo Mountains. Although much of this geology is at higher elevations and in forest service lands out of the survey area, there is significant acreage at lower elevations around the towns of Cundiyo in the northeast corner of the survey area, Hyde Park to the east of Santa Fe, and Canada de los Alamos to the southeast of Santa Fe. This formation constitutes the basement rock of much of New Mexico.

Exposed at the surface, the Laramide Orogeny caused the uplifting of mountains several thousand feet above the surrounding areas. The consequent shedding of the overlying material is largely resultant in the formations of huge water bearing aquifers to the south and east (Ogallala Formation).

Adjacent to the granite, gneiss, and schist just east of Santa Fe and north of the Santa Fe River are smaller outcroppings of limestone, sandstone, and shale of the Pennsylvanian Age Magdalena Group.

Around the town of Glorieta are sandstones and shales with some conglomerate of the early Permian Age Sangre de Cristo Formation.

The Glorieta Slope is composed of sandstone and limestone with minor amounts of mudstone formations of Triassic and Permian age redbeds. These formations include the Santa Rosa Sandstone, the Bernal Formation, the San Andres Limestone, the Glorieta Sandstone, and the Yeso Formation.

The Galisteo Basin is composed mainly of shales and sandstones of the Cretaceous Age Mancos Shale and Dakota Sandstone Formations.

The Jemez Volcanic Pile flanks the east side of the Jemez Mountains and was formed from the process of magma buildup beginning about 13 million years ago. This buildup occurred as a result of the formation of the Rio Grande Rift, a separation of the earth's crust in the North American Tectonic plate. As this separation progressed, giant blocks of crust settled into the mantle, forming a series of basins that stretch from Leadville, Colorado to El Paso, Texas that in some places contain more than 20,000 feet of alluvial sediment. (10) A continuance of these eruptions formed the Cerros del Rio Basalt Lava Field around 3 million years ago. Two giant eruptions ejecting over 165 cubic miles of volcanic material occurred about 1.6 and again 1.2 million years ago, forming the Otowi and Tshirege Members of the Bandelier Tuff. Several subsequent eruptions occurred since that time until about 50,000 years ago.

Rocks of comparable age to the Jemez Volcanic Pile are from intrusive igneous eruptions yielding rocks (monzonite) that form high hills and mountains including the Ortiz, San Pedro, and South Mountains and the Cerrillos Hills, and igneous extrusive flows that make up the Espinazo Formation. (16) Next in age is the latite and dacite of the Tschicoma Formation which form the high mountains including Cerro Grande and Parajarito Mountain west of the survey area. The western edge of the survey area also contains exposures of Cerros del Rio Basalt which form mostly structural benches or mesas above White Rock Canyon through which flows the Rio Grande. (16) This part of the survey area also contains the thick deposits of Bandelier Tuff, composed of rhyolitic volcanic ash, which has been highly dissected by deep

southeast trending canyons that have given the area distinct plateau/canyon topography. The plateaus are wide enough that interfluves occur between canyons; these interfluves exhibit landscapes that are similar to hills, whereby hillslope positions were identified. The canyons are bounded by cliffs that grade to steep escarpments, grading to footslope positions below. Some valleys in the bottom of the canyons are wide enough to contain some or all components of valley floors, flood plain steps, and flood plains. High stream terrace surfaces are greatly eroded, but do exist in small, localized areas.

The central and north-central part of the survey area is composed primarily of outwash alluvium. This material is derived from granite, gneiss, and schist of the Sangre de Cristo Mountains, and to a lesser extent, river alluvium composed mostly of quartzite and basalt deposited by the ancestral Rio Grande and Rio Chama. In most instances, the former material has buried the latter by piedmonts that slope generally to the west and south, and represent several thousand feet of weakly consolidated alluvium.

Climate

Santa Fe County is located in a region of the U.S. that is continental and rugged in topography in that the climate is represented by considerable variations in both temperature and precipitation. The moisture regimes range from aridic ustic to typic ustic and the temperature regimes from mesic to frigid. Additionally, in areas with measurable slope, aspect can account for great variability in climate.

Summers are warm to hot and the winters are moderately cool to cold with mean annual temperatures ranging from about 40 to 54 degrees F. (3) The diurnal range of temperatures is quite large and may exceed 30 degrees F. The average number of days without freezing temperatures is about 100 in the higher elevations, and 170 in the lower elevation areas.

The temperatures are mild (warmer) than usual for the elevation. This is because of a phenomenon known locally as the Rio Grande Box Effect. At night, cold air drains from northern mountains over 13,000 feet elevation down the Rio Grande Valley, which in turn displaces warmer air at lower elevations. The warm air moves northward up the valley, like water flowing uphill, riding above the stream of cold air towards Santa Fe and Los Alamos. (4) This box effect is what makes Albuquerque famous for its balloon fiesta; with just the right conditions, balloonists can move southward with the cold draft, change their elevation, and catch the northward movement from the warm draft and return close to the point of liftoff. The result of this effect to the Santa Fe-Los Alamos area is much warmer nighttime temperatures whereby Santa Fe, sitting at an elevation 2,000 feet above Albuquerque, often has similar nighttime temperatures.

Mean annual precipitation ranges from 9 to 20 inches, which falls with great variability from month to month and year to year. Seasonal precipitation patterns exhibit a slight maximum in the summer with over one-third of the annual average falling in the months of July to September. (4) The primary source of moisture during the summer monsoon season is air from over the Gulf of Mexico. Southeast winds caused by the circulation patterns around the Bermuda high-pressure area shift westward in the summer. This brings moisture-laden tropical air into the southwestern United States. Occasionally, an influx of moisture from the eastern subtropical Pacific occurs in late summer as weakened storm systems from the Gulf of California disintegrate over Arizona and New Mexico. Most summer precipitation falls as heavy rain from brief, isolated, high-intensity convective thunderstorms which are usually accompanied by strong, gusty winds and occasionally bursts of hail. Flash flooding in normally dry arroyos is common during this time of the year. During the winter, precipitation falls in a widespread pattern and is produced by Pacific

Soil Survey of Santa Fe County Area, New Mexico

Ocean storm-fronts moving inland from the west. Winter precipitation is much heavier in the higher elevations, where the storm systems are orographically lifted as they pass over the mountains.

Annually, sunshine occurs at an average of 70 percent of the daylight hours with 80 percent during the summer and 60 percent in winter. The average relative humidity in mid-afternoon is about 35 percent. Humidity is higher at night, and the average at dawn is about 65 percent. In late spring and early summer afternoons, humidity drops to as low as 15 to 20 percent. WETS tables provide weather information including temperature and precipitation for the Los Alamos and Santa Fe sites.

Climate Data

Prepared by the Natural Resources Conservation Service National Water and Climate Center, Portland, Oregon.

Climate tables are created from climate station Santa Fe 2 New Mexico.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Santa Fe, New Mexico.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Santa Fe 2 in the period 1971 to 2000.

Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 32.4 degrees F and the average daily minimum temperature is 20.2 degrees. The lowest temperature on record, which occurred at Santa Fe 2 on December 23, 1990, is -17 degrees. In summer, the average temperature is 68.8 degrees and the average daily maximum temperature is 83.9 degrees. The highest temperature, which occurred at Santa Fe 2 on June 29, 1998, is 99 degrees.

Growing degree days are shown in Table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 14.29 inches. Of this, about 8.52 inches, or 60 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 2.00 inches at Santa Fe 2 on August 12, 1981. Thunderstorms occur on about 47 days each year, and most occur in July.

The average seasonal snowfall is 17.0 inches. The greatest snow depth at any one time during the period of record was 16.0 inches recorded on November 23, 1986. On an average, 10 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 16.0 inches recorded on November 23, 1986.

The average relative humidity in mid-afternoon is about 59 percent. Humidity is higher at night, and the average at dawn is about 40 percent. The sun shines 74 percent of the time in summer and 65 percent in winter. The prevailing wind is from the southeast. Average wind speed is highest, 8.2 miles per hour, in March.

Soil Survey of Santa Fe County Area, New Mexico

Table 1.—Temperature and Precipitation
(Recorded for the period 1971–2000 at Santa Fe 2, NM)

Month	Temperature (Degrees F)						Precipitation (Inches)				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have		Average number of growing degree days*	Average	2 years in 10 will have		Average number of days w/0.1 or more	Average snowfall
				Maximum temperature higher than	Minimum temperature less than			less than	more than		
January	42.4	18.3	30.3	59	-4	0	0.63	0.14	1.12	2	3.2
February	48.1	23.2	35.6	66	1	1	0.53	0.13	0.92	2	2.7
March	55.2	27.6	41.4	72	11	7	0.91	0.39	1.40	2	2.7
April	63.8	33.4	48.6	80	16	71	0.73	0.09	1.29	1	0.9
May	72.7	42.1	57.4	88	26	242	1.28	0.38	2.16	3	0.0
June	82.8	51.0	66.9	95	37	508	1.28	0.21	2.25	3	0.0
July	85.7	55.6	70.7	96	44	636	2.16	1.03	3.24	5	0.0
August	83.3	54.4	68.8	94	44	581	2.16	1.39	2.87	6	0.0
September	77.1	47.6	62.3	90	31	368	1.64	0.66	2.59	4	0.0
October	66.6	36.9	51.8	82	17	117	1.29	0.34	2.12	3	0.9
November	52.7	26.1	39.4	71	6	6	1.04	0.37	1.64	2	2.8
December	43.8	19.0	31.4	60	-3	0	0.65	0.09	1.10	2	3.8
Yearly:	---	---	---	---	---	---	---	---	---	---	---
Average	64.5	36.2	50.4	---	---	---	---	---	---	---	---
Extreme	99	-17	---	97	-8	---	---	---	---	---	---
Total	---	---	---	---	---	2,537	14.29	11.45	16.33	35	17.0

Average number of days per year with at least 1 inch of snow on the ground: 10

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (Threshold: 50.0 degrees F)

Soil Survey of Santa Fe County Area, New Mexico

Table 2.—Freeze Dates in Spring and Fall
(Recorded in the period 1971–2000 at Santa Fe 2, NM)

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 3	May 14	May 21
2 year in 10 later than--	April 27	May 8	May 17
5 year in 10 later than--	April 15	April 25	May 8
First freezing temperature in fall:			
1 year in 10 earlier than--	October 16	October 1	September 23
2 years in 10 earlier than--	October 21	October 7	September 28
5 years in 10 earlier than--	October 31	October 19	October 9

Table 3.—Growing Season
(Recorded for the period 1971–2000 at Santa Fe 2, NM)

Probability	Daily Minimum Temperature		
	Number of days higher than 24°F	Number of days higher than 28°F	Number of days higher than 32°F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	169	148	129
8 years in 10	179	157	137
5 years in 10	197	173	153
2 years in 10	215	190	169
1 year in 10	225	199	177

Soil Survey of Santa Fe County Area, New Mexico

Climate tables are created from climate station Los Alamos, New Mexico. Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Santa Fe, New Mexico.

Table 4 gives data on temperature and precipitation for the survey area as recorded at Los Alamos in the period 1971 to 2000.

Table 5 shows probable dates of the first freeze in fall and the last freeze in spring. Table 6 provides data on the length of the growing season.

In winter, the average temperature is 30.5 degrees F and the average daily minimum temperature is 19.5 degrees. The lowest temperature on record, which occurred at Los Alamos on January 13, 1963, is -16 degrees. In summer, the average temperature is 65.9 degrees and the average daily maximum temperature is 78.9 degrees. The highest temperature, which occurred at Los Alamos on June 28, 1998, is 95 degrees.

Growing degree days are shown in Table 4. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 18.95 inches. Of this, about 11.24 inches, or 59 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 2.47 inches at Los Alamos on July 31, 1968. Thunderstorms occur on about 45 days each year, and most occur in July.

The average seasonal snowfall is 58.8 inches. The greatest snow depth at any one time during the period of record was 40 inches recorded on January 16, 1987. On an average, 48 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 22.0 inches recorded on January 15, 1987 and December 6, 1978.

The average relative humidity in mid-afternoon is about 59 percent. Humidity is higher at night, and the average at dawn is about 40 percent. The sun shines 74 percent of the time in summer and 65 percent in winter. The prevailing wind is from the south-southwest. Average wind speed is highest, 7.7 miles per hour, in March.

Soil Survey of Santa Fe County Area, New Mexico

Table 4.—Temperature and Precipitation
(Recorded for the period 1971–2000 at Los Alamos, NM)

Month	Temperature (Degrees F)						Precipitation (Inches)				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have		Average number of growing degree days*	Average	2 years in 10 will have		Average number of days w/0.1 or more	Average snowfall
				Maximum temperature higher than	Minimum temperature less than			less than	more than		
January	39.5	17.7	28.6	57	-4	0	0.96	0.23	1.68	2	14.2
February	44.2	21.8	33.0	62	0	0	0.76	0.17	1.21	2	9.1
March	50.8	27.0	38.9	68	9	5	1.28	0.50	2.04	3	10.4
April	58.8	33.1	45.9	75	16	43	1.05	0.23	1.82	2	4.9
May	67.9	41.7	54.8	83	27	182	1.43	0.39	2.55	3	0.9
June	78.4	51.1	64.7	91	36	442	1.44	0.47	2.21	3	0.0
July	80.6	54.6	67.6	91	46	544	2.97	1.73	4.26	7	0.0
August	77.6	53.1	65.4	88	43	476	3.32	2.12	4.41	8	0.0
September	71.7	47.0	59.3	85	30	288	2.08	1.12	3.02	4	0.0
October	61.2	36.7	48.9	77	17	76	1.54	0.34	2.64	3	2.9
November	48.2	25.9	37.0	66	6	2	1.19	0.34	1.96	2	5.3
December	40.5	19.0	29.8	57	-2	0	0.92	0.17	1.55	2	11.2
Yearly:	---	---	---	---	---	---	---	---	---	---	---
Average	59.9	35.7	47.8	---	---	---	---	---	---	---	---
Extreme	95	-16	---	92	-8	---	---	---	---	---	---
Total	---	---	---	---	---	2,059	18.95	15.85	21.86	41	58.8

Average number of days per year with at least 1 inch of snow on the ground: 48

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (Threshold: 50.0 degrees F)

Soil Survey of Santa Fe County Area, New Mexico

Table 5.—Freeze Dates in Spring and Fall
(Recorded in the period 1971-2000 at Los Alamos, NM)

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 29	May 13	May 27
2 years in 10 later than--	April 24	May 8	May 22
5 year in 10 later than--	April 13	April 28	May 10
First freezing temperature in fall:			
1 year in 10 earlier than--	October 15	September 27	September 19
2 years in 10 earlier than--	October 20	October 3	September 25
5 years in 10 earlier than--	October 30	October 16	October 6

Table 6.—Growing Season
(Recorded for the period 1971-2000 at Los Alamos, NM)

Probability	Daily Minimum Temperature		
	Number of days higher than 24°F	Number of days higher than 28°F	Number of days higher than 32°F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	175	145	125
8 years in 10	183	153	133
5 years in 10	199	170	148
2 years in 10	216	186	163
1 year in 10	224	195	170

Soil Survey of Santa Fe County Area, New Mexico

Climate tables are created from climate station Stanley 1 NNE New Mexico. Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Santa Fe, New Mexico.

Table 7 gives data on temperature and precipitation for the survey area as recorded at Stanley 1 NNE in the period 1971 to 2000. Table 8 shows probable dates of the first freeze in fall and the last freeze in spring. Table 9 provides data on the length of the growing season.

In winter, the average temperature is 31.4 degrees F and the average daily minimum temperature is 17.3 degrees. The lowest temperature on record, which occurred at Stanley 1 NNE on January 7, 1971, is -30 degrees. In summer, the average temperature is 68.1 degrees and the average daily maximum temperature is 84.9 degrees. The highest temperature, which occurred at Stanley 1 NNE on June 24, 1971, is 101 degrees.

Growing degree days are shown in Table 7. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 13.80 inches. Of this, about 9.11 inches, or 66 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 2.55 inches at Stanley 1 NNE on October 30, 1959. Thunderstorms occur on about 45 days each year, and most occur in July.

The average seasonal snowfall is 20.7 inches. The greatest snow depth at any one time during the period of record was 29 inches recorded on December 31, 2006 and the following day. On an average, 25 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 14.1 inches recorded on December 30, 2006.

The average relative humidity in mid-afternoon is about 59 percent. Humidity is higher at night, and the average at dawn is about 40 percent. The sun shines 74 percent of the time in summer and 65 percent in winter. The prevailing wind is from the southeast. Average wind speed is highest, 8.2 miles per hour, in March.

Soil Survey of Santa Fe County Area, New Mexico

Table 7.—Temperature and Precipitation
(Recorded for the period 1971-2000 at Stanley, NM)

Month	Temperature (Degrees F)						Precipitation (Inches)				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have		Average number of growing degree days*	Average	2 years in 10 will have		Average number of days w/0.1 or more	Average snowfall
				Maximum temperature higher than	Minimum temperature less than			less than	more than		
January	42.9	15.9	29.4	62	-10	0	0.50	0.17	0.85	2	4.5
February	49.3	20.0	34.7	67	-5	0	0.35	0.12	0.58	1	3.6
March	57.0	24.9	41.0	74	6	10	0.61	0.18	0.92	2	2.7
April	64.8	30.7	47.7	81	13	61	0.59	0.10	1.02	1	1.5
May	74.2	39.6	56.9	88	22	230	1.12	0.25	1.99	2	0.1
June	84.0	48.2	66.1	97	35	483	1.50	0.30	2.45	3	0.0
July	86.7	53.5	70.1	97	37	622	2.20	1.16	3.28	5	0.0
August	83.9	52.4	68.1	94	42	561	2.74	1.58	3.90	6	0.0
September	77.9	44.8	61.4	90	27	345	1.55	0.74	2.37	4	0.0
October	67.6	33.4	50.5	83	15	95	1.40	0.23	2.36	3	0.7
November	53.7	23.6	38.7	71	1	5	0.70	0.18	1.22	2	2.9
December	44.3	15.9	30.1	62	-6	0	0.51	0.07	0.87	1	4.7
Yearly:	---	---	---	---	---	---	---	---	---	---	---
Average	65.5	33.6	49.6	---	---	---	---	---	---	---	---
Extreme	101	-30	---	98	-14	---	---	---	---	---	---
Total	---	---	---	---	---	2,412	13.80	10.66	16.63	32	20.7

Average number of days per year with at least 1 inch of snow on the ground: 25

*A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (Threshold: 50.0 degrees F)

Soil Survey of Santa Fe County Area, New Mexico

Table 8.—Freeze Dates in Spring and Fall
(Recorded for the period 1971-2000 at Stanley, NM)

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 10	May 21	May 27
2 years in 10 later than--	May 4	May 15	May 23
5 years in 10 later than--	April 22	May 4	May 15
First freezing temperature in fall:			
1 year in 10 earlier than--	September 30	September 24	September 19
2 years in 10 earlier than--	October 6	September 28	September 23
5 years in 10 earlier than--	October 17	October 7	October 1

Table 9.—Growing Season
(Recorded for the period 1971-2000 at Stanley, NM)

Probability	Daily Minimum Temperature		
	Number of days higher than 24°F	Number of days higher than 28°F	Number of days higher than 32°F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	156	132	119
8 years in 10	163	140	125
5 years in 10	177	155	138
2 years in 10	190	170	150
1 year in 10	198	178	157

How This Survey Was Made

This survey was made as an update to the Santa Fe County Area Soil Survey to provide recent and higher resolution information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location as well as a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the types of native plants; and the kinds of bedrock. Many soil profiles were carefully studied, observing the sequence of natural layers, or horizons, in a soil profile. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been altered by biological activity.

The soils and miscellaneous areas in the survey area exist in an orderly pattern related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform (fig. 2 and fig. 3). By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles studied. Observations were recorded on soil color, depth, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that facilitate the identification and classification of the soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. These divisions are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the soil profile. After the soils are classified and named in the survey area, they are compared with similar soils in the same taxonomic class in other areas in order to confirm, revise, and update data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions and additional interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists.

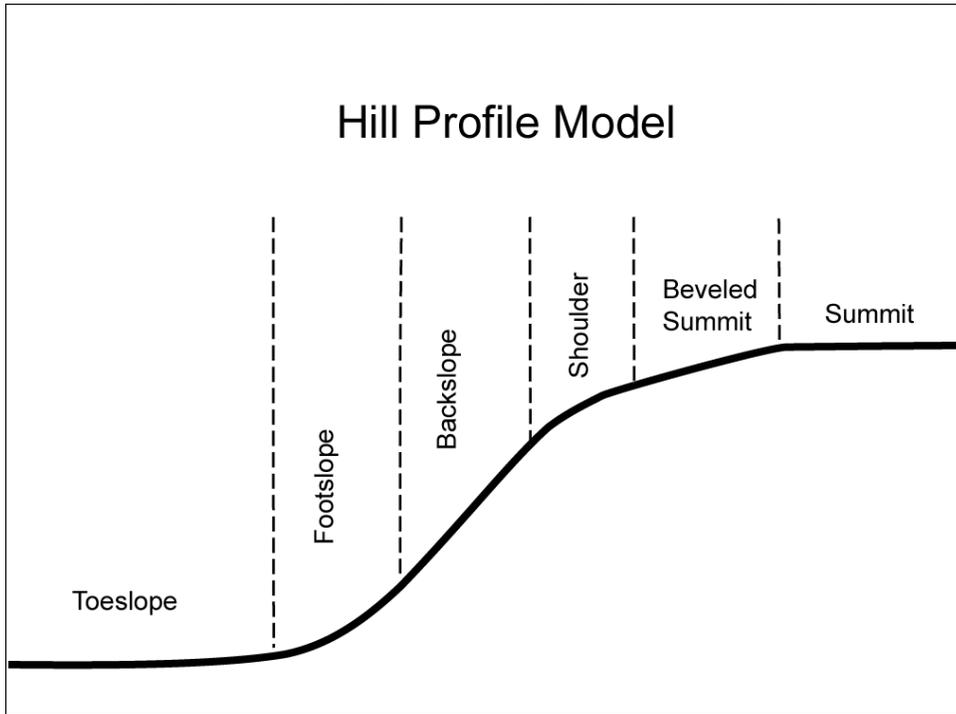


Figure 2.—Cross-section diagram of a hill. Many soils in this report are defined as being on a specific landform position. This simple hill profile model shows landform positions that are defined in the glossary.

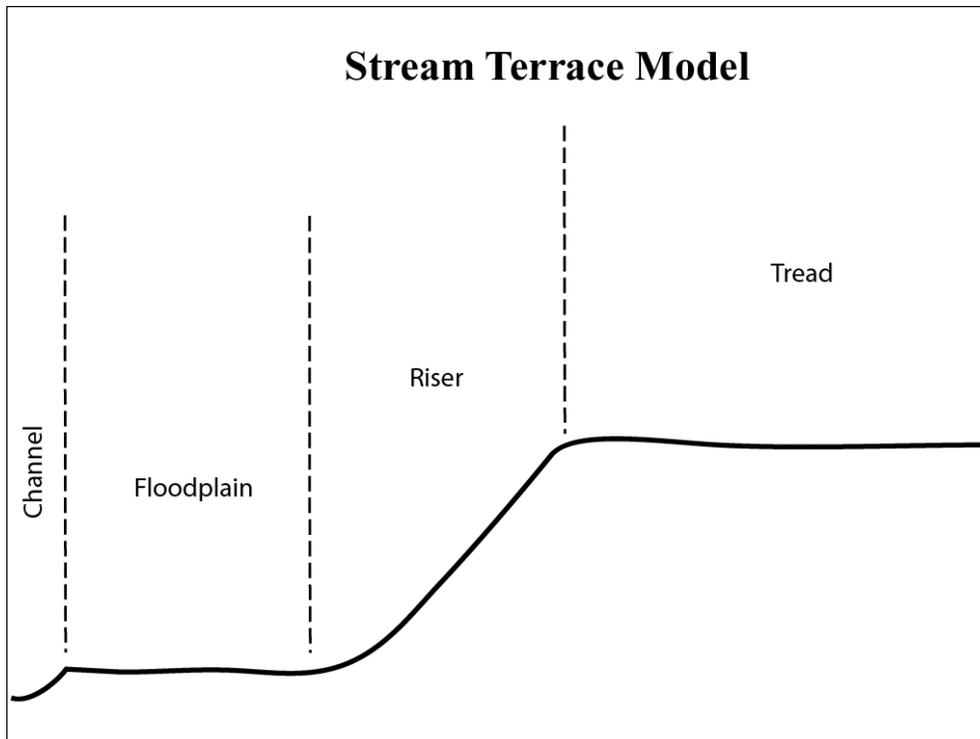


Figure 3.—Cross-section diagram of a stream terrace. The individual soils are defined as being on either the tread (flat part of the stream terrace), or the steep riser part.

Soil Survey of Santa Fe County Area, New Mexico

Predictions about soil behavior are based not only on soil properties but also on variables such as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After locating and identifying the significant natural bodies of soil in the survey area, the boundaries of these bodies were drawn on aerial photographs and each labeled as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately. The use of overlapping vertical aerial photographs and optical devices known as stereoscopes enabled the soil scientists to see landscapes and individual landforms in three dimensions. This technique is known as stereoscopy and is an essential tool for the accurate placement of soil delineations (boundaries) in areas of medium to high relief. Different tonal patterns on aerial photographs are often related to distinct differences in soil, slope, vegetation, moisture, erosion, and geology. Tonal differences are additional tools used by soil scientists to make accurate soil maps on aerial photographs.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas, or soils in the previous survey of this area. (8) Differences are the result of a better knowledge of soils, modifications in soil series concepts, variations in the intensity of mapping or in the extent of the soils in the survey areas, or differences in map unit design.

Detailed Soil Map Units

The map unit delineation on a soil map represents an area dominated by one or several major kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects and characteristically have variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and usually some inclusions or included soils that belong to other taxonomic classes.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be reasonably separated on the soil maps at the desired map resolution. Inclusions are therefore mentioned in the map unit descriptions.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of soil data. The objectives of soil mapping are not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

Each map unit is identified with a map unit symbol and a map unit description which includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

A collection of soils with similar properties make up a soil *series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example *Panky loam, 1 to 4 percent slopes* is a phase of the *Panky* series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. *Zozobra-Jaconita complex, 5 to 25 percent slopes* is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up

of all of them. *Morenda, Fiesta, and Espanola* soils, 1 to 85 percent slopes, flooded is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. *Rock outcrop* is an example.

A list of the acreage and proportionate extent of each map unit can be found online at <http://websoilsurvey.nrcs.usda.gov>. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

100—Panky loam, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,900 to 6,700 feet (1,798 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Panky and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Panky soils

Landscape: Fan piedmonts (fig. 4)

Landform: Eroded fan remnants (fig. 5)

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, schist, loess, and volcanic ash

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 1 to 5 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.4 inches (high)

Shrink-swell potential: About 2.4 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 30 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, broom snakeweed, galleta, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

AE—0 to 3 inches; loam

Bt—3 to 8 inches; clay loam

Btk1—8 to 11 inches; clay loam

Btk2—11 to 17 inches; loam

Bk1—17 to 36 inches; loam

Soil Survey of Santa Fe County Area, New Mexico

Bk2—36 to 53 inches; loam
 Bkq1—53 to 66 inches; loam
 Bkq2—66 to 88 inches; loam
 BCk—88 to 115 inches; loam

Minor Components Composition

Tetilla and similar soils: About 5 percent
 Zozobra and similar soils: About 2 percent
 Khapo and similar soils: About 2 percent
 Urban land: About 1 percent



Figure 4.—An area of Panky loam, 1 to 4 percent slopes. The Ortiz Mountains are in the background on the left. The Sandia Mountains are in the background to the right.

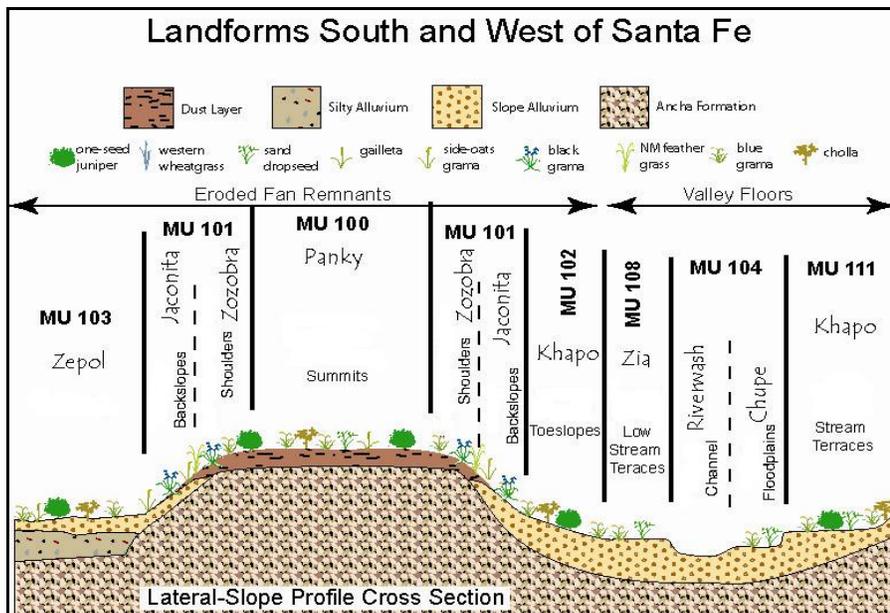


Figure 5.—Cross-section diagram of landforms and landform position for map units south and west of Santa Fe.

101—Zozobra-Jaconita complex, 5 to 25 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,900 feet (1,646 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Zozobra and similar soils: 45 percent

Jaconita and similar soils: 40 percent

Minor components: 15 percent

Component Descriptions

Zozobra soils

Landscape: Fan piedmonts (fig. 6)

Landform: Eroded fan remnants (fig. 5)

Position on landform: Shoulders

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 5 to 12 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent rounded cobbles; about 25 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 20 to 35 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 33 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, New Mexico feathergrass, galleta, sideoats grama, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6c

Typical Profile

ABk—0 to 3 inches; gravelly sandy loam

Bk1—3 to 7 inches; loam

Bk2—7 to 15 inches; loam

Bk3—15 to 24 inches; sandy loam

2Bk4—24 to 28 inches; gravelly loamy sand

2Bk5—28 to 35 inches; gravelly loamy coarse sand

2Bk6—35 to 46 inches; loamy coarse sand

2Bk7—46 to 54 inches; gravelly coarse sand

2Bk8—54 to 67 inches; very gravelly loamy coarse sand

2C—67 to 88 inches; gravelly coarse sand

Jaconita soils

Landscape: Fan piedmonts (fig. 6)

Landform: Eroded fan remnants (fig. 5)

Position on landform: Backslopes

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 10 to 25 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded cobbles; about 40 percent rounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, New Mexico feathergrass,
oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 6e

Typical Profile

ABk—0 to 2 inches; very gravelly coarse sandy loam
Bk1—2 to 6 inches; very gravelly coarse sandy loam
Bk2—6 to 14 inches; extremely gravelly loamy coarse sand
Bk3—14 to 45 inches; very gravelly coarse sand
Bk4—45 to 56 inches; very gravelly loamy coarse sand
C1—56 to 78 inches; gravelly coarse sand
C2—78 to 92 inches; very gravelly coarse sand
C3—92 to 104 inches; loamy fine sand
C4—104 to 118 inches; fine sand

Minor Components Composition

Khapo and similar soils: About 6 percent
Haozous and similar soils: About 4 percent
Churipa and similar soils: About 3 percent
Urban land: About 2 percent

102—Khapo sandy loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,700 feet (1,646 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Khapo and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Khapo soils

Landscape: Fan piedmonts (fig. 6)

Landform: Eroded fan remnants (fig. 5)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, schist, loess, and volcanic ash

Slope: 3 to 8 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 1.8 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; sandy loam

BA—2 to 5 inches; sandy loam

Bt—5 to 11 inches; sandy clay loam

Btk1—11 to 29 inches; fine sandy loam

Btk2—29 to 43 inches; fine sandy loam

Bk1—43 to 72 inches; fine sandy loam

Bk2—72 to 89 inches; sandy loam

Bkb—89 to 120 inches; loam

Minor Components Composition

Jaconita and similar soils: About 5 percent

Panky and similar soils: About 4 percent

Soil Survey of Santa Fe County Area, New Mexico

Chupe and similar soils: About 3 percent
Zepol and similar soils: About 2 percent
Urban land: About 1 percent



Figure 6.—An area of Zozobra-Jaconita complex, 5 to 25 percent slopes. The Jaconita soils are on the steep backslopes, and the Zozobra soils are on the upper rounded summits. An area of Khapo sandy loam, 3 to 8 percent slopes is in the foreground. The Sangre de Cristo Mountains are in the background.

103—Zepol silt loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 7,000 feet (1,768 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Zepol and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Zepol soils

Landscape: Fan piedmonts

Landform: Narrow flood plains on eroded fan remnants (fig. 5)

Parent material: Alluvium derived from loess, volcanic ash, pumice, basalt lapilli, granite, and schist

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 10.7 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Flooding hazard: Occasional

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 8 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

AC1—0 to 3 inches; silt loam

AC2—3 to 6 inches; silt loam

Bt1—6 to 12 inches; silt loam

Bt2—12 to 22 inches; silty clay loam

Bt3—22 to 27 inches; silt loam

Btk1—27 to 35 inches; silt loam

Btk2—35 to 46 inches; silt loam

Bk1—46 to 75 inches; silt loam

Bk2—75 to 89 inches; silt loam

BCK—89 to 114 inches; loam

Minor Components Composition

Zia and similar soils: About 6 percent

Chupe and similar soils: About 5 percent

Khapo and similar soils: About 4 percent

104—Chupe-Riverwash complex, 1 to 3 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,500 feet (1,646 to 2,286 meters)

Mean annual precipitation: 9 to 13 inches (229 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Chupe and similar soils: 65 percent

Riverwash: 30 percent

Minor components: 5 percent

Component Descriptions

Chupe soils

Landscape: Valleys (fig. 7)

Landform: Narrow flood plains on valley floors (fig. 5)

Parent material: Alluvium derived from granite, gneiss, schist, granitic sandstone, and mudstone

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.1 inches (low)

Shrink-swell potential: About 1.9 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6s

Typical Profile

AC—0 to 3 inches; loamy coarse sand

C1—3 to 10 inches; gravelly coarse sand

C2—10 to 26 inches; gravelly coarse sand

C3—26 to 31 inches; very gravelly coarse sand

C4—31 to 37 inches; gravelly coarse sand

C5—37 to 42 inches; very gravelly coarse sand

C6—42 to 50 inches; sandy clay loam

C7—50 to 65 inches; loamy coarse sand

C8—65 to 84 inches; coarse sand

C9—84 to 96 inches; gravelly coarse sand

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Chupe soil.

Landscape: Valleys (fig. 7)

Landform: Flood plains on valley floors

Parent material: Alluvium derived from mixed

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 20 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Zia and similar soils: About 3 percent

Koshare and similar soils: About 1 percent

Khapo and similar soils: About 1 percent



Figure 7.—An area of Chupe-Riverwash complex, 1 to 3 percent slopes, flooded. Zia soils are on the terrace behind the Riverwash.

105—Dumps, sanitary landfill

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,500 feet (1,737 to 2,286 meters)

Mean annual precipitation: 10 to 15 inches (254 to 381 millimeters)

Mean annual air temperature: 46 to 52 degrees F (8.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Dumps: 80 percent

Minor components: 20 percent

Component Descriptions

Dumps

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Summits

Parent material: Mine spoil or earthy fill

Slope: 1 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded cobbles; about 25 percent subrounded gravel

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Land capability subclass (nonirrigated): 8e

Minor Components Composition

Encantado and similar soils: About 6 percent

Tanoan and similar soils: About 5 percent

Zozobra and similar soils: About 4 percent

Khapo and similar soils: About 3 percent

Nazario and similar soils: About 1 percent

Panky and similar soils: About 1 percent

106—Pits

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,700 feet (1,646 to 2,347 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Pits: 80 percent

Minor components: 20 percent

Component Descriptions

Pits

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 1 to 8 percent

Shape (down/across): Linear/convex

Surface fragments: About 5 percent subrounded cobbles; about 35 percent subrounded gravel

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 4.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Riovista and similar soils: About 8 percent

Devargas and similar soils: About 4 percent

Paraje and similar soils: About 3 percent

Delvalle and similar soils: About 3 percent

Agua Fria and similar soils: About 2 percent

107—Riverwash, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,500 feet (1,707 to 1,981 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Riverwash: 85 percent

Minor components: 15 percent

Component Descriptions

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Chupe and Cuyamungue soils.

Landscape: Valleys

Landform: Channels on valley floors (fig. 11)

Parent material: Alluvium derived from mixed

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 20 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Chupe and similar soils: About 8 percent

Cuyamungue and similar soils: About 7 percent

108—Zia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,600 feet (1,676 to 2,012 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Zia and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Zia soils

Landscape: Valleys (fig. 8)

Landform: Low stream terraces on valley floors (fig. 5)

Position on landform: Tread

Parent material: Alluvium derived from granitic sandstone and mudstone

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 49 to 57 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.4 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Very rare

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 4 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

AC—2 to 7 inches; fine sandy loam

C1—7 to 12 inches; very fine sandy loam

C2—12 to 22 inches; sand

C3—22 to 40 inches; very fine sandy loam

C4—40 to 53 inches; loam

2C5—53 to 69 inches; stratified sand to very gravelly coarse sand

3Btkb—69 to 79 inches; loam

3Bkb—79 to 91 inches; coarse sandy loam

3BCkb—91 to 99 inches; gravelly coarse sand

Minor Components Composition

Khapo and similar soils: About 6 percent
Zepol and similar soils: About 4 percent



Figure 8.—An area of Zia fine sandy loam, 0 to 2 percent slopes on a low stream terrace.

109—Tetilla loam, 1 to 5 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 6,800 feet (1,829 to 2,073 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Tetilla and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Tetilla soils

Landscape: Lava fields

Landform: Interfluves on undulating plateaus (fig. 9)

Position on landform: Toeslopes, footslopes

Parent material: Alluvium derived from loess, volcanic ash, and basalt

Slope: 1 to 5 percent

Shape (down/across): Concave/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.8 inches (high)

Shrink-swell potential: About 4.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 33 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, threeawn, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

AE—0 to 3 inches; loam

Bt1—3 to 8 inches; clay loam

Bt2—8 to 21 inches; clay loam

Btk1—21 to 40 inches; loam

Btk2—40 to 57 inches; sandy clay loam

Bk1—57 to 77 inches; gravelly sandy loam

Bk2—77 to 86 inches; gravelly sandy loam

Minor Components Composition

Calabasas and similar soils: About 4 percent
 Panky and similar soils: About 3 percent
 Jacanita and similar soils: About 2 percent
 Chupe and similar soils: About 1 percent

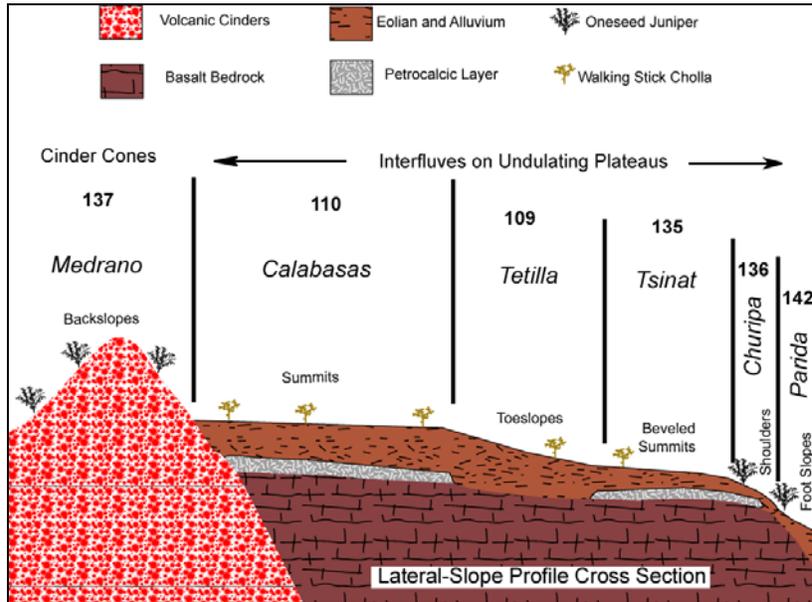


Figure 9.—Cross-section diagram of landform and landform position for map units west of Santa Fe on the Caja del Rio Plateau.

110—Calabasas loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Calabasas and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Calabasas soils

Landscape: Lava fields (fig. 10)

Landform: Interfluves on undulating plateaus (fig. 9)

Position on landform: Summits

Parent material: Eolian material derived from volcanic ash and pumice, and alluvium derived from loess and basalt

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Deep

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 39 to 59 inches to petrocalcic; 39 to 79 inches to duripan

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 7.4 inches (moderate)

Shrink-swell potential: About 2.9 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 45 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, threeawn, ring muhly, sand dropseed, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; loam

Bt—4 to 12 inches; clay loam

Btk1—12 to 17 inches; clay loam

Btk2—17 to 25 inches; loam

Bk—25 to 32 inches; very fine sandy loam

Bkq—32 to 49 inches; gravelly sandy loam

Bkqm—49 to 54 inches; cemented material

B'kq—54 to 70 inches; fine sandy loam

B'kqm—70 to 81 inches; cemented material

Minor Components Composition

Tetilla and similar soils: About 5 percent
Tsinat and similar soils: About 3 percent
Truehill and similar soils: About 1 percent
Churipa and similar soils: About 1 percent



Figure 10.—An area of Calabajas loam, 1 to 3 percent slopes. The Ortiz Mountains are in the background.

111—Khapo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,500 feet (1,676 to 2,286 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Khapo and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Khapo soils

Landscape: Valleys

Landform: High stream terraces (fig. 5)

Position on landform: Tread

Parent material: Alluvium derived from granitic sandstone, mudstone, and volcanic ash

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 1.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

BA—2 to 5 inches; fine sandy loam

Bt—5 to 10 inches; fine sandy loam

Btk1—10 to 20 inches; fine sandy loam

Btk2—20 to 28 inches; fine sandy loam

Btk3—28 to 35 inches; loam

Btk4—35 to 41 inches; sandy loam

BCkb1—41 to 54 inches; fine sandy loam

BCkb2—54 to 73 inches; gravelly coarse sandy loam

Cb—73 to 99 inches; stratified loamy sand to loam

Minor Components Composition

Zia and similar soils: About 8 percent

Haozous and similar soils: About 5 percent

Urban land: About 2 percent

112—Riovista gravelly loamy sand, 0 to 1 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 6,900 feet (1,829 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Riovista and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Riovista soils

Landscape: Valleys

Landform: Low flood plain steps on valley floors (fig. 11)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, and schist over residuum derived from granitic sandstone

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 25 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Rare

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, galleta, oneseed juniper, sideoats grama, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 3 inches; gravelly loamy sand

C1—3 to 8 inches; gravelly sand

C2—8 to 16 inches; very gravelly coarse sand

C3—16 to 35 inches; extremely cobbly coarse sand

C4—35 to 53 inches; extremely gravelly loamy coarse sand

C5—53 to 61 inches; gravelly loamy sand

C6—61 to 95 inches; stratified gravelly coarse sand to loamy sand

Minor Components Composition

Delvalle and similar soils: About 6 percent
 Urban land: About 4 percent
 Cuyamungue and similar soils: About 3 percent
 Khapo and similar soils: About 2 percent

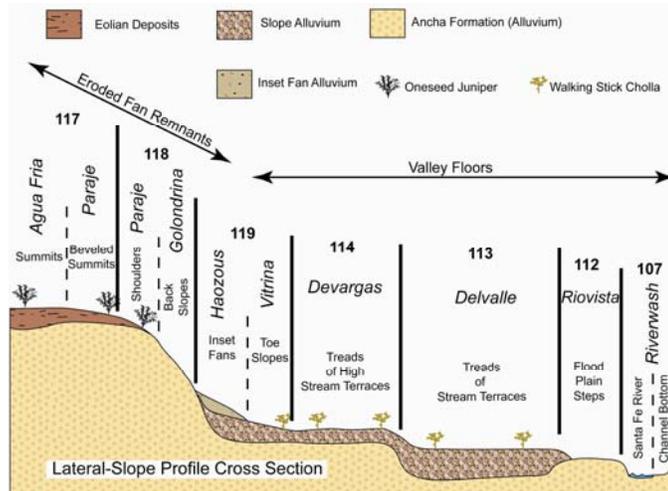


Figure 11.—Cross-section diagram of landform and landform position for map units along the Santa Fe River in town and southwest of Santa Fe.

113—Delvalle-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,300 feet (1,646 to 2,225 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Delvalle and similar soils: 60 percent

Urban land: 30 percent

Minor components: 10 percent

Component Descriptions

Delvalle soils

Landscape: Valleys

Landform: Stream terraces (fig. 11)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 3 percent subrounded cobbles; about 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 6.8 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; fine sandy loam

Bk1—3 to 10 inches; fine sandy loam

Bk2—10 to 19 inches; fine sandy loam

Bk3—19 to 34 inches; fine sandy loam

Bk4—34 to 54 inches; sandy loam

Bck1—54 to 63 inches; very gravelly sand

Bck2—63 to 72 inches; extremely gravelly coarse sand

C1—72 to 92 inches; very gravelly loamy coarse sand

C2—92 to 105 inches; sand

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential and industrial districts. It is intermingled with the Delvalle soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 2 percent.

Landscape: Valleys

Landform: Stream terraces

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth to restrictive feature: 0 inches to strongly contrasting textural stratification

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Devargas and similar soils: About 5 percent

Slope: 1 to 3 percent

Riovista and similar soils: About 3 percent

Dumps: About 2 percent

Slope: 0 to 8 percent

114—Devargas-Urban land complex, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,400 feet (1,646 to 2,256 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Devargas and similar soils: 50 percent

Urban land: 45 percent

Minor components: 5 percent

Component Descriptions

Devargas soils

Landscape: Valleys

Landform: High stream terraces (fig. 11)

Position on landform: Tread

Parent material: Alluvium derived from sandstone over alluvium derived from granite, gneiss, and schist

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 28 to 31 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 5.2 inches (low)

Shrink-swell potential: About 2.9 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt1—2 to 9 inches; loam

Bt2—9 to 17 inches; clay loam

Btk1—17 to 25 inches; clay loam

Btk2—25 to 30 inches; loam

Bk—30 to 33 inches; very gravelly coarse sandy loam

2BCK—33 to 42 inches; extremely gravelly loamy coarse sand

2C1—42 to 67 inches; extremely cobbly coarse sand

2C2—67 to 85 inches; extremely gravelly loamy coarse sand

2C3—85 to 94 inches; very gravelly coarse sand

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential and industrial districts. It is intermingled with the Devargas soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 2 percent.

Landscape: Valleys

Landform: High stream terraces

Slope: 0 to 3 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Delvalle and similar soils: About 3 percent

Panky and similar soils: About 1 percent

Dumps: About 1 percent

115—Panky-Urban land complex, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 6,900 feet (1,859 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Panky and similar soils: 55 percent

Urban land: 35 percent

Minor components: 10 percent

Component Descriptions

Panky soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, schist, loess, and volcanic ash

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.6 inches (high)

Shrink-swell potential: About 2.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 30 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, broom snakeweed, galleta, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt—2 to 9 inches; clay loam

Btk1—9 to 13 inches; clay loam

Btk2—13 to 17 inches; clay loam

Bk1—17 to 34 inches; loam

Bk2—34 to 45 inches; loam

Bkq1—45 to 64 inches; loam

Bkq2—64 to 92 inches; loam

Btyb—92 to 104 inches; loam

BCb—104 to 120 inches; loam

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential and industrial districts. It is intermingled with the Panky soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 2 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Agua Fria and similar soils: About 3 percent

Khapo and similar soils: About 3 percent

Devargas and similar soils: About 2 percent

Dumps: About 2 percent

116—Arents-Urban land-Orthents complex, 1 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,600 feet (1,646 to 2,316 meters)

Mean annual precipitation: 9 to 15 inches (229 to 381 millimeters)

Mean annual air temperature: 46 to 52 degrees F (8.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Arents and similar soils: 50 percent

Urban land: 25 percent

Orthents and similar soils: 20 percent

Minor components: 5 percent

Component Descriptions

Arents soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Toeslopes, backslopes

Parent material: Roadfill material derived from granite, gneiss, schist, sandstone, or siltstone

Slope: 1 to 45 percent

Shape (down/across): Convex/linear

Surface fragments: About 20 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.1 inches (moderate)

Shrink-swell potential: About 2.2 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 7 (slightly sodic)

Land capability subclass (nonirrigated): 8

Typical Profile

ABkp—0 to 4 inches; gravelly loam

Btkp1—4 to 26 inches; gravelly loam

Btkp2—26 to 46 inches; gravelly loam

Btkp3—46 to 63 inches; loam

BCkp—63 to 90 inches; loam

Urban land

Description: Urban land consists of asphalt highway and frontage road lanes and the steel and concrete of bridges and overpasses. This Urban land is along major highway and road corridors such as Interstate 25 and 40, U.S. highway 285, NM highway 14, and NM highway 599.

Landscape: Fan piedmonts

Soil Survey of Santa Fe County Area, New Mexico

Landform: Eroded fan remnants

Slope: 1 to 15 percent

Shape (down/across): Linear/linear

Depth to restrictive feature: 0 inches to strongly contrasting textural stratification

Land capability subclass (nonirrigated): 8s

Orthents soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Backslopes, toeslopes

Parent material: Roadcut material derived from granite, gneiss, schist, loess, sandstone, or siltstone

Slope: 30 to 60 percent

Shape (down/across): Linear/concave

Surface fragments: About 20 percent subrounded gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Land capability subclass (nonirrigated): 8e

Typical Profile

C1—0 to 7 inches; very gravelly coarse sand

C2—7 to 15 inches; very gravelly coarse sand

C3—15 to 80 inches; stratified gravelly coarse sand to very gravelly coarse sand

Minor Components Composition

Alire and similar soils: About 1 percent

Khapo and similar soils: About 1 percent

Panky and similar soils: About 1 percent

Predawn and similar soils: About 1 percent

Tanoan and similar soils: About 1 percent

117—Agua Fria-Paraje complex, 1 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,700 feet (1,707 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Agua Fria and similar soils: 60 percent

Paraje and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Agua Fria soils

Landscape: Fan piedmonts (fig. 12)

Landform: Eroded fan remnants (fig. 11)

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 20 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change; 49 to 59 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 6.0 inches (moderate)

Shrink-swell potential: About 2.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 28 percent

Gypsum average in horizon of maximum accumulation: About 3 percent

Salinity average in horizon of maximum accumulation: About 10 mmhos/cm
(moderately saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, threeawn, oneseed juniper, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

AE—0 to 3 inches; gravelly loam

Bt—3 to 7 inches; clay

Btk1—7 to 13 inches; gravelly clay loam

Btk2—13 to 19 inches; gravelly loam

Bk1—19 to 36 inches; gravelly loam

Bk2—36 to 53 inches; gravelly loam

Bky—53 to 61 inches; very gravelly coarse sandy loam

BCky1—61 to 69 inches; very gravelly loamy coarse sand

BCky2—69 to 88 inches; extremely gravelly coarse sand

C—88 to 100 inches; extremely gravelly loamy coarse sand

Paraje soils

Landscape: Fan piedmonts (fig. 12)

Landform: Eroded fan remnants (fig. 11)

Position on landform: Beveled summits

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 2 to 8 percent

Shape (down/across): Convex/convex

Surface fragments: About 5 percent rounded cobbles; about 40 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 6 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 3.4 inches (low)

Shrink-swell potential: About 1.8 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 4 inches; very gravelly loam

Bt—4 to 9 inches; very gravelly clay loam

Btk—9 to 13 inches; very gravelly sandy clay loam

Bk1—13 to 22 inches; very gravelly sandy clay loam

Bk2—22 to 40 inches; extremely gravelly coarse sandy loam

Bck1—40 to 54 inches; extremely gravelly loamy coarse sand

Bck2—54 to 77 inches; extremely gravelly coarse sandy loam

Bck3—77 to 87 inches; extremely gravelly sandy clay loam

Bck4—87 to 99 inches; extremely gravelly coarse sandy loam

Minor Components Composition

Panky and similar soils: About 5 percent

Golondrina and similar soils: About 3 percent

Urban land: About 2 percent



Figure 12.—An area of Agua Fria-Paraje complex, 1 to 8 percent slopes. Roadcut shows the profile of the Agua Fria soils. The upper profile shows very few rock fragments underlain by very gravelly and cobbly alluvium.

118—Golondrina-Paraje complex, 8 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 7,000 feet (1,768 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Golondrina and similar soils: 50 percent

Paraje and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Golondrina soils

Landscape: Fan piedmonts (fig. 13)

Landform: Eroded fan remnants (fig. 11)

Position on landform: Backslopes

Parent material: Colluvium and alluvium derived from granite, gneiss, schist, and loess

Slope: 15 to 45 percent

Shape (down/across): Linear/convex

Surface fragments: About 10 percent rounded cobbles; about 55 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, sideoats grama, New Mexico featherglass, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 4 inches; extremely gravelly coarse sandy loam

Btk1—4 to 8 inches; very gravelly sandy clay loam

Btk2—8 to 17 inches; very gravelly coarse sandy loam

Btk3—17 to 31 inches; extremely gravelly coarse sandy loam

Bck—31 to 42 inches; very gravelly coarse sandy loam

Bck1—42 to 53 inches; extremely gravelly coarse sandy loam

Bck2—53 to 67 inches; extremely gravelly coarse sandy loam

C—67 to 84 inches; extremely gravelly coarse sandy loam

Paraje soils

Landscape: Fan piedmonts (fig. 13)

Landform: Eroded fan remnants (fig. 11)

Position on landform: Shoulders

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 8 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 5 percent rounded cobbles; about 50 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 3.1 inches (low)

Shrink-swell potential: About 1.6 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 3 inches; very gravelly loam

Bt—3 to 6 inches; very gravelly clay loam

Btk—6 to 12 inches; very gravelly sandy clay loam

Bk1—12 to 21 inches; very gravelly sandy clay loam

Bk2—21 to 37 inches; very gravelly coarse sandy loam

Bck1—37 to 47 inches; extremely gravelly loamy coarse sand

Bck2—47 to 62 inches; extremely gravelly loamy coarse sand

Bck3—62 to 79 inches; extremely gravelly coarse sandy loam

C—79 to 94 inches; very gravelly sandy clay loam

Minor Components Composition

Paraje and similar soils: About 5 percent

Agua Fria and similar soils: About 4 percent

Urban land: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 13.—An area of Golondrina-Paraje complex, 8 to 45 percent slopes is in the background. An area of Vitrina-Haozous complex, 5 to 15 percent slopes, flooded is in the foreground. Vitrina soils are closest with Haozous soils on an inset fan directly beyond the Vitrina soils. Golondrina soils begin where the slope becomes steep.

119—Vitrina-Haozous complex, 5 to 15 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,600 feet (1,646 to 2,012 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Vitrina and similar soils: 50 percent

Haozous and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Vitrina soils

Landscape: Fan piedmonts (fig. 13)

Landform: Eroded fan remnants (fig. 11)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 20 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, black grama, galleta, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; gravelly coarse sandy loam

Bt1—3 to 11 inches; gravelly sandy loam

Bt2—11 to 16 inches; gravelly coarse sandy loam

Btk—16 to 26 inches; gravelly coarse sandy loam

Bk—26 to 41 inches; gravelly coarse sandy loam

Bck—41 to 53 inches; gravelly sandy loam

Bkb—53 to 61 inches; gravelly coarse sandy loam

Bckb1—61 to 75 inches; very gravelly coarse sandy loam

Bckb2—75 to 98 inches; gravelly coarse sandy loam

Cb—98 to 110 inches; gravelly sandy loam

Haozous soils

Landscape: Fan piedmonts (fig. 13)

Landform: Inset fans on eroded fan remnants (fig. 11)

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 5 to 15 percent

Shape (down/across): Linear/convex

Surface fragments: About 5 percent rounded cobbles; about 40 percent rounded gravels

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, black grama, galleta, oneseed juniper

Land capability subclass (nonirrigated): 6s

Typical Profile

AC1—0 to 1 inch; very gravelly coarse sandy loam

AC2—1 inch to 8 inches; very gravelly coarse sand

AB—8 to 14 inches; gravelly sandy loam

Bw1—14 to 27 inches; gravelly coarse sandy loam

Bw2—27 to 34 inches; gravelly coarse sandy loam

Bw3—34 to 44 inches; gravelly coarse sandy loam

Bk1—44 to 48 inches; gravelly coarse sandy loam

Bk2—48 to 57 inches; very gravelly coarse sandy loam

BCK1—57 to 89 inches; stratified gravelly loamy coarse sand to very gravelly coarse sand

BCK2—89 to 120 inches; stratified very gravelly loamy coarse sand to gravelly coarse sandy loam

Minor Components Composition

Riverwash: About 3 percent

Vitrina and similar soils: About 3 percent

Chupe and similar soils: About 2 percent

Golondrina and similar soils: About 1 percent

Wet spot: About 1 percent

120—Quarteles-Rock outcrop complex, 25 to 90 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,900 feet (1,676 to 2,103 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Quarteles and similar soils: 70 percent

Rock outcrop: 20 percent

Minor components: 10 percent

Component Descriptions

Quarteles soils

Landscape: Piedmont slopes (fig. 14)

Landform: Ridges, hills (fig. 15)

Position on landform: Backslopes

Parent material: Colluvium and residuum derived from micaceous sandstone, siltstone, mudstone, and fanglomerate

Slope: 25 to 90 percent

Shape (down/across): Linear, convex/convex

Surface fragments: About 25 percent rounded medium and coarse gravel

Depth class: Very shallow

Depth to restrictive feature: 4 to 10 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Sandstone Hills

Potential native vegetation: sideoats grama, blue grama, Indian ricegrass, mountain mahogany, oneseed juniper

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 2 inches; gravelly loam

2C1—2 to 5 inches; paragravelly loam

2C2—5 to 7 inches; very paragravelly loam

2Cr—7 to 17 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed sandstone or siltstone bedrock. It occurs as ledges or cliffs intermingled with the Quarteles soils.

Landscape: Piedmont slopes (fig. 14)

Landform: Hills, ridges (fig. 15)

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Sandstone and siltstone

Slope: 50 to 150 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: At surface, bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Minor Components Composition

Jaconita and similar soils: About 4 percent

Ojito and similar soils: About 3 percent

Xenmack and similar soils: About 2 percent

Chupe and similar soils: About 1 percent



Figure 14.—An area of Quarteles-Rock outcrop complex, 25 to 90 percent slopes. The Quarteles soils are on areas that have vegetation. Rock outcrop areas are devoid of vegetation.

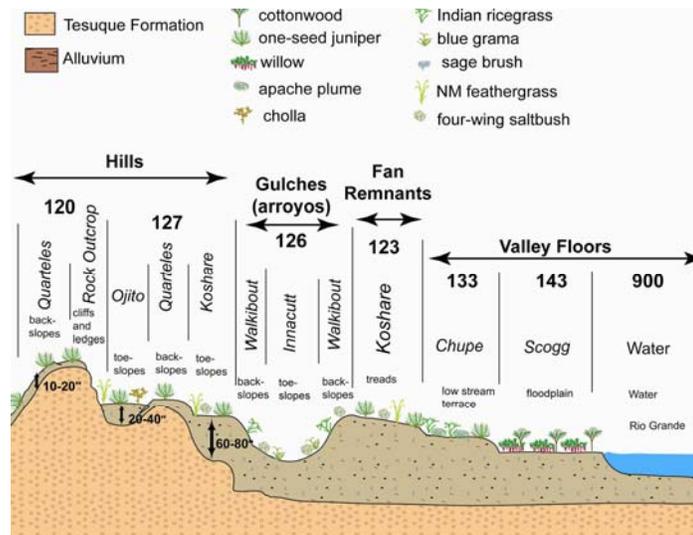


Figure 15.—Cross-section diagram of landform and landform position for map units north of Santa Fe.

121—El Rancho silt loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,700 feet (1,676 to 2,042 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

El Rancho and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

El Rancho soils

Landscape: Piedmont slopes (fig. 16)

Landform: Fan remnants (fig. 17)

Position on landform: Tread

Parent material: Alluvium derived from micaceous siltstone, sandstone, and mudstone

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 3 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.9 inches (high)

Shrink-swell potential: About 4.2 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 8 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; silt loam

Bw1—3 to 11 inches; silt loam

Bw2—11 to 24 inches; silt loam

Bw3—24 to 38 inches; silt loam

BC—38 to 53 inches; silt loam

C1—53 to 85 inches; silt loam

C2—85 to 120 inches; silty clay loam

Minor Components Composition

- Koshare and similar soils: About 5 percent
- Walkibout and similar soils: About 4 percent
- Urban land: About 3 percent
- Chupe and similar soils: About 3 percent



Figure 16.—An area of El Rancho silt loam, 1 to 3 percent slopes is in the foreground. An area of Quarteles-Rock outcrop complex, 25 to 90 percent slopes is in the background.

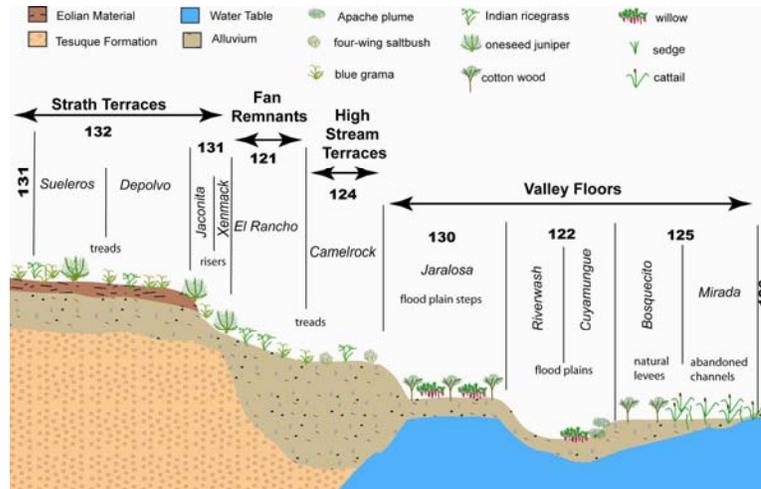


Figure 17.—Cross-section diagram of landform and landform position for map units north of Santa Fe, mostly along or adjacent to the Santa Cruz, Tesuque, Pojoaque, and Nambe River systems, and the Rio Grande.

122—Cuyamungue-Riverwash complex, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,500 feet (1,646 to 2,286 meters)

Mean annual precipitation: 9 to 14 inches (229 to 356 millimeters)

Mean annual air temperature: 47 to 52 degrees F (8.3 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Cuyamungue and similar soils: 60 percent

Riverwash: 30 percent

Minor components: 10 percent

Component Descriptions

Cuyamungue soils

Landscape: Valleys (fig. 18 and fig. 19)

Landform: Flood plains on valley floors (fig. 17)

Parent material: Alluvium derived from granite, gneiss, schist, and granitic sandstone

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 35 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Populus fremontii/Salix exigua-Salix/Carex

Potential native vegetation: Bigelow's rubber rabbitbrush, willow, Fremont cottonwood

Land capability subclass (nonirrigated): 4w

Typical Profile

AC—0 to 3 inches; very gravelly coarse sand

C1—3 to 17 inches; stratified gravelly coarse sand to very gravelly coarse sand

C2—17 to 24 inches; stratified gravelly coarse sand to very gravelly coarse sand

C3—24 to 35 inches; very gravelly coarse sand

C4—35 to 58 inches; stratified gravelly coarse sand to extremely gravelly coarse sand

C5—58 to 86 inches; stratified very gravelly coarse sand to extremely gravelly coarse sand

C6—86 to 100 inches; extremely gravelly loamy coarse sand

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Cuyamungue soil.

Landscape: Valleys (fig. 18 and fig. 19)

Landform: Flood plains on valley floors (fig. 17)

Parent material: Alluvium derived from mixed

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 20 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Zia and similar soils: About 4 percent

Bosquecito and similar soils: About 3 percent

Mirada and similar soils: About 2 percent

Wet spot: About 1 percent



Figure 18.—An area of Cuyamungue-Riverwash complex, 0 to 2 percent slopes, flooded, in the Santa Fe Canyon, southwest of Santa Fe.

Soil Survey of Santa Fe County Area, New Mexico



Figure 19.—An area of Cuyamungue-Riverwash complex, 0 to 2 percent slopes, flooded. Riverwash on the left. The Cuyamungue soils are in the middle. Trees are on an area of Mirada-Bosquecito complex, 0 to 2 percent slopes, flooded.

123—Koshare very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,800 feet (1,646 to 2,073 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Koshare and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Koshare soils

Landscape: Piedmont slopes

Landform: Fan remnants (fig. 15)

Position on landform: Tread

Parent material: Alluvium derived from micaceous sandstone and siltstone

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

Bk1—3 to 19 inches; fine sandy loam

Bk2—19 to 30 inches; fine sandy loam

Bk3—30 to 42 inches; fine sandy loam

Bck1—42 to 55 inches; very fine sandy loam

Bck2—55 to 72 inches; fine sandy loam

Bck3—72 to 83 inches; very fine sandy loam

2Bck4—83 to 96 inches; gravelly coarse sand

3Bck5—96 to 121 inches; very fine sandy loam

Minor Components Composition

El Rancho and similar soils: About 6 percent
Innacutt and similar soils: About 4 percent
Walkibout and similar soils: About 3 percent
Urban land: About 2 percent

124—Camelrock silty clay loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,500 feet (1,676 to 1,981 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Camelrock and similar soils: 80 percent

Minor components: 15 percent

Component Descriptions

Camelrock soils

Landscape: Valleys (fig. 20)

Landform: High stream terraces (fig. 17)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, schist, micaceous sandstone, siltstone, and mudstone

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 9.7 inches (high)

Shrink-swell potential: About 5.2 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 8 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Clayey Bottomland

Potential native vegetation: western wheatgrass, blue grama, fourwing saltbush, galleta

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; silty clay loam

Bw—3 to 7 inches; silty clay loam

Bss—7 to 14 inches; silty clay

Bkssy1—14 to 24 inches; silty clay

Bkssy2—24 to 29 inches; silty clay

BKky1—29 to 41 inches; stratified clay loam to very fine sandy loam

BKky2—41 to 55 inches; stratified loam to silty clay loam

BKky3—55 to 71 inches; clay

C1—71 to 98 inches; stratified loam to silty clay loam

C2—98 to 120 inches; stratified fine sandy loam to silty clay

Minor Components Composition

El Rancho and similar soils: About 8 percent

Walkibout and similar soils: About 4 percent

Urban land: About 3 percent



**Figure 20.—An area of Camelrock silty clay loam, 0 to 2 percent slopes.
The very flat Camelrock soils are in an area close to Pojoaque.**

125—Mirada-Bosquecito complex, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,600 feet (1,676 to 2,012 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Mirada and similar soils: 55 percent

Bosquecito and similar soils: 40 percent

Minor components: 5 percent

Component Descriptions

Mirada soils

Landscape: Valleys (fig. 19 and fig. 21)

Landform: Abandoned channels on valley floors (fig. 17)

Parent material: Alluvium derived from micaceous sandstone, siltstone, granite, gneiss, and schist

Slope: 0 to 1 percent

Shape (down/across): Linear/concave

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Very poorly drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 6.3 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Ponding hazard: Frequent

Seasonal high water table depth: About 0 to 5 inches

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Marshy

Potential native vegetation: rabbitfootgrass, bluejoint, rush, sedge, western wheatgrass

Land capability subclass (nonirrigated): 5c

Typical Profile

A—0 to 2 inches; silt loam

ACg—2 to 9 inches; silt loam

Cg1—9 to 25 inches; stratified silt loam to fine sandy loam

Cg2—25 to 34 inches; stratified very fine sandy loam to sandy loam

Cg3—34 to 43 inches; stratified fine sandy loam to loamy sand

Cg4—43 to 58 inches; stratified gravelly coarse sand to gravelly coarse sand

Cg5—58 to 80 inches; stratified gravelly coarse sand to very gravelly coarse sand

Bosquecito soils

Landscape: Valleys (fig. 19 and fig. 21)

Landform: Natural levees flood plains on valley floors (fig. 17)

Parent material: Alluvium derived from micaceous sandstone, siltstone, granite, gneiss, and schist

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Somewhat poorly drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 6.5 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Seasonal high water table depth: About 24 to 31 inches

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 7 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 4 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: *Populus fremontii*/*Salix exigua*-*Salix*/*Carex*

Potential native vegetation: Kentucky bluegrass, cottonwood, western wheatgrass

Land capability subclass (nonirrigated): 2w

Typical Profile

A—0 to 1 inch; very fine sandy loam

AC1—1 inch to 5 inches; loamy very fine sand

AC2—5 to 10 inches; loamy sand

C1—10 to 16 inches; fine sandy loam

C2—16 to 26 inches; fine sandy loam

Cg1—26 to 33 inches; fine sandy loam

Cg2—33 to 42 inches; stratified fine sandy loam to loamy sand

Cg3—42 to 51 inches; stratified very fine sandy loam to loamy sand

Cg4—51 to 64 inches; stratified gravelly coarse sand to loamy very fine sand

C'—64 to 84 inches; stratified gravelly coarse sand to very gravelly coarse sand

Minor Components Composition

Cuyamungue and similar soils: About 2 percent

Jaralosa and similar soils: About 2 percent

Scogg and similar soils: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 21.—An area of Mirada-Bosquecito complex, 0 to 2 percent slopes, flooded. The Mirada soils are in the foreground with an abundant growth of sedges and cattails. The Bosquecito soils are in the background covered with trees.

126—Walkibout-Innacutt complex, 2 to 80 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,100 feet (1,646 to 2,164 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Walkibout and similar soils: 55 percent

Innacutt and similar soils: 25 percent

Minor components: 20 percent

Component Descriptions

Walkibout soils

Landscape: Piedmont slopes (fig. 22)

Landform: Gulches (fig. 15)

Position on landform: Backslopes

Parent material: Colluvium and alluvium derived from micaceous sandstone, siltstone, mudstone, and fanglomerate

Slope: 25 to 80 percent

Shape (down/across): Linear/convex

Surface fragments: About 5 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 43 to 67 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 2.4 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Limy

Potential native vegetation: western wheatgrass, galleta, winterfat, Indian ricegrass, fourwing saltbush

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 2 inches; loam

B_{Ck}—2 to 7 inches; fine sandy loam

C₁—7 to 18 inches; very fine sandy loam

C₂—18 to 25 inches; silt loam

C₃—25 to 42 inches; silt loam

Soil Survey of Santa Fe County Area, New Mexico

- C4—42 to 49 inches; stratified fine sandy loam to gravelly coarse sand
- C5—49 to 55 inches; very fine sandy loam
- C6—55 to 72 inches; stratified loamy fine sand to gravelly coarse sand
- C7—72 to 87 inches; stratified very fine sandy loam to loamy very fine sand
- C8—87 to 120 inches; stratified silt loam to very fine sandy loam

Innacutt soils

Landscape: Piedmont slopes (fig. 22)

Landform: Inset fans on gulches (fig. 15)

Position on landform: Toeslopes

Parent material: Alluvium derived from micaceous sandstone, siltstone, mudstone, and fanglomerate

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 7.1 inches (moderate)

Shrink-swell potential: About 1.7 percent (low)

Flooding hazard: Frequent

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Deep Sand

Potential native vegetation: Indian ricegrass, blue grama, sand dropseed, galleta

Land capability subclass (nonirrigated): 7c

Typical Profile

- AC1—0 to 2 inches; fine sandy loam
- AC2—2 to 6 inches; very fine sandy loam
- C1—6 to 18 inches; stratified fine sandy loam to very fine sandy loam
- C2—18 to 24 inches; fine sandy loam
- C3—24 to 33 inches; fine sandy loam
- C4—33 to 47 inches; stratified very fine sandy loam to loamy very fine sand
- C5—47 to 53 inches; very gravelly coarse sand
- 2C6—53 to 98 inches; stratified very fine sandy loam to silt loam
- 2C7—98 to 120 inches; stratified very fine sandy loam to fine sandy loam

Minor Components Composition

- Koshare and similar soils: About 5 percent
- Chupe and similar soils: About 4 percent
- Quarteles and similar soils: About 4 percent
- El Rancho and similar soils: About 3 percent
- Riverwash: About 2 percent
- Urban land: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 22.—An area of Walkibout-Innacutt complex, 2 to 80 percent slopes, flooded. The Walkibout soils are on steep slopes. The Innacutt soils are on flood plains. An inclusion of Riverwash is in the right center.

127—Ojito-Koshare-Quarteles complex, 5 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,600 feet (1,646 to 2,012 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Ojito and similar soils: 40 percent

Koshare and similar soils: 30 percent

Quarteles and similar soils: 20 percent

Minor components: 10 percent

Component Descriptions

Ojito soils

Landscape: Piedmont slopes

Landform: Hills (fig. 15)

Position on landform: Shoulders, footslopes

Parent material: Eolian material and slope alluvium derived from micaceous sandstone and siltstone over residuum weathered from micaceous sandstone

Slope: 5 to 25 percent

Shape (down/across): Convex/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Sandy Slopes

Potential native vegetation: Indian ricegrass, New Mexico feathergrass, sand dropseed

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; loamy very fine sand

Bk1—3 to 10 inches; loamy very fine sand

Bk2—10 to 18 inches; loamy very fine sand

2BCK1—18 to 25 inches; very fine sandy loam

3BCK2—25 to 35 inches; very paragravelly very fine sand

3Cr—35 to 45 inches; cemented bedrock

Koshare soils

Landscape: Piedmont slopes

Landform: Hills (fig. 15)

Position on landform: Toeslopes

Parent material: Eolian material and slope alluvium derived from sandstone and siltstone over residuum weathered from micaceous sandstone, eolian material and slope alluvium derived from micaceous sandstone and siltstone over residuum weathered from micaceous sandstone

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 3 inches; very fine sandy loam

Bk1—3 to 15 inches; very fine sandy loam

Bk2—15 to 29 inches; very fine sandy loam

Bk3—29 to 41 inches; very fine sandy loam

BCk—41 to 50 inches; very fine sandy loam

2BCk1—50 to 59 inches; paragravelly loamy very fine sand

2BCk2—59 to 67 inches; very paragravelly loamy very fine sand

2Cr—67 to 77 inches; cemented bedrock

Quarteles soils

Landscape: Piedmont slopes

Landform: Hills (fig. 15)

Position on landform: Backslopes

Parent material: Colluvium derived from sandstone, siltstone, and mudstone over residuum weathered from micaceous sandstone and siltstone

Slope: 25 to 50 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent rounded gravel; about 5 percent subangular channers

Depth class: Very shallow

Depth to restrictive feature: 4 to 10 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Soil Survey of Santa Fe County Area, New Mexico

Available water capacity: About 1.3 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Sandstone Hills

Potential native vegetation: sideoats grama, blue grama, Indian ricegrass, mountain mahogany, oneseed juniper

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; gravelly very fine sandy loam

2C1—3 to 6 inches; very paragravelly very fine sandy loam

2C2—6 to 9 inches; extremely paragravelly very fine sandy loam

2Cr—9 to 19 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 4 percent

Urban land: About 2 percent

Walkabout and similar soils: About 2 percent

Riverwash: About 1 percent

Innacutt and similar soils: About 1 percent

128—Koshare-Urban land complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,500 feet (1,676 to 1,981 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Koshare and similar soils: 55 percent

Urban land: 35 percent

Minor components: 10 percent

Component Descriptions

Koshare soils

Landscape: Piedmont slopes

Landform: Fan remnants

Position on landform: Tread

Parent material: Alluvium derived from micaceous sandstone and siltstone

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's
rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

Bk1—3 to 19 inches; fine sandy loam

Bk2—19 to 30 inches; fine sandy loam

Bk3—30 to 42 inches; fine sandy loam

BCK1—42 to 55 inches; very fine sandy loam

BCK2—55 to 72 inches; fine sandy loam

BCK3—72 to 83 inches; very fine sandy loam

2BCK4—83 to 96 inches; gravelly coarse sand

3BCK5—96 to 121 inches; very fine sandy loam

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, and sidewalks. Urban land is in and adjacent to communities in northern Santa Fe County such as Cuyamungue, El Rancho, Jacona, Jaconita, Nambe, Pojoaque, Tesuque Pueblo, and their surrounding areas. It is intermingled with Koshare soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 3 percent.

Landscape: Piedmont slopes

Landform: Fan remnants

Slope: 2 to 6 percent

Shape (down/across): Linear/linear

Minor Components Composition

El Rancho and similar soils: About 5 percent

Innacutt and similar soils: About 3 percent

Walkibout and similar soils: About 2 percent

129—El Rancho-Urban land complex, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,500 feet (1,707 to 1,981 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

El Rancho and similar soils: 55 percent

Urban land: 35 percent

Minor components: 10 percent

Component Descriptions

El Rancho soils

Landscape: Piedmont slopes

Landform: Fan remnants

Position on landform: Tread

Parent material: Alluvium derived from micaceous siltstone, sandstone, and mudstone

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 3 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.9 inches (high)

Shrink-swell potential: About 4.2 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 8 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; silt loam

Bw1—3 to 11 inches; silt loam

Bw2—11 to 24 inches; silt loam

Bw3—24 to 38 inches; silt loam

BC—38 to 53 inches; silt loam

C1—53 to 85 inches; silt loam

C2—85 to 120 inches; silty clay loam

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, and sidewalks. Urban land is in and adjacent to communities in northern Santa Fe County such as Cuyamungue, El Rancho, Jacona, Jaconita, Nambe, Pojoaque, Tesuque Pueblo, and their surrounding areas. It is intermingled with El Rancho soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 3 percent.

Landscape: Piedmont slopes

Landform: Fan remnants

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Minor Components Composition

Koshare and similar soils: About 6 percent

Walkibout and similar soils: About 3 percent

Chupe and similar soils: About 1 percent

130—Jaralosa very fine sandy loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,900 feet (1,646 to 2,103 meters)

Mean annual precipitation: 9 to 14 inches (229 to 356 millimeters)

Mean annual air temperature: 47 to 52 degrees F (8.3 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Jaralosa and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Jaralosa soils

Landscape: Valleys (fig. 23)

Landform: Flood plain steps on valley floors (fig. 17)

Position on landform: Tread

Parent material: Alluvium derived from micaceous sandstone and siltstone over alluvium derived from granite, gneiss, or schist

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Depth to restrictive feature: 20 to 39 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: *Populus fremontii*/*Salix exigua*-*Salix*/*Carex*

Potential native vegetation: willow, cottonwood, sedge

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 1 inch; very fine sandy loam

AC1—1 inch to 6 inches; loamy very fine sand

AC2—6 to 10 inches; very fine sandy loam

ACnz—10 to 16 inches; very fine sandy loam

Cnz1—16 to 22 inches; loamy very fine sand

Cnz2—22 to 35 inches; stratified very fine sandy loam to loamy very fine sand

2C1—35 to 42 inches; gravelly sand, gravelly coarse sand

2C2—42 to 53 inches; stratified very gravelly coarse sand to very gravelly coarse sand

2C3—53 to 84 inches; very gravelly coarse sand

Minor Components Composition

Bosquecito and similar soils: About 6 percent
Innacutt and similar soils: About 4 percent
Cuyamungue and similar soils: About 3 percent
Urban land: About 2 percent



Figure 23.—An area of Jaralosa very fine sandy loam, 0 to 2 percent slopes, flooded.

131—Jaconita-Xenmack complex, 25 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,600 feet (1,646 to 2,012 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Jaconita and similar soils: 45 percent

Xenmack and similar soils: 45 percent

Minor components: 10 percent

Component Descriptions

Jaconita soils

Landscape: Piedmont slopes

Landform: Upper strath terraces (fig. 17)

Position on landform: Riser

Parent material: Colluvium and slope alluvium derived from granite, gneiss, schist, and micaceous sandstone

Slope: 25 to 60 percent

Shape (down/across): Convex/linear

Surface fragments: About 50 percent rounded gravel; about 5 percent rounded cobbles

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.1 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 7 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 7e

Typical Profile

ABk—0 to 2 inches; very gravelly coarse sandy loam

Bk1—2 to 5 inches; very gravelly coarse sandy loam

Bk2—5 to 10 inches; very gravelly loamy coarse sand

Bck1—10 to 22 inches; very gravelly coarse sand

Bck2—22 to 42 inches; extremely gravelly coarse sand

C1—42 to 65 inches; extremely gravelly coarse sand

2C2—65 to 77 inches; very fine sandy loam

Soil Survey of Santa Fe County Area, New Mexico

2C3—77 to 99 inches; loam
2C4—99 to 108 inches; loamy fine sand
2C5—108 to 120 inches; loam

Xenmack soils

Landscape: Piedmont slopes
Landform: Lower strath terraces (fig. 17)
Position on landform: Riser
Parent material: Colluvium derived from granite, gneiss, and schist over residuum derived from sandstone and siltstone
Slope: 25 to 60 percent
Shape (down/across): Concave/linear
Surface fragments: About 50 percent rounded gravel; about 15 percent rounded cobbles
Depth class: Moderately deep
Depth to restrictive feature: 20 to 39 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 4.6 inches (low)
Shrink-swell potential: About 2.0 percent (low)
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 10 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Gravelly
Potential native vegetation: black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, galleta, twoneedle pinyon
Land capability subclass (nonirrigated): 7e

Typical Profile

ABk—0 to 2 inches; extremely gravelly sandy loam
Bk1—2 to 7 inches; very gravelly sandy loam
Bk2—7 to 16 inches; gravelly loam
Bk3—16 to 24 inches; gravelly loam
2BCk1—24 to 29 inches; paragravelly clay loam
2BCk2—29 to 37 inches; very paragravelly loam
2Cr—37 to 47 inches; cemented bedrock

Minor Components Composition

Quarteles and similar soils: About 5 percent
Zozobra and similar soils: About 3 percent
Depolvo and similar soils: About 2 percent

132—Depolvo-Sueleros complex, 2 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,500 feet (1,676 to 1,981 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Depolvo and similar soils: 45 percent

Sueleros and similar soils: 40 percent

Minor components: 15 percent

Component Descriptions

Depolvo soils

Landscape: Piedmont slopes (fig. 24)

Landform: Higher portions on strath terraces (fig. 17)

Position on landform: Tread

Parent material: Loess derived from micaceous sandstone and siltstone

Slope: 2 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 9.4 inches (high)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 18 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 6 (slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

Btk1—3 to 9 inches; loam

Btk2—9 to 21 inches; loam

Btk3—21 to 38 inches; loam

Bk1—38 to 48 inches; loam

Bk2—48 to 58 inches; loam

Btkb—58 to 79 inches; fine sandy loam

Bkb1—79 to 93 inches; sandy loam

Bkb2—93 to 103 inches; fine sandy loam

Bkb3—103 to 109 inches; gravelly sandy loam

Sueleros soils

Landscape: Piedmont slopes (fig. 24)

Landform: Beveled, lower portions on strath terraces (fig. 17)

Position on landform: Tread

Parent material: Loess derived from micaceous sandstone and siltstone over alluvium derived from granite, gneiss, and schist

Slope: 2 to 15 percent

Shape (down/across): Concave/linear

Surface fragments: About 10 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 6 inches to natric

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 20 mmhos/cm (strongly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 45 (strongly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

Btkn1—3 to 6 inches; loam

Btkn2—6 to 14 inches; loam

Btkn3—14 to 26 inches; loam

Bkn—26 to 37 inches; very gravelly sandy loam

2Bk1—37 to 44 inches; very gravelly coarse sand

2Bk2—44 to 54 inches; very gravelly coarse sand

3BCk1—54 to 70 inches; loam

3BCk2—70 to 92 inches; very fine sandy loam

3C—92 to 120 inches; very fine sandy loam

Minor Components Composition

Jaconita and similar soils: About 7 percent

Xenmack and similar soils: About 5 percent

Ojito and similar soils: About 3 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 24.—An area of Depolvo-Sueleros complex, 2 to 15 percent slopes. The Sangre de Cristo Mountains are in the background.

133—Chupe fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,300 to 6,600 feet (1,615 to 2,012 meters)

Mean annual precipitation: 9 to 13 inches (229 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Chupe and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Chupe soils

Landscape: Valleys (fig. 25)

Landform: Low stream terraces on valley floors (fig. 15)

Parent material: Alluvium derived from granite and quartzite

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Rare

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Sandy

Potential native vegetation: sand dropseed, black grama, blue grama, Bigelow's
rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; fine sandy loam

C1—4 to 8 inches; sand

C2—8 to 23 inches; gravelly coarse sand

C3—23 to 41 inches; gravelly coarse sand

C4—41 to 55 inches; gravelly coarse sand

C5—55 to 76 inches; gravelly coarse sand

C6—76 to 94 inches; very gravelly coarse sand

Minor Components Composition

Metate and similar soils: About 5 percent

Scogg and similar soils: About 5 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 25.—An area of Chupe fine sandy loam, 1 to 3 percent slopes with Vanto soils at the mouth of Canon de los Frijoles. An area of Ildefonso-Rock outcrop-Rubble land complex, 30 to 70 percent slopes is in the background.

134—Bosquecito fine sandy loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,200 feet (1,707 to 1,890 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Bosquecito and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Bosquecito soils

Landscape: Valleys

Landform: Flood plain steps on valley floors

Parent material: Alluvium derived from micaceous sandstone and siltstone over alluvium derived from granite, gneiss, or schist

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded gravel

Depth class: Very deep

Drainage class: Somewhat poorly drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.0 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Populus fremontii/Salix exigua-Salix/Carex

Potential native vegetation: cottonwood, western wheatgrass, willow

Land capability subclass (nonirrigated): 2c

Typical Profile

A—0 to 2 inches; fine sandy loam

AC1—2 to 5 inches; very fine sandy loam

AC2—5 to 8 inches; loamy sand

C1—8 to 12 inches; fine sandy loam

C2—12 to 19 inches; fine sandy loam

Cg1—19 to 29 inches; sandy loam

Cg2—29 to 42 inches; gravelly coarse sand

Cg3—42 to 56 inches; very gravelly coarse sand

C'—56 to 82 inches; very gravelly coarse sand

Minor Components Composition

Mirada and similar soils: About 4 percent

Jaralosa and similar soils: About 3 percent

Cuyamungue and similar soils: About 3 percent

135—Tsinat gravelly loam, 1 to 6 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Tsinat and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Tsinat soils

Landscape: Lava fields

Landform: Interfluves on undulating plateaus (fig. 9)

Position on landform: Beveled summits

Parent material: Eolian material and alluvium derived from basalt and volcanic ash

Slope: 1 to 6 percent

Shape (down/across): Linear/convex

Surface fragments: About 5 percent subangular cobbles; about 25 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to duripan and/or petrocalcic; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.9 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 40 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Cinder

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, threeawn, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; gravelly loam

Btk1—2 to 9 inches; loam

Btk2—9 to 14 inches; cobbly clay loam

Btk3—14 to 21 inches; cobbly clay loam

Bk—21 to 28 inches; gravelly loam

Bkqm—28 to 45 inches; cemented material

B'k—45 to 54 inches; gravelly sandy loam

2R—54 to 64 inches; cemented bedrock

Minor Components Composition

Calabasas and similar soils: About 4 percent

Medrano and similar soils: About 3 percent

Churipa and similar soils: About 3 percent

136—Churipa very cobbly sandy loam, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 6,700 feet (1,737 to 2,042 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Churipa and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Churipa soils

Landscape: Lava fields

Landform: Interfluves on undulating plateaus (fig. 9)

Position on landform: Shoulders

Parent material: Alluvium derived from basalt, volcanic ash, and scoria (cinders)

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 2 percent subangular stones; about 25 percent subangular cobbles; about 15 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to petrocalcic and/or duripan; 20 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.2 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 40 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Shallow

Potential native vegetation: blue grama, sideoats grama, little bluestem, galleta, oneseed juniper, skunkbush sumac

Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 1 inch; very cobbly loam

Bt1—1 inch to 6 inches; loam

Bt2—6 to 9 inches; clay loam

Btk—9 to 13 inches; cobbly loam

Bk—13 to 17 inches; cobbly loam

Bkqm—17 to 30 inches; cemented material

B'k—30 to 36 inches; extremely cobbly loamy sand

2R—36 to 46 inches; cemented bedrock

Minor Components Composition

Tsinat and similar soils: About 4 percent
Medrano and similar soils: About 3 percent
Parida and similar soils: About 2 percent
Rock outcrop: About 1 percent

137—Medrano extremely gravelly loam, 5 to 65 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 6,900 feet (1,737 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Medrano and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Medrano soils

Landscape: Lava fields (fig. 26)

Landform: Cinder cones (fig. 9)

Position on landform: Backslopes

Parent material: Slope alluvium derived from volcanic ash over residuum weathered from scoria (cinders)

Slope: 5 to 65 percent

Shape (down/across): Convex/linear

Surface fragments: Less than 1 percent subrounded stones; about 10 percent subrounded cobbles; about 55 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to duripan

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 55 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 6 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, black grama, New Mexico feathergrass, galleta, sideoats grama, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; extremely gravelly loam

Bt1—3 to 7 inches; very gravelly loam

Bt2—7 to 10 inches; very gravelly clay loam

Btk—10 to 14 inches; very gravelly clay loam

Bk—14 to 19 inches; very gravelly loam

Bkqm—19 to 30 inches; cemented material

BCK1—30 to 49 inches; extremely gravelly cinders

BCK2—49 to 80 inches; extremely gravelly cinders

Minor Components Composition

Churipa and similar soils: About 4 percent
Tsinat and similar soils: About 3 percent
Rock outcrop: About 3 percent



Figure 26.—A Cinder mine in an area of Medrano extremely gravelly loam, 5 to 65 percent slopes. The Medrano soils are exposed by the pit. White duripan is evident in the upper part of the profile.

138—Andanada very gravelly loam, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,700 feet (1,768 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Andanada and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Andanada soils

Landscape: Lava plateaus

Landform: Undulating mesas, plateaus (fig. 27)

Position on landform: Shoulders

Parent material: Slope alluvium derived from basalt

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 35 percent subangular gravel; about 10 percent subangular cobbles; less than 1 percent subangular stones

Depth class: Very shallow

Depth to restrictive feature: 2 to 10 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 0.8 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: New Mexico feathergrass, black grama, sideoats grama, blue grama, oneseed juniper

Land capability subclass (nonirrigated): 7s

Typical Profile

Ak—0 to 3 inches; very gravelly loam

Bk—3 to 9 inches; very gravelly loam

2R—9 to 19 inches; cemented bedrock

Minor Components Composition

Chiminet and similar soils: About 5 percent

Rock outcrop: About 5 percent

Soil Survey of Santa Fe County Area, New Mexico

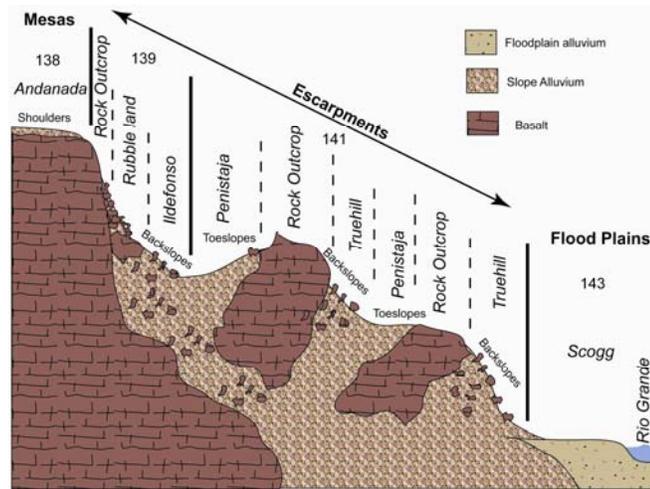


Figure 27.—Cross-section diagram of landform and landform position for map units in White Rock Canyon along the Rio Grande.

139—Idefonso-Rock outcrop-Rubble land complex, 30 to 70 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,700 feet (1,676 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Idefonso and similar soils: 55 percent

Rock outcrop: 20 percent

Rubble land: 15 percent

Minor components: 10 percent

Component Descriptions

Idefonso soils

Landscape: Lava plateaus (fig. 25)

Landform: Escarpments (fig. 27)

Position on landform: Backslopes

Parent material: Colluvium derived from basalt over residuum weathered from fanglomerate

Slope: 30 to 70 percent

Shape (down/across): Linear/linear

Surface fragments: About 50 percent subangular gravel; about 20 percent subangular cobbles; about 5 percent subangular stones; about 3 percent subangular boulders

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.2 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 20 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 7e

Typical Profile

Ak—0 to 5 inches; extremely gravelly sandy loam

Bk1—5 to 15 inches; very gravelly sandy loam

Bk2—15 to 24 inches; very cobbly sandy loam

Bk3—24 to 56 inches; very cobbly sandy loam

2Bk4—56 to 67 inches; gravelly coarse sand

2Bk5—67 to 84 inches; very gravelly coarse sand

Rock outcrop

Description: Rock outcrop consists of exposed basalt bedrock. It occurs as steeply sloping exposures and vertical cliffs and ledges generally located above the Ildefonso soil and above Rubble land.

Landscape: Lava plateaus (fig. 25)

Landform: Escarpments, canyons (fig. 27)

Parent material: Basalt

Slope: 100 to 300 percent

Depth to restrictive feature: 0 inches to bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Rubble land

Description: Rubble land consists of talus of irregularly shaped cobbles, stones, and boulders that are devoid of vegetation. It is on very steeply sloping backslopes below basalt cliffs and is the result of parts of the cliff breaking off and tumbling down slope.

Landscape: Lava plateaus (fig. 25)

Landform: Escarpments, canyons (fig. 27)

Parent material: Basalt

Slope: 70 to 90 percent

Runoff class: High

Land capability subclass (nonirrigated): 8

Minor Components Composition

Zacaton and similar soils: About 6 percent

Abrojo and similar soils: About 4 percent

140—Truehill very cobbly loam, 25 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,900 to 7,000 feet (1,798 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Truehill and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Truehill soils

Landscape: Lava fields

Landform: Undulating hills on plateaus

Position on landform: Backslopes, shoulders

Parent material: Slope alluvium and colluvium derived from andesite

Slope: 25 to 45 percent

Shape (down/across): Convex/convex

Surface fragments: About 2 percent subangular stones; about 30 percent subangular cobbles; about 25 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.4 inches (low)

Shrink-swell potential: About 3.1 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 32 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 3 inches; very cobbly loam

Bt1—3 to 7 inches; very cobbly clay loam

Bt2—7 to 12 inches; very cobbly clay loam

Btk—12 to 18 inches; very cobbly loam

Bk1—18 to 31 inches; very cobbly loam

2Bk2—31 to 42 inches; extremely gravelly coarse sandy loam

2Bck1—42 to 56 inches; extremely gravelly coarse sandy loam

2Bck2—56 to 80 inches; extremely gravelly coarse sandy loam

Minor Components Composition

Rock outcrop: About 5 percent

Penistaja and similar soils: About 3 percent

Ildefonso and similar soils: About 2 percent

141—Truehill-Penistaja family-Rock outcrop complex, 4 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,300 feet (1,646 to 1,920 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Truehill and similar soils: 60 percent

Penistaja family and similar soils: 20 percent

Rock outcrop: 10 percent

Minor components: 10 percent

Component Descriptions

Truehill soils

Landscape: Breaks

Landform: Toreva blocks on escarpments (fig. 27)

Position on landform: Backslopes

Parent material: Colluvium derived from basalt

Slope: 15 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 7 percent subangular boulders; about 4 percent subangular stones; about 30 percent subangular cobbles; about 25 percent subangular medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 4.6 inches (low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 20 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 2 inches; extremely cobbly loam

Bt—2 to 9 inches; very cobbly loam

Bk1—9 to 17 inches; very cobbly loam

Bk2—17 to 27 inches; very cobbly loam

Bk3—27 to 45 inches; very cobbly loam

Bk4—45 to 68 inches; extremely cobbly loam

Bk5—68 to 82 inches; very cobbly loam

Penistaja family soils

Landscape: Breaks

Landform: Escarpments (fig. 27)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, and basalt

Slope: 4 to 10 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 3.7 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom
snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; sandy loam

Bt—3 to 12 inches; sandy clay loam

Btk1—12 to 28 inches; fine sandy loam

Btk2—28 to 45 inches; loam

Bk—45 to 80 inches; sandy loam

BC—80 to 90 inches; loam

Rock outcrop

Description: Rock outcrop consists of exposed basalt bedrock. It occurs as steeply sloping bedrock and knobs on cliffs and Toreva Blocks and is intermingled with the Truehill soils.

Landscape: Breaks (fig. 27)

Landform: Toreva blocks on escarpments

Parent material: Basalt

Slope: 20 to 120 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: 0 inches to bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Minor Components Composition

Sandoval and similar soils: About 6 percent

Parida and similar soils: About 4 percent

142—Parida gravelly loam, 3 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 6,800 feet (1,859 to 2,073 meters)

Mean annual precipitation: 10 to 12 inches (254 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Parida and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Parida soils

Landscape: Lava fields

Landform: Undulating plateaus (fig. 9)

Position on landform: Footslopes

Parent material: Slope alluvium derived from basalt and pyroclastics

Slope: 3 to 10 percent

Shape (down/across): Concave/concave

Surface fragments: About 20 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.2 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, New Mexico feathergrass,
oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 2 inches; gravelly loam

A2—2 to 6 inches; gravelly loam

Bw1—6 to 13 inches; very gravelly coarse sandy loam

Bw2—13 to 18 inches; gravelly coarse sandy loam

Bk—18 to 34 inches; gravelly coarse sandy loam

C—34 to 82 inches; extremely gravelly loamy coarse sand

Minor Components Composition

Churipa and similar soils: About 7 percent

Penistaja and similar soils: About 3 percent

143—Scogg very fine sandy loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,300 to 5,600 feet (1,615 to 1,707 meters)

Mean annual precipitation: 9 to 12 inches (229 to 305 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Scogg and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Scogg soils

Landscape: Valleys

Landform: Flood plains on valley floors (fig. 15 and fig. 27)

Parent material: Alluvium derived from granite and quartzite

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent rounded medium and coarse gravel

Depth class: Very deep

Drainage class: Poorly drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.9 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Seasonal high water table depth: About 12 to 20 inches

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Populus fremontii/Salix exigua-Salix/Carex

Potential native vegetation: willow, sedge, cottonwood, rush

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

C—3 to 15 inches; stratified fine sand to fine sandy loam

Cg1—15 to 24 inches; stratified loamy fine sand to very fine sandy loam

Cg2—24 to 31 inches; stratified very fine sandy loam to silt loam

2Cg3—31 to 80 inches; very gravelly coarse sand

Minor Components Composition

Chupe and similar soils: About 7 percent

Bosquecito and similar soils: About 5 percent

Mirada and similar soils: About 3 percent

144—Los Alamos fine sandy loam, 1 to 5 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,900 feet (1,768 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Los Alamos and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Los Alamos soils

Landscape: Lava plateaus (fig. 28)

Landform: Mesas

Position on landform: Summits

Parent material: Eolian material derived from volcanic ash over residuum weathered from pumice

Slope: 1 to 5 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 4 to 10 inches to abrupt textural change; 20 to 39 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 5.9 inches (low)

Shrink-swell potential: About 1.7 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Loamy

Potential native vegetation: galleta, black grama, blue grama, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 3 inches; fine sandy loam (fig. 29)

A2—3 to 7 inches; fine sandy loam

Bt—7 to 17 inches; clay loam

Btk—17 to 25 inches; loam

Bk—25 to 32 inches; ashy paragravelly sandy loam

2BCk—32 to 39 inches; paragravel

2C—39 to 80 inches; paragravel

Minor Components Composition

Armenta and similar soils: About 5 percent

Navajita and similar soils: About 4 percent

Adornado and similar soils: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 28.—An area of Los Alamos fine sandy loam, 1 to 5 percent slopes is in the foreground. An area of Rock outcrop-Abrojo-Chiminet complex, 25 to 65 percent slopes is in the background.



Figure 29.—Typical profile of Los Alamos fine sandy loam, 1 to 5 percent slopes. This profile shows a well developed argillic horizon (rich in clay) and abundant pumice in the lower part.

145—Romberg very gravelly sandy loam, 25 to 55 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,800 feet (1,707 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Romberg and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Romberg soils

Landscape: Lava plateaus

Landform: Hills

Position on landform: Backslopes

Parent material: Slope alluvium derived from conglomerate

Slope: 25 to 55 percent

Shape (down/across): Convex/linear

Surface fragments: About 20 percent rounded cobbles; about 45 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 4.7 inches (low)

Shrink-swell potential: About 3.3 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Gravelly

Potential native vegetation: black grama, oneseed juniper, blue grama, prickly pear, twoneedle pinyon

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; very gravelly sandy loam

Bt1—4 to 11 inches; gravelly sandy clay loam

Bt2—11 to 18 inches; very gravelly sandy clay loam

Btk—18 to 33 inches; gravelly sandy clay loam

C—33 to 79 inches; extremely cobbly loamy coarse sand

Minor Components Composition

Espiritu and similar soils: About 7 percent

Chiminet and similar soils: About 2 percent

Rock outcrop: About 1 percent

200—Predawn loam, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,300 feet (1,859 to 2,225 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Predawn and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Predawn soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 30)

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, schist, loess, and volcanic ash

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 6 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 7.2 inches (moderate)

Shrink-swell potential: About 2.6 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 33 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, black grama, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam

BA—2 to 4 inches; loam

Bt—4 to 9 inches; clay loam

Btk1—9 to 14 inches; clay loam

Btk2—14 to 19 inches; clay loam

Bk1—19 to 27 inches; loam

Bk2—27 to 36 inches; loam

Bck1—36 to 52 inches; gravelly sandy loam

Bck2—52 to 77 inches; very gravelly coarse sand

C—77 to 86 inches; gravelly loamy sand

Minor Components Composition

Alire and similar soils: About 6 percent

Encantado and similar soils: About 3 percent

Urban land: About 1 percent

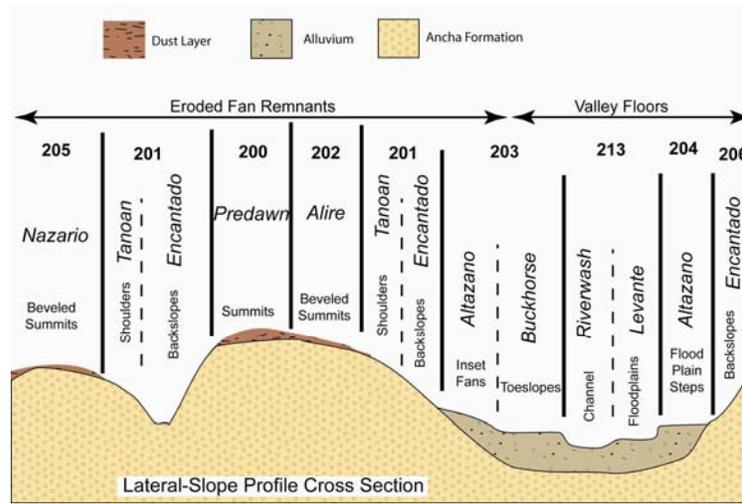


Figure 30.—Cross-section diagram of landform and landform position for map units north and west of Santa Fe at higher elevations

201—Tanoan-Encantado complex, 5 to 25 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,500 feet (1,676 to 2,286 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Tanoan and similar soils: 45 percent

Encantado and similar soils: 40 percent

Minor components: 15 percent

Component Descriptions

Tanoan soils

Landscape: Fan piedmonts (fig. 31)

Landform: Eroded fan remnants (fig. 30)

Position on landform: Shoulders

Parent material: Alluvium derived from granite, gneiss, schist, and loess over residuum weathered from basaltic tuff or granitic sandstone

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 15 percent subrounded gravel; about 0 percent subrounded cobbles

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, galleta, black grama, ring muhly

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; gravelly sandy loam

Bk1—3 to 7 inches; loam

Bk2—7 to 24 inches; loam

Bk3—24 to 32 inches; sandy loam

Bkq—32 to 57 inches; loam

BCK1—57 to 70 inches; gravelly loamy coarse sand

BCK2—70 to 84 inches; gravelly coarse sandy loam

Encantado soils

Landscape: Fan piedmonts (fig. 32)

Landform: Eroded fan remnants (fig. 30)

Position on landform: Backslopes

Parent material: Colluvium and slope alluvium derived from granite, gneiss, and schist over residuum weathered from granitic fanglomerate and sandstone

Slope: 10 to 25 percent

Shape (down/across): Linear/linear

Surface fragments: About 15 percent subrounded cobbles; about 40 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 27 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, New Mexico feathergrass, black grama, blue grama, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 4s

Typical Profile

ABk—0 to 3 inches; very gravelly sandy loam

Bk1—3 to 9 inches; very gravelly loam

Bk2—9 to 22 inches; very gravelly coarse sandy loam

Bck1—22 to 33 inches; gravelly loamy coarse sand

Bck2—33 to 45 inches; very gravelly loamy coarse sand

Bck3—45 to 54 inches; very gravelly loamy coarse sand

C1—54 to 63 inches; gravelly loamy sand

C2—63 to 85 inches; very gravelly loamy sand

Minor Components Composition

Nazario and similar soils: About 4 percent

Buckhorse and similar soils: About 3 percent

Altazano and similar soils: About 3 percent

Urban land: About 2 percent

Encantado and similar soils: About 2 percent

Riverwash: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 31.—An area of Tanoan-Encantado complex, 5 to 25 percent slopes. Sparse vegetation is on the Tanoan soils.



Figure 32.—An area of Tanoan-Encantado complex, 5 to 25 percent slopes. The Encantado soils have some vegetation.

202—Alire loam, 2 to 6 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,400 feet (1,859 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Alire and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Alire soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 30 and fig. 36)

Position on landform: Beveled summits

Parent material: Alluvium derived granite, gneiss, schist, loess, and volcanic ash

Slope: 2 to 6 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.6 inches (high)

Shrink-swell potential: About 2.8 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 30 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam

Bt—2 to 8 inches; clay loam

Btk1—8 to 15 inches; clay loam

Btk2—15 to 28 inches; clay loam

Bk1—28 to 45 inches; loam

Bk2—45 to 57 inches; gravelly loam

Bck—57 to 71 inches; gravelly sandy loam

Bckq—71 to 105 inches; gravelly sandy loam

Minor Components Composition

Encantado and similar soils: About 5 percent
Predawn and similar soils: About 2 percent
Tanoan and similar soils: About 2 percent
Urban land: About 1 percent

203—Buckhorse-Altazano complex, 2 to 8 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,500 feet (1,737 to 2,286 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Buckhorse and similar soils: 55 percent

Altazano and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Buckhorse soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 30)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, schist, granitic sandstone, fanglomerate, and mudstone

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.2 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, sand dropseed, galleta, ring muhly, black grama

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 4 inches; coarse sandy loam

Bt—4 to 11 inches; coarse sandy loam

Btk1—11 to 22 inches; loam

Btk2—22 to 37 inches; loam

Bk—37 to 49 inches; fine sandy loam

BCK—49 to 61 inches; sandy loam

C—61 to 83 inches; gravelly coarse sand

Altazano soils

Landscape: Fan piedmonts

Landform: Inset fans on eroded fan remnants (fig. 30)

Parent material: Slope alluvium derived from granite, gneiss, schist, granitic sandstone, fanglomerate, and mudstone

Slope: 2 to 8 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, sand dropseed, black grama, galleta

Land capability subclass (nonirrigated): 4w

Typical Profile

AC—0 to 2 inches; gravelly sandy loam
C1—2 to 8 inches; gravelly coarse sandy loam
C2—8 to 19 inches; very gravelly loamy coarse sand
C3—19 to 29 inches; gravelly sandy loam
Btkb1—29 to 46 inches; loam
Btkb2—46 to 65 inches; loam
BCkb—65 to 74 inches; gravelly coarse sandy loam
Ckb—74 to 90 inches; gravelly loamy coarse sand

Minor Components Composition

Junebee and similar soils: About 4 percent
Tanoan and similar soils: About 3 percent
Riverwash: About 2 percent
Urban land: About 1 percent

204—Altazano loamy sand, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,400 feet (1,859 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Altazano and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Altazano soils

Landscape: Valleys

Landform: Flood plains on valley floors (fig. 30)

Parent material: Alluvium derived from granite, gneiss, schist, granitic sandstone, fanglomerate, and mudstone

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 22 to 30 inches to strongly contrasting textural stratification; 22 to 30 inches to abrupt textural change

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 7.1 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, Gambel oak, oneseed juniper, black grama, galleta

Land capability subclass (nonirrigated): 4c

Typical Profile

AC—0 to 3 inches; loamy sand

C1—3 to 8 inches; fine sandy loam

C2—8 to 12 inches; loamy sand

C3—12 to 18 inches; stratified sandy loam to loam

C4—18 to 26 inches; gravelly loamy coarse sand

Btkb1—26 to 29 inches; loam

Btkb2—29 to 36 inches; loam

Soil Survey of Santa Fe County Area, New Mexico

Bkb—36 to 58 inches; loam

BCkb1—58 to 76 inches; gravelly coarse sandy loam

BCkb2—76 to 92 inches; gravelly coarse sand

Minor Components Composition

Buckhorse and similar soils: About 5 percent

Levante and similar soils: About 3 percent

Tanoan and similar soils: About 3 percent

Riverwash: About 2 percent

Urban land: About 2 percent

205—Nazario gravelly loam, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,200 to 7,400 feet (1,890 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Nazario and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Nazario soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 30)

Position on landform: Beveled summits

Parent material: Alluvium derived from granite, gneiss, schist, and loess over residuum weathered from granitic fanglomerate and sandstone

Slope: 2 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subrounded cobbles; about 20 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 20 to 28 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 28 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

ABk—0 to 2 inches; gravelly loam

Bk1—2 to 7 inches; gravelly loam

Bk2—7 to 15 inches; gravelly loam

Bk3—15 to 24 inches; gravelly loam

2Bck1—24 to 43 inches; very gravelly loamy coarse sand

2Bck2—43 to 52 inches; gravelly loamy coarse sand

2C1—52 to 67 inches; coarse sand

2C2—67 to 94 inches; gravelly coarse sand

Minor Components Composition

Alire and similar soils: About 3 percent
Tanoan and similar soils: About 3 percent
Encantado and similar soils: About 2 percent
Urban land: About 2 percent

206—Encantado very cobbly sandy loam, 25 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,600 feet (1,737 to 2,316 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Encantado and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Encantado soils

Landscape: Fan piedmonts (fig. 33)

Landform: Eroded fan remnants (fig. 30)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granitic fanglomerate and sandstone

Slope: 25 to 45 percent

Shape (down/across): Linear/linear

Surface fragments: About 20 percent subrounded cobbles; about 25 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Calcium carbonate average in horizon of maximum accumulation: About 23 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, New Mexico feathergrass, black grama, blue grama, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 7e

Typical Profile

ABk—0 to 2 inches; very cobbly sandy loam

Bk1—2 to 8 inches; gravelly sandy loam

Bk2—8 to 12 inches; gravelly coarse sandy loam

Bk3—12 to 24 inches; very gravelly coarse sandy loam

Bck—24 to 31 inches; gravelly loamy sand

Bck1—31 to 56 inches; very gravelly loamy coarse sand

Bck2—56 to 67 inches; gravelly loamy sand

C—67 to 82 inches; gravelly loamy coarse sand

Minor Components Composition

Nazario and similar soils: About 4 percent
Encantado and similar soils: About 3 percent
Urban land: About 2 percent
Rock outcrop: About 1 percent



Figure 33.—An area of Encantado very cobbly sandy loam, 25 to 45 percent slopes. The steeper slopes of the Encantado soils make desirable homesites.

207—Urban land

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,400 feet (1,676 to 2,256 meters)

Mean annual precipitation: 9 to 15 inches (229 to 381 millimeters)

Mean annual air temperature: 47 to 52 degrees F (8.1 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Urban land: 85 percent

Minor components: 15 percent

Component Descriptions

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, storage yards, roads, streets, sidewalks, and railroad grades. Urban land is in intensely built-up portions of the City of Santa Fe and is mostly within commercial and industrial districts. It is intermingled in places with small remnant areas of natural soil or bodies of man-made soil that have usually been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes are dominantly 1 to 5 percent, but range to 25 percent.

Landscape: Fan piedmonts

Landform: Stream terraces, eroded fan remnants

Slope: 1 to 5 percent

Shape (down/across): Linear/linear

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Minor Components Composition

Alire and similar soils: About 4 percent

Panky and similar soils: About 3 percent

Buckhorse and similar soils: About 2 percent

Predawn and similar soils: About 2 percent

Altazano and similar soils: About 2 percent

Tanoan and similar soils: About 1 percent

Delvalle and similar soils: About 1 percent

208—Alire-Urban land complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,400 to 7,400 feet (1,951 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Alire and similar soils: 50 percent

Urban land: 40 percent

Minor components: 10 percent

Component Descriptions

Alire soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Beveled summits

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.2 inches (high)

Shrink-swell potential: About 2.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 29 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 4 inches; loam

Bt—4 to 11 inches; clay loam

Btk1—11 to 20 inches; clay loam

Btk2—20 to 27 inches; loam

Bk1—27 to 42 inches; loam

Bk2—42 to 51 inches; gravelly loam

Bkq1—51 to 69 inches; gravelly loam

Bkq2—69 to 95 inches; gravelly loam

C—95 to 99 inches; gravelly sandy loam

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential districts. It is intermingled with Alire soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 8 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Slope: 0 to 5 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Predawn and similar soils: About 4 percent

Tanoan and similar soils: About 3 percent

Altazano and similar soils: About 2 percent

Encantado and similar soils: About 1 percent

209—Dondiego-Urban land complex, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,300 to 7,800 feet (1,920 to 2,377 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Dondiego and similar soils: 55 percent

Urban land: 40 percent

Minor components: 5 percent

Component Descriptions

Dondiego soils

Landscape: Valleys

Landform: High stream terraces (fig. 34)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 69 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 7.8 inches (moderate)

Shrink-swell potential: About 4.1 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; sandy loam

Bt1—2 to 7 inches; loam

Bt2—7 to 14 inches; loam

Bt3—14 to 26 inches; loam

Btk—26 to 37 inches; loam

Btk2—37 to 51 inches; loam

Bk—51 to 66 inches; gravelly loam

Bck—66 to 92 inches; gravelly loamy coarse sand

C—92 to 106 inches; very gravelly coarse sand

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential districts. It is intermingled with Dondiego soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 3 percent.

Landscape: Valleys

Landform: High stream terraces (fig. 34)

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Minor Components Composition

Meseeya and similar soils: About 3 percent

Altazano and similar soils: About 2 percent

210—Urban land-Buckhorse-Altazano complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,500 feet (1,737 to 2,286 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Urban land: 60 percent

Buckhorse and similar soils: 20 percent

Altazano and similar soils: 10 percent

Minor components: 10 percent

Component Descriptions

Urban land

Description: Urban land consists of areas covered by buildings, driveways, parking lots, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and is mostly within residential areas. It is intermingled with the Buckhorse and Altazano soils that are either slightly disturbed or have been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 8 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8s

Buckhorse soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, schist, granitic sandstone, fanglomerate, and mudstone

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.2 inches (moderate)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Soil Survey of Santa Fe County Area, New Mexico

Potential native vegetation: blue grama, sand dropseed, galleta, ring muhly, black grama

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 4 inches; coarse sandy loam
Bt—4 to 11 inches; coarse sandy loam
Btk1—11 to 22 inches; loam
Btk2—22 to 37 inches; loam
Bk—37 to 49 inches; fine sandy loam
BCk—49 to 61 inches; sandy loam
C—61 to 83 inches; gravelly coarse sand

Altazano soils

Landscape: Fan piedmonts

Landform: Inset fans on eroded fan remnants

Parent material: Slope alluvium derived from granite, gneiss, schist, granitic sandstone, fanglomerate, and mudstone

Slope: 2 to 8 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, sand dropseed, black grama, galleta

Land capability subclass (nonirrigated): 4w

Typical Profile

AC—0 to 2 inches; gravelly sandy loam
C1—2 to 8 inches; gravelly coarse sandy loam
C2—8 to 19 inches; very gravelly loamy coarse sand
C3—19 to 29 inches; gravelly sandy loam
Btkb1—29 to 46 inches; loam
Btkb2—46 to 65 inches; loam
BCkb—65 to 74 inches; gravelly coarse sandy loam
Ckb—74 to 90 inches; gravelly loamy coarse sand

Minor Components Composition

Levante and similar soils: About 7 percent

Riverwash: About 3 percent

211—Tanoan-Encantado-Urban land complex, 5 to 25 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,500 feet (1,676 to 2,286 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Tanoan and similar soils: 35 percent

Encantado and similar soils: 30 percent

Urban land: 25 percent

Minor components: 10 percent

Component Descriptions

Tanoan soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Shoulders

Parent material: Alluvium derived from granite, gneiss, schist, and loess over residuum weathered from basaltic tuff or granitic sandstone

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 15 percent subrounded gravel; about 0 percent subrounded cobbles

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-

Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, galleta, black grama, ring muhly

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; gravelly sandy loam

Bk1—3 to 7 inches; loam

Bk2—7 to 24 inches; loam

Bk3—24 to 32 inches; sandy loam

Bkq—32 to 57 inches; loam

BCk1—57 to 70 inches; gravelly loamy coarse sand

BCk2—70 to 84 inches; gravelly coarse sandy loam

Encantado soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Backslopes

Parent material: Colluvium and slope alluvium derived from granite, gneiss, and schist over residuum weathered from granitic fanglomerate and sandstone

Slope: 10 to 25 percent

Shape (down/across): Linear/linear

Surface fragments: About 15 percent subrounded cobbles; about 40 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 27 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-

Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, New Mexico feathergrass, black grama, blue grama, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 4s

Typical Profile

ABk—0 to 3 inches; very gravelly sandy loam

Bk1—3 to 9 inches; very gravelly loam

Bk2—9 to 22 inches; very gravelly coarse sandy loam

Bck1—22 to 33 inches; gravelly loamy coarse sand

Bck2—33 to 45 inches; very gravelly loamy coarse sand

Bck3—45 to 54 inches; very gravelly loamy coarse sand

C1—54 to 63 inches; gravelly loamy sand

C2—63 to 85 inches; very gravelly loamy sand

Urban land

Description: Urban land consists of areas covered by buildings, driveways, parking lots, roads, streets, tennis courts, and sidewalks. Urban land is in portions of the City of Santa Fe and is mostly within residential areas. It is intermingled with Tanoan and Encantado soils that are either undisturbed or have been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 25 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Slope: 1 to 25 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8

Minor Components Composition

Altazano and similar soils: About 4 percent
Junebee and similar soils: About 3 percent
Nazario and similar soils: About 2 percent
Alire and similar soils: About 1 percent

212—Junebee gravelly sandy loam, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,800 feet (1,859 to 2,377 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Junebee and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Junebee soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 34)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granitic sandstone, fanglomerate, and mudstone

Slope: 5 to 15 percent

Shape (down/across): Concave/linear

Surface fragments: About 15 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.8 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 7 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Deep Sand

Potential native vegetation: Indian ricegrass, blue grama, sand dropseed, galleta

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; gravelly sandy loam

Btk1—3 to 14 inches; sandy loam

Btk2—14 to 29 inches; sandy loam

Btk3—29 to 38 inches; sandy loam

Btk4—38 to 48 inches; gravelly coarse sandy loam

Btk5—48 to 58 inches; gravelly coarse sandy loam

Bk1—58 to 72 inches; gravelly coarse sandy loam

Bk2—72 to 88 inches; gravelly coarse sandy loam

BCk—88 to 112 inches; gravelly loamy coarse sand

C—112 to 122 inches; gravelly loamy coarse sand

Minor Components Composition

Altazano and similar soils: About 6 percent
Levante and similar soils: About 5 percent
Riverwash: About 4 percent

213—Levante-Riverwash complex, 1 to 3 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,700 feet (1,707 to 2,347 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Levante and similar soils: 55 percent

Riverwash: 35 percent

Minor components: 10 percent

Component Descriptions

Levante soils

Landscape: Valleys

Landform: Narrow flood plains on valley floors (fig. 30 and fig. 34)

Parent material: Alluvium derived from granite, gneiss, schist, and granitic sandstone

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 2.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 7 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's
rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 4c

Typical Profile

AC—0 to 4 inches; loamy sand

C1—4 to 17 inches; coarse sand

C2—17 to 32 inches; gravelly coarse sand

C3—32 to 45 inches; stratified gravelly loamy coarse sand to gravelly coarse
sand

C4—45 to 58 inches; gravelly loamy coarse sand

C5—58 to 86 inches; very gravelly coarse sand

C6—86 to 122 inches; very gravelly coarse sand

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Levante soil.

Landscape: Valleys

Landform: Channels on flood plains (fig. 30 and fig. 34)

Parent material: Alluvium derived from mixed

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded (shape or size unspecified); about 20 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Altazano and similar soils: About 5 percent

Dondiego and similar soils: About 3 percent

Urban land: About 2 percent

214—Nazario-Urban land complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,200 to 7,400 feet (1,890 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Nazario and similar soils: 55 percent

Urban land: 30 percent

Minor components: 15 percent

Component Descriptions

Nazario soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Beveled summits

Parent material: Alluvium derived from granite, gneiss, schist, and loess over residuum weathered from granitic fanglomerate and sandstone

Slope: 2 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subrounded cobbles; about 20 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 20 to 28 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 28 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

ABk—0 to 2 inches; gravelly loam

Bk1—2 to 7 inches; gravelly loam

Bk2—7 to 15 inches; gravelly loam

Bk3—15 to 24 inches; gravelly loam

2Bck1—24 to 43 inches; very gravelly loamy coarse sand

2Bck2—43 to 52 inches; gravelly loamy coarse sand

2C1—52 to 67 inches; coarse sand

2C2—67 to 94 inches; gravelly coarse sand

Urban land

Description: Urban land consists of areas covered by buildings, driveways, parking lots, roads, streets, tennis courts, and sidewalks. Urban land is in portions of the City of Santa Fe and is mostly within residential areas. It is intermingled with the Nazario soil that are either undisturbed or have been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 8 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Slope: 1 to 8 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8

Minor Components Composition

Alire and similar soils: About 8 percent

Encantado and similar soils: About 4 percent

Tanoan and similar soils: About 3 percent

215—Predawn-Urban land complex, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,400 to 7,300 feet (1,951 to 2,225 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Predawn and similar soils: 60 percent

Urban land: 30 percent

Minor components: 10 percent

Component Descriptions

Predawn soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Position on landform: Summits

Parent material: Alluvium derived from granite, gneiss, schist, loess, and volcanic ash

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 4 to 6 inches to strongly contrasting textural stratification;
4 to 6 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 7.6 inches (moderate)

Shrink-swell potential: About 2.7 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 48 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 5 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, black grama, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

AE—0 to 5 inches; loam

Bt—5 to 10 inches; clay

Btk1—10 to 16 inches; clay loam

Btk2—16 to 23 inches; clay loam

Bk1—23 to 28 inches; loam

Bk2—28 to 34 inches; loam

Soil Survey of Santa Fe County Area, New Mexico

Bky1—34 to 48 inches; loam
Bky2—48 to 73 inches; loam
BCk1—73 to 88 inches; loam
BCk2—88 to 100 inches; sandy loam

Urban land

Description: Urban land consists of areas covered by buildings, parking lots, roads, streets, and sidewalks. Urban land is in portions of the City of Santa Fe and surrounding areas and is mostly within residential districts. It is intermingled with Predawn soil that is either undisturbed or has been landscaped and planted. Urban land is hard and impermeable and surface runoff is very rapid. Slopes generally are less than 3 percent.

Landscape: Fan piedmonts

Landform: Eroded fan remnants

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Alire and similar soils: About 7 percent

Tanoan and similar soils: About 3 percent

216—Dondiego loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,400 feet (1,859 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Dondiego and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Dondiego soils

Landscape: Valleys

Landform: Low stream terraces on valley floors (fig. 34)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, schist, and loess

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 4.1 percent (moderate)

Flooding hazard: Very rare

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam

Bt1—2 to 9 inches; loam

Bt2—9 to 22 inches; loam

Btk—22 to 28 inches; loam

BCk—28 to 36 inches; sandy loam

Btb1—36 to 48 inches; loam

Btb2—48 to 59 inches; loam

BCb—59 to 69 inches; gravelly sandy loam

Cb1—69 to 85 inches; gravelly loamy coarse sand

Cb2—85 to 102 inches; stratified gravelly loamy coarse sand to sandy loam

Minor Components Composition

Ohke and similar soils: About 7 percent

Altazano and similar soils: About 4 percent

Urban land: About 4 percent

217—Ohke sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,700 feet (1,859 to 2,347 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Ohke and similar soils: 80 percent

Minor components: 20 percent

Component Descriptions

Ohke soils

Landscape: Valleys

Landform: Low stream terraces on valley floors (fig. 34)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.8 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Very rare

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, Gambel oak, oneseed juniper, black grama, galleta

Land capability subclass (nonirrigated): 4s

Typical Profile

A1—0 to 3 inches; sandy loam

A2—3 to 10 inches; gravelly coarse sandy loam

AC—10 to 14 inches; gravelly loamy coarse sand

C1—14 to 22 inches; gravelly coarse sand

C2—22 to 29 inches; very gravelly coarse sand

C3—29 to 49 inches; gravelly coarse sand

C4—49 to 85 inches; stratified very gravelly coarse sand to gravelly coarse sand

C5—85 to 98 inches; sandy loam

C6—98 to 106 inches; gravelly loamy sand

Minor Components Composition

Dondiego and similar soils: About 8 percent

Altazano and similar soils: About 7 percent

Urban land: About 5 percent

218—Pedregal very gravelly loam, 2 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,900 to 7,600 feet (1,798 to 2,316 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Pedregal and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Pedregal soils

Landscape: Fan piedmonts

Landform: Narrow, eroded fan remnants (fig. 34)

Position on landform: Shoulders, beveled summits

Parent material: Alluvium derived from granite, gneiss, and schist over residuum weathered from granitic sandstone, siltstone, and fanglomerate

Slope: 2 to 15 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent rounded cobbles; about 40 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 3.6 inches (low)

Shrink-swell potential: About 1.7 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 39 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, twoneedle pinyon, ring muhly

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 2 inches; very gravelly loam

Bt1—2 to 5 inches; very gravelly clay loam

Bt2—5 to 8 inches; very gravelly clay loam

Btk—8 to 12 inches; very gravelly sandy clay loam

Bk1—12 to 22 inches; very gravelly sandy loam

Bk2—22 to 45 inches; extremely gravelly coarse sandy loam

BCk—45 to 62 inches; extremely gravelly coarse sand

C1—62 to 81 inches; gravelly loamy sand

2C2—81 to 92 inches; silt loam

2C3—92 to 104 inches; silt loam

Minor Components Composition

- Predawn and similar soils: About 4 percent
- Alire and similar soils: About 2 percent
- Urban land: About 2 percent
- Encantado and similar soils: About 1 percent
- Nazario and similar soils: About 1 percent

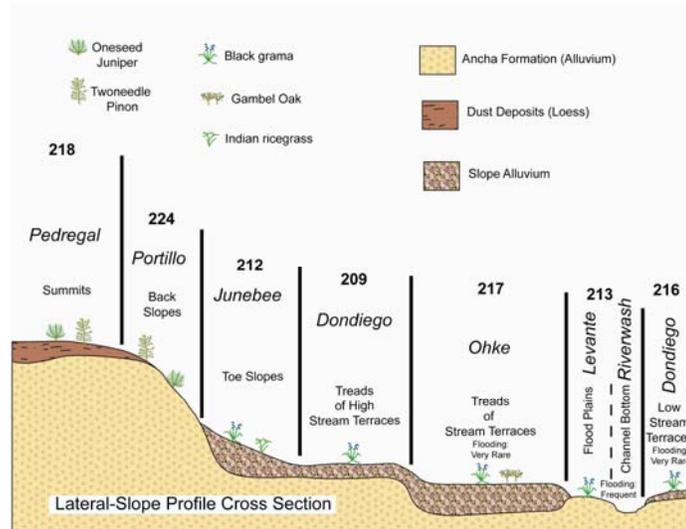


Figure 34.—Cross-section diagram of landform and landform position for map units mostly south and west of Santa Fe at higher elevations.

219—Ohke sandy loam, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,300 to 6,700 feet (1,920 to 2,042 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Ohke and similar soils: 80 percent

Minor components: 20 percent

Component Descriptions

Ohke soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 34)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from basaltic tuff

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.3 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Hills

Potential native vegetation: blue grama, Gambel oak, oneseed juniper, black grama,
galleta

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 3 inches; sandy loam

Bw—3 to 9 inches; gravelly sandy loam

Bkq—9 to 13 inches; gravelly sandy loam

BCKq1—13 to 27 inches; gravelly loamy sand

BCKq2—27 to 48 inches; loamy sand

Cq—48 to 82 inches; loamy sand

C—82 to 98 inches; loamy sand

Minor Components Composition

Nazario and similar soils: About 7 percent

Tanoan and similar soils: About 6 percent

Rock outcrop: About 4 percent

Urban land: About 3 percent

220—Horcado-Nazario complex, 2 to 35 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,100 feet (1,707 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Horcado and similar soils: 60 percent

Nazario and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Horcado soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 35)

Position on landform: Backslopes

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 15 to 35 percent

Shape (down/across): Linear/convex

Surface fragments: About 50 percent rounded gravel; about 3 percent rounded cobbles

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: Gambel oak, blue grama, oneseed juniper, bottlebrush squirreltail, sideoats grama, twoneedle pinyon

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 4 inches; very gravelly coarse sandy loam

Bk1—4 to 8 inches; gravelly coarse sandy loam

Bk2—8 to 17 inches; very gravelly loamy coarse sand

Bck1—17 to 33 inches; very gravelly loamy coarse sand

Bck2—33 to 45 inches; very gravelly loamy sand

Bck3—45 to 74 inches; very gravelly loamy coarse sand

Bck4—74 to 88 inches; very gravelly coarse sand

Bckq1—88 to 94 inches; gravelly sandy loam

Bckq2—94 to 105 inches; gravelly sandy loam

Nazario soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 35)

Position on landform: Beveled summits, shoulders

Parent material: Alluvium derived from granite, gneiss, schist, and loess over residuum weathered from granitic fanglomerate and sandstone

Slope: 2 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 3 percent rounded cobbles; about 35 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 4.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 17 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: blue grama, black grama, New Mexico feathergrass, oneseed juniper, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 4s

Typical Profile

ABk—0 to 2 inches; very gravelly loam

Bk1—2 to 5 inches; gravelly loam

Bk2—5 to 16 inches; gravelly loam

Bk3—16 to 31 inches; gravelly coarse sandy loam

2Bck1—31 to 49 inches; very gravelly coarse sand

2Bck2—49 to 63 inches; gravelly coarse sand

2Bck3—63 to 76 inches; gravelly loamy coarse sand

2C1—76 to 96 inches; gravelly coarse sand

2C2—96 to 120 inches; very gravelly loamy coarse sand

Minor Components Composition

Encantado and similar soils: About 4 percent

Latierra and similar soils: About 3 percent

Lamesilla and similar soils: About 2 percent

Urban land: About 1 percent

221—Latierra-Lamesilla-Levante complex, 2 to 15 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,300 feet (1,676 to 2,225 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Latierra and similar soils: 45 percent

Lamesilla and similar soils: 30 percent

Levante and similar soils: 15 percent

Minor components: 10 percent

Component Descriptions

Latierra soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 35)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 20 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 31 to 39 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.1 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; gravelly coarse sandy loam

Bt1—3 to 7 inches; gravelly coarse sandy loam

Bt2—7 to 12 inches; gravelly coarse sandy loam

Btk1—12 to 20 inches; gravelly coarse sandy loam

Btk2—20 to 26 inches; gravelly sandy clay loam

Bk—26 to 37 inches; gravelly coarse sandy loam

BCk—37 to 46 inches; very gravelly loamy coarse sand

C1—46 to 60 inches; loam

C2—60 to 83 inches; very gravelly loamy coarse sand

C3—83 to 110 inches; gravelly coarse sandy loam

Lamesilla soils

Landscape: Fan piedmonts

Landform: Inset fans on eroded fan remnants (fig. 35)

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 40 percent rounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.4 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, Gambel oak, oneseed juniper, black grama,
galleta

Land capability subclass (nonirrigated): 4w

Typical Profile

AC1—0 to 2 inches; very gravelly coarse sandy loam

AC2—2 to 6 inches; gravelly coarse sandy loam

Bw1—6 to 20 inches; gravelly coarse sandy loam

Bw2—20 to 34 inches; gravelly coarse sandy loam

Bw3—34 to 52 inches; very gravelly coarse sandy loam

Bk—52 to 65 inches; gravelly sandy clay loam

C1—65 to 83 inches; gravelly coarse sandy loam

C2—83 to 104 inches; stratified very gravelly coarse sand to gravelly sandy loam

C3—104 to 121 inches; very gravelly coarse sand

Levante soils

Landscape: Fan piedmonts

Landform: Narrow flood plains on eroded fan remnants (fig. 35)

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 2 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 30 percent rounded gravel

Depth class: Very deep

Drainage class: Excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Soil Survey of Santa Fe County Area, New Mexico

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's
rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 4w

Typical Profile

AC—0 to 4 inches; gravelly coarse sand

C1—4 to 13 inches; stratified gravelly coarse sand to sandy loam

C2—13 to 29 inches; stratified gravelly coarse sand to coarse sandy loam

C3—29 to 42 inches; stratified gravelly coarse sand to gravelly loamy coarse
sand

C4—42 to 55 inches; very gravelly coarse sand

Btb—55 to 65 inches; coarse sandy loam

BCkb1—65 to 81 inches; stratified gravelly loamy coarse sand to gravelly sandy
loam

BCkb2—81 to 96 inches; gravelly loamy coarse sand

BCkb3—96 to 105 inches; very gravelly loamy coarse sand

Minor Components Composition

Horcado and similar soils: About 4 percent

Altazano and similar soils: About 3 percent

Dondiego and similar soils: About 3 percent

222—Sipapu-Yuzarra-Kachina complex, 5 to 65 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,800 feet (1,707 to 2,377 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Sipapu and similar soils: 45 percent

Yuzarra and similar soils: 30 percent

Kachina and similar soils: 15 percent

Minor components: 10 percent

Component Descriptions

Sipapu soils

Landscape: Piedmont slopes

Landform: Ridges, hills (fig. 35)

Position on landform: Backslopes

Parent material: Colluvium derived from granite and gneiss over residuum weathered from granitic sandstone, siltstone, and mudstone

Slope: 20 to 65 percent

Shape (down/across): Convex/convex; linear

Surface fragments: About 5 percent rounded cobbles; about 25 percent rounded gravel

Depth class: Very shallow

Depth to restrictive feature: 6 to 10 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 12 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: mountain mahogany, oneseed juniper, twoneedle pinyon, black grama, sideoats grama

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 1 inch; gravelly sandy loam

Bk—1 inch to 3 inches; sandy loam

2Bc—3 to 8 inches; very paragravelly fine sandy loam

2Cr—8 to 18 inches; cemented bedrock

Yuzarra soils

Landscape: Piedmont slopes

Landform: Ridges, hills (fig. 35)

Position on landform: Beveled summits

Parent material: Alluvium derived from granite, gneiss, and schist over residuum weathered from granitic sandstone and fanglomerate

Slope: 5 to 15 percent

Shape (down/across): Convex/linear, convex

Surface fragments: About 5 percent rounded cobbles; about 45 percent rounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 35 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, black grama, little bluestem, sideoats grama

Land capability subclass (nonirrigated): 4s

Typical Profile

ABk—0 to 3 inches; very gravelly sandy loam

Bk1—3 to 10 inches; gravelly sandy loam

2Bk2—10 to 22 inches; very gravelly coarse sand

2Bk3—22 to 26 inches; gravelly sand

2Bk4—26 to 34 inches; very gravelly coarse sand

2Cr—34 to 44 inches; cemented bedrock

Kachina soils

Landscape: Piedmont slopes

Landform: Ridges, hills (fig. 35)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from micaceous sandstone, siltstone, mudstone, and fanglomerate

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Depth to restrictive feature: 79 to 98 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.3 inches (high)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 7 percent

Soil Survey of Santa Fe County Area, New Mexico

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, true mountain mahogany, sideoats grama, eriogonum, little bluestem

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; fine sandy loam

Bk1—3 to 13 inches; fine sandy loam

Bk2—13 to 24 inches; sandy clay loam

Bk3—24 to 44 inches; loam

BCK1—44 to 53 inches; sandy loam

BCK2—53 to 73 inches; gravelly sandy loam

BCK3—73 to 81 inches; gravelly sandy clay loam

2BCK4—81 to 93 inches; very paragravelly silty clay loam

2Cr—93 to 103 inches; cemented bedrock

Minor Components Composition

Junebee and similar soils: About 3 percent

Badland: About 2 percent

Dondiego and similar soils: About 2 percent

Levante and similar soils: About 1 percent

Rock outcrop: About 1 percent

Urban land: About 1 percent

223—Kachina fine sandy loam, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,300 feet (1,707 to 2,225 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Kachina and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Kachina soils

Landscape: Piedmont slopes

Landform: Hills (fig. 35)

Position on landform: Toeslopes

Parent material: Alluvium derived micaceous sandstone, siltstone, mudstone, and fanglomerate

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 9.7 inches (high)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 11 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-
Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, Ericameria nauseosa
ssp. nauseosa var. nauseosa, sideoats grama, blue grama

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; fine sandy loam

Bk1—3 to 7 inches; loam

Bk2—7 to 19 inches; sandy clay loam

Bk3—19 to 26 inches; loam

Bck1—26 to 36 inches; loam

Bck2—36 to 48 inches; loam

Bck3—48 to 59 inches; loam

Bck4—59 to 84 inches; fine sandy loam

Bck5—84 to 102 inches; very fine sandy loam

Bck6—102 to 120 inches; gravelly sandy loam

Minor Components Composition

Sipapu and similar soils: About 5 percent
Junebee and similar soils: About 4 percent
Levante and similar soils: About 3 percent
Urban land: About 2 percent
Yuzarra and similar soils: About 1 percent

224—Portillo extremely gravelly sandy loam, 25 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,900 to 7,400 feet (1,798 to 2,256 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Portillo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Portillo soils

Landscape: Fan piedmonts

Landform: Eroded fan remnants (fig. 34)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granitic sandstone, siltstone, and fanglomerate

Slope: 25 to 50 percent

Shape (down/across): Linear/convex

Surface fragments: About 20 percent cobbles; about 50 percent rounded gravels; less than 1 percent rounded stones

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 4.2 inches (low)

Shrink-swell potential: About 1.7 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 33 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: Gambel oak, oneseed juniper, twoneedle pinyon, blue grama

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; extremely gravelly sandy loam

Bt1—3 to 7 inches; very gravelly clay loam

Bt2—7 to 15 inches; very gravelly sandy clay loam

Btk—15 to 17 inches; very gravelly sandy clay loam

Bk1—17 to 26 inches; very gravelly sandy loam

Bk2—26 to 34 inches; very gravelly coarse sandy loam

2BCk1—34 to 53 inches; gravelly loamy sand

2BCk2—53 to 66 inches; coarse sandy loam

2BCk3—66 to 102 inches; gravelly loamy coarse sand

2C—102 to 120 inches; gravelly loamy coarse sand

Minor Components Composition

Encantado and similar soils: About 6 percent

Pedregal and similar soils: About 3 percent

Sipapu and similar soils: About 1 percent

225—Encantado-Resolana complex, 35 to 70 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 7,900 feet (1,829 to 2,408 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 45 to 49 degrees F (7.2 to 9.4 degrees C)

Frost-free period: 120 to 150 days

Map Unit Composition

Encantado and similar soils: 45 percent

Resolana and similar soils: 40 percent

Minor components: 15 percent

Component Descriptions

Encantado soils

Landscape: Fan piedmonts

Landform: South-facing eroded fan remnants (fig. 35)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granitic fanglomerate and sandstone

Slope: 35 to 60 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent rounded cobbles; about 50 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, lithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 21 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-

Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, New Mexico feathergrass, black grama, blue grama, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 7e

Typical Profile

ABk—0 to 1 inch; extremely gravelly coarse sandy loam

Btk—1 inch to 4 inches; very gravelly coarse sandy loam

Bk1—4 to 9 inches; very gravelly coarse sandy loam

Bk2—9 to 16 inches; very gravelly coarse sandy loam

Bk3—16 to 33 inches; extremely gravelly loamy coarse sand

2BCk1—33 to 41 inches; gravelly loamy coarse sand

2BCk2—41 to 51 inches; very gravelly loamy coarse sand

2BCk3—51 to 62 inches; gravelly coarse sand

2R—62 to 72 inches; cemented bedrock

Resolana soils

Landscape: Fan piedmonts

Landform: North-facing eroded fan remnants (fig. 35)

Position on landform: Backslopes

Parent material: Colluvium derived granite, gneiss, and schist over residuum weathered from granitic conglomerate

Slope: 40 to 70 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent rounded cobbles; about 40 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.1 inches (low)

Shrink-swell potential: About 2.6 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 19 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, New Mexico feathergrass, black grama, blue grama, sideoats grama, twoneedle pinyon, galleta

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 1 inch; very gravelly coarse sandy loam

Bt—1 inch to 5 inches; gravelly sandy clay loam

Btk1—5 to 11 inches; very gravelly sandy clay loam

Btk2—11 to 17 inches; very gravelly coarse sandy loam

Btk3—17 to 24 inches; very gravelly coarse sandy loam

2Bk1—24 to 34 inches; extremely gravelly coarse sandy loam

2Bk2—34 to 43 inches; extremely gravelly coarse sandy loam

2Bk3—43 to 63 inches; gravelly coarse sandy loam

2R—63 to 73 inches; cemented bedrock

Minor Components Composition

Nazario and similar soils: About 5 percent

Crucitas and similar soils: About 4 percent

Levante and similar soils: About 3 percent

Riverwash: About 2 percent

Adellern and similar soils: About 1 percent

226—Crucitas gravelly fine sandy loam, 2 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,500 to 7,300 feet (1,981 to 2,225 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Crucitas and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Crucitas soils

Landscape: Valleys

Landform: Flood plain steps on valley floors (fig. 35)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 2 to 10 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded cobbles; about 30 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 30 to 39 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.7 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Rare

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-

Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, Bigelow's rubber

rabbitbrush, Apacheplume, blue grama, prickly pear

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 1 inch; gravelly fine sandy loam

Bw1—1 inch to 6 inches; gravelly sandy loam

Bw2—6 to 15 inches; gravelly sandy loam

Bw3—15 to 25 inches; gravelly sandy loam

Bw4—25 to 36 inches; gravelly sandy loam

2C—36 to 46 inches; extremely gravelly loamy coarse sand

2Bck1—46 to 60 inches; very gravelly coarse sand

2Bck2—60 to 72 inches; extremely gravelly coarse sand

2Bck3—72 to 110 inches; stratified gravelly coarse sand to gravelly fine sandy loam

Minor Components Composition

Levante and similar soils: About 7 percent
 Ohke and similar soils: About 6 percent
 Urban land: About 2 percent

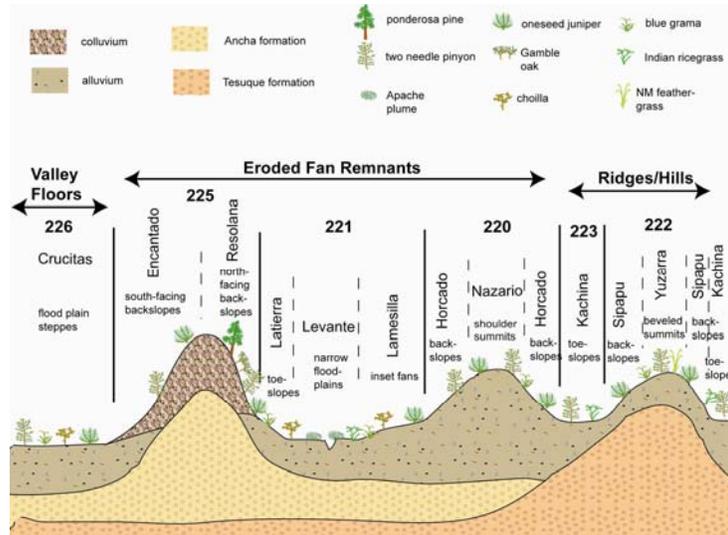


Figure 35.—Cross-section diagram of landform and landform position for map units north and east of Santa Fe at higher elevations.

300—Arnor gravelly sandy loam, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,800 to 8,400 feet (2,073 to 2,560 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Arnor and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Arnor soils

Landscape: Foothills

Landform: Hills (fig. 36)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 2 to 8 percent

Shape (down/across): Linear/concave

Surface fragments: About 20 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 7.4 inches (moderate)

Shrink-swell potential: About 4.2 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis

Potential native vegetation: blue grama, oneseed juniper, bottlebrush squirreltail, twoneedle pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 4 inches; gravelly sandy loam

Bt1—4 to 9 inches; gravelly sandy clay loam

Bt2—9 to 15 inches; gravelly sandy clay loam

Bt3—15 to 24 inches; gravelly sandy clay loam

Btk—24 to 35 inches; gravelly sandy clay loam

Ab—35 to 46 inches; gravelly sandy clay loam

Btkb—46 to 52 inches; gravelly sandy clay loam

2B/Ctkb—52 to 66 inches; very gravelly coarse sandy loam

2Crtk—66 to 80 inches; bedrock

Minor Components Composition

Setonville and similar soils: About 4 percent
 Antonchico and similar soils: About 3 percent
 Riverwash: About 2 percent
 Urban land: About 1 percent

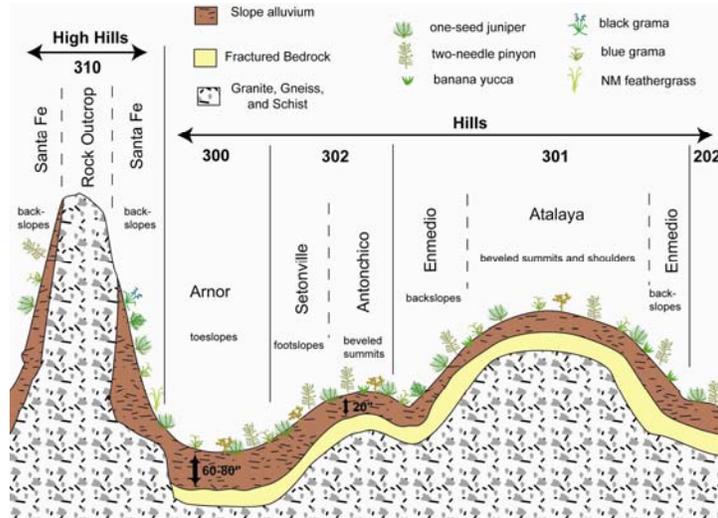


Figure 36.—Cross-section diagram of landform and landform position for map units southeast of Santa Fe at higher elevations.

301—Enmedio-Atalaya-Rock outcrop complex, 5 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,400 to 8,500 feet (1,951 to 2,591 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Enmedio and similar soils: 60 percent

Atalaya and similar soils: 20 percent

Rock outcrop: 10 percent

Minor components: 10 percent

Component Descriptions

Enmedio soils

Landscape: Foothills

Landform: Hills (fig. 36)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 15 to 60 percent

Shape (down/across): Linear/linear

Surface fragments: About 40 percent subrounded gravel; about 25 percent subrounded cobbles; about 1 percent subrounded stones

Depth class: Deep

Depth to restrictive feature: 16 to 30 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.2 inches (very low)

Shrink-swell potential: About 2.1 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii

Potential native vegetation: blue grama, twoneedle pinyon, oneseed juniper, skunkbush sumac, Gambel oak

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 2 inches; extremely cobbly sandy loam

Bt1—2 to 5 inches; very gravelly sandy clay loam

Bt2—5 to 13 inches; very gravelly sandy clay loam

Bt3—13 to 19 inches; very gravelly sandy clay loam

2Ct—19 to 35 inches; cobbles

2C—35 to 46 inches; cobbles

2R—46 to 56 inches; bedrock

Atalaya soils

Landscape: Foothills

Landform: Hills (fig. 36)

Position on landform: Shoulders, beveled summits

Parent material: Slope alluvium derived from granite, gneiss, and schist over residuum weathered from granite and schist

Slope: 5 to 15 percent

Shape (down/across): Linear/convex

Surface fragments: About 45 percent subrounded gravel; about 10 percent subrounded cobbles; less than 1 percent subrounded stones

Depth class: Deep

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.1 inches (low)

Shrink-swell potential: About 1.0 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii

Potential native vegetation: Gambel oak, blue grama, twoneedle pinyon, oneseed juniper

Land capability subclass (nonirrigated): 4e

Typical Profile

A—0 to 1 inch; very gravelly sandy loam

Bt1—1 inch to 4 inches; gravelly coarse sandy loam

Bt2—4 to 7 inches; gravelly coarse sandy loam

Bt3—7 to 12 inches; gravelly coarse sandy loam

BC1—12 to 24 inches; gravelly coarse sandy loam

BC2—24 to 34 inches; cobbly coarse sandy loam

2CBk—34 to 50 inches; cobbles

2R—50 to 60 inches; bedrock

Rock outcrop

Description: Rock outcrop consists of exposed granite bedrock. It occurs as steeply sloping bedrock and knobs intermingled with the Enmedio and Atalaya soils.

Landscape: Foothills

Landform: Hills (fig. 36)

Parent material: Granite and gneiss

Slope: 30 to 140 percent

Shape (down/across): Linear/linear

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Minor Components Composition

Setonville and similar soils: About 7 percent

Urban land: About 3 percent

302—Setonville-Antonchico complex, 3 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,300 to 8,200 feet (1,920 to 2,499 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Setonville and similar soils: 70 percent

Antonchico and similar soils: 20 percent

Minor components: 10 percent

Component Descriptions

Setonville soils

Landscape: Foothills

Landform: Hills (fig. 36)

Position on landform: Foothills

Parent material: Slope alluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 5 to 15 percent

Shape (down/across): Concave/concave

Surface fragments: About 5 percent subrounded cobbles; about 50 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 20 to 31 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 32 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis

Potential native vegetation: twoneedle pinyon, bottlebrush squirreltail, blue grama, oneseed juniper, Gambel oak

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 2 inches; very gravelly sandy loam

Bt—2 to 8 inches; very gravelly clay loam

Btk—8 to 13 inches; very gravelly sandy clay loam

Bk1—13 to 20 inches; gravelly sandy clay loam

Bk2—20 to 28 inches; very gravelly sandy loam

2BCk1—28 to 36 inches; gravel

2BCk2—36 to 45 inches; cobbles

2R—45 to 55 inches; bedrock

Antonchico soils

Landscape: Foothills

Landform: Hills (fig. 36)

Position on landform: Beveled summits

Parent material: Slope alluvium derived from granite, gneiss, and schist over residuum weathered from schist

Slope: 3 to 5 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent subrounded gravel; about 5 percent subrounded cobbles

Depth class: Deep

Depth to restrictive feature: 20 to 42 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.5 inches (low)

Shrink-swell potential: About 1.7 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 26 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, bottlebrush squirreltail, blue grama

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; gravelly sandy loam

Bt1—2 to 7 inches; gravelly sandy clay loam

Bt2—7 to 14 inches; gravelly sandy clay loam

Bt3—14 to 20 inches; gravelly sandy clay loam

2BCk—20 to 42 inches; cobbles

2R—42 to 52 inches; bedrock

Minor Components Composition

Atalaya and similar soils: About 5 percent

Enmedio and similar soils: About 4 percent

Urban land: About 1 percent

303—Morenda, Fiesta, and Espanola soils, 1 to 85 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,800 to 8,500 feet (2,073 to 2,591 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 110 to 130 days

Map Unit Composition

Fiesta and similar soils: 35 percent

Morenda, inset fan and similar soils: 25 percent

Morenda, floodplain and similar soils: 20 percent

Espanola and similar soils: 15 percent

Minor components: 5 percent

Component Descriptions

Morenda, inset fan soils

Landscape: Valleys

Landform: Inset fans on valley floors (fig. 37)

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 5 to 20 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.0 inches (moderate)

Shrink-swell potential: About 3.6 percent (moderate)

Flooding hazard: Occasional

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii

Potential native vegetation:

Common trees: Ponderosa pine

Other plants: Gambel oak, Arizona fescue, muttongrass, elk sedge, ponderosa pine

Land capability subclass (nonirrigated): 3e

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; coarse sandy loam

Bw1—4 to 16 inches; gravelly coarse sandy loam

Bw2—16 to 26 inches; gravelly coarse sandy loam

Bw3—26 to 41 inches; gravelly coarse sandy loam

Btb—41 to 53 inches; sandy clay loam

Btkb—53 to 70 inches; loam

2BCkb—70 to 83 inches; gravelly coarse sand

Morenda, flood plain soils

Landscape: Valleys

Landform: Low stream terraces on valley floors (fig. 37)

Position on landform: Tread

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Drainage class: Moderately well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 2.8 percent (low)

Flooding hazard: Occasional

Seasonal high water table depth: About 39 to 59 inches

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Populus fremontii/Salix/Carex

Potential native vegetation: willow, cottonwood, sedge

Land capability subclass (nonirrigated): 8

Typical Profile

A—0 to 3 inches; sandy loam

AB—3 to 9 inches; sandy loam

Bw1—9 to 20 inches; loam

Bw2—20 to 27 inches; loam

Bw3—27 to 35 inches; sandy loam

BC—35 to 46 inches; gravelly coarse sandy loam

2Cg1—46 to 56 inches; very gravelly coarse sand

2Cg2—56 to 81 inches; extremely gravelly coarse sand

Fiesta soils

Landscape: Valleys

Landform: Valley sides (fig. 37)

Position on landform: Footslopes

Parent material: Slope alluvium derived from granite, gneiss, and schist

Slope: 10 to 35 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.2 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Soil Survey of Santa Fe County Area, New Mexico

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation:

Common trees: Ponderosa pine

Other plants: Gambel oak, Arizona fescue, muttongrass, elk sedge, ponderosa pine

Land capability subclass (nonirrigated): 4c

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; sandy clay loam

Bt1—4 to 9 inches; sandy clay loam

Bt2—9 to 14 inches; sandy clay loam

Bt3—14 to 25 inches; sandy clay loam

Bt4—25 to 42 inches; clay loam

Bt5—42 to 51 inches; gravelly sandy clay loam

Bt6—51 to 64 inches; gravelly sandy clay loam

Btk—64 to 84 inches; gravelly sandy clay loam

Btk/C—84 to 121 inches; gravelly sandy clay loam

Espanola soils

Landscape: Valleys

Landform: High stream terraces (fig. 37)

Position on landform: Riser

Parent material: Alluvium derived from granite, gneiss, and schist

Slope: 35 to 85 percent

Shape (down/across): Linear/linear

Surface fragments: About 3 percent subrounded boulders; about 2 percent subrounded stones; about 5 percent subrounded cobbles; about 20 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.4 inches (very low)

Shrink-swell potential: About 1.9 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation:

Common trees: Ponderosa pine

Other plants: Gambel oak, Arizona fescue, muttongrass, ponderosa pine

Land capability subclass (nonirrigated): 3c

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 8 inches; gravelly sandy clay loam

E/Bt1—8 to 16 inches; extremely gravelly coarse sandy loam

E/Bt2—16 to 31 inches; extremely gravelly coarse sandy loam

Bt—31 to 45 inches; extremely gravelly coarse sandy loam

C1—45 to 54 inches; extremely gravelly loamy coarse sand

C2—54 to 67 inches; extremely gravelly loamy coarse sand

C3—67 to 80 inches; extremely gravelly loamy coarse sand

Minor Components Composition

Enmedio and similar soils: About 3 percent
 Riverwash: About 2 percent

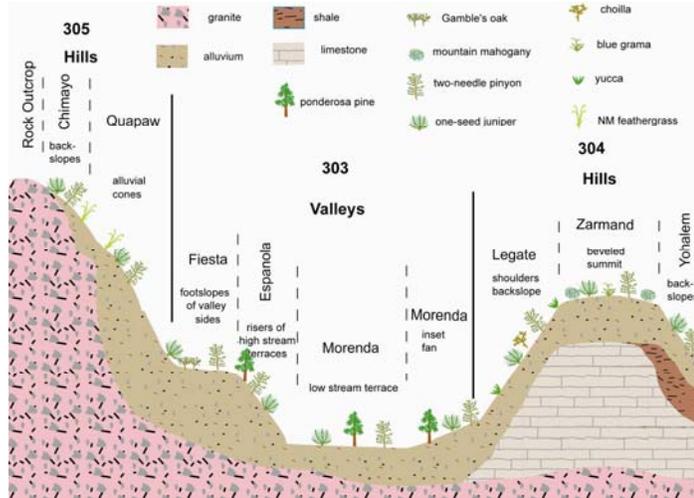


Figure 37.—Cross-section diagram of landform and landform position for map units east and northeast of Santa Fe at higher elevations.

304—Legate-Yohalem-Zarmand complex, 5 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,200 to 8,500 feet (1,890 to 2,591 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Legate and similar soils: 60 percent

Yohalem and similar soils: 20 percent

Zarmand and similar soils: 15 percent

Minor components: 5 percent

Component Descriptions

Legate soils

Landscape: Foothills (fig. 38 and fig. 39)

Landform: Hills (fig. 37)

Position on landform: Shoulders, backslopes

Parent material: Colluvium derived from limestone

Slope: 15 to 45 percent

Shape (down/across): Linear/convex

Surface fragments: About 5 percent subrounded boulders; about 2 percent subrounded stones; about 15 percent subrounded cobbles; about 50 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 2.7 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 72 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii

Potential native vegetation: twoneedle pinyon, blue grama, oneseed juniper, eriogonum, Bigelow's rubber rabbitbrush

Land capability subclass (nonirrigated): 7s

Typical Profile

Ak—0 to 2 inches; extremely gravelly sandy loam

Bk1—2 to 9 inches; very gravelly fine sandy loam

Bk2—9 to 14 inches; very gravelly sandy loam

Bk3—14 to 18 inches; very gravelly sandy loam

2R—18 to 28 inches; bedrock

Yohalem soils

Landscape: Foothills (fig. 38 and fig. 39)

Landform: Hills (fig. 37)

Position on landform: Backslopes

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Colluvium derived from shale and limestone over residuum weathered from shale
Slope: 30 to 50 percent
Shape (down/across): Linear/convex
Surface fragments: About 45 percent subrounded gravel; about 5 percent subrounded cobbles
Depth class: Shallow
Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 2.5 inches (very low)
Shrink-swell potential: About 9.4 percent (very high)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 5 percent
Gypsum average in horizon of maximum accumulation: About 2 percent
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii
Potential native vegetation: twoneedle pinyon, blue grama, oneseed juniper, eriogonum, Bigelow's rubber rabbitbrush
Land capability subclass (nonirrigated): 6e

Typical Profile

A—0 to 1 inch; very gravelly clay loam
Bw—1 inch to 7 inches; paragravelly clay loam
BCky—7 to 15 inches; extremely paragravelly clay
Cr—15 to 25 inches; bedrock

Zarmand soils

Landscape: Foothills (fig. 38 and fig. 39)
Landform: Hills (fig. 37)
Position on landform: Beveled summits
Parent material: Alluvium derived from limestone and sandstone over residuum weathered from limestone
Slope: 5 to 15 percent
Shape (down/across): Linear/convex
Surface fragments: About 50 percent subrounded gravel; about 20 percent subrounded cobbles; less than 1 percent subrounded stones
Depth class: Moderately deep
Depth to restrictive feature: 20 to 30 inches to bedrock, paralithic; 20 to 39 inches to bedrock, lithic
Drainage class: Somewhat excessively drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 3.2 inches (low)
Shrink-swell potential: About 2.8 percent (low)
Runoff class: Low
Calcium carbonate average in horizon of maximum accumulation: About 58 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii
Potential native vegetation: twoneedle pinyon, blue grama, oneseed juniper, Gambel oak, eriogonum, Bigelow's rubber rabbitbrush
Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 1 inch; extremely channery fine sandy loam
ABk—1 inch to 9 inches; gravelly fine sandy loam
Bk1—9 to 17 inches; gravelly loam
2Bk2—17 to 24 inches; paragravelly loam
2Crk—24 to 29 inches; bedrock
2R—29 to 39 inches; bedrock

Minor Components Composition

Rock outcrop: About 3 percent
Urban land: About 2 percent



Figure 38.—An area of Legate-Yohalem-Zarmand complex, 5 to 50 percent slopes. The Legate soils have sparse vegetation and many rock fragments.



Figure 39.—An area of Legate-Yohalem-Zarmand complex, 5 to 50 percent slopes. The Yohalem soils have very sparse vegetation with many flat rock fragments covering the surface.

305—Chimayo-Rock outcrop-Quapaw complex, 50 to 90 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,100 to 8,100 feet (1,859 to 2,469 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Chimayo and similar soils: 45 percent

Rock outcrop: 25 percent

Quapaw and similar soils: 20 percent

Minor components: 10 percent

Component Descriptions

Chimayo soils

Landscape: Breaks

Landform: Hills (fig. 37)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 50 to 90 percent

Shape (down/across): Linear/convex

Surface fragments: About 2 percent subrounded boulders; about 3 percent subrounded stones; about 10 percent subrounded cobbles; about 50 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.4 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Mountain Loam

Potential native vegetation: Arizona fescue, blue grama, mountain muhly, sedge, twoneedle pinyon

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; extremely gravelly coarse sandy loam

Bw—3 to 7 inches; very gravelly coarse sandy loam

2C—7 to 17 inches; cobbles

2R—17 to 27 inches; bedrock

Rock outcrop

Description: Rock outcrop consists of exposed granite bedrock. It occurs as steeply sloping bedrock and knobs intermingled with the Chimayo soils.

Landscape: Breaks

Landform: Hills (fig. 37)

Parent material: Granite and gneiss

Slope: 70 to 190 percent

Shape (down/across): Linear/linear

Runoff class: Very high

Land capability subclass (nonirrigated): 8s

Quapaw soils

Landscape: Breaks

Landform: Alluvial cones (fig. 37)

Parent material: Colluvium derived from granite, gneiss, and schist

Slope: 60 to 80 percent

Shape (down/across): Linear/linear

Surface fragments: About 55 percent subrounded gravel; about 10 percent subrounded cobbles; about 1 percent subrounded stones

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.2 inches (low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Mountain Loam

Potential native vegetation: Arizona fescue, blue grama, mountain muhly, sedge, twoneedle pinyon

Land capability subclass (nonirrigated): 8e

Typical Profile

A—0 to 3 inches; extremely gravelly loam

Bw—3 to 10 inches; very gravelly loam

Bk1—10 to 18 inches; very gravelly sandy loam

Bk2—18 to 28 inches; extremely gravelly coarse sandy loam

Bk3—28 to 44 inches; extremely gravelly sandy loam

BCK1—44 to 55 inches; extremely gravelly coarse sandy loam

BCK2—55 to 80 inches; extremely cobbly coarse sandy loam

Minor Components Composition

Enmedio and similar soils: About 7 percent

Riverwash: About 3 percent

306—Adellern gravelly sandy loam, 50 to 90 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 7,400 to 9,100 feet (2,256 to 2,774 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 110 to 130 days

Map Unit Composition

Adellern and similar soils: 95 percent

Minor components: 5 percent

Component Descriptions

Adellern soils

Landscape: Foothills

Landform: North-facing high hills

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from schist

Slope: 50 to 90 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent angular flagstones; about 5 percent angular channers; about 15 percent subrounded gravel; less than 1 percent subrounded stones

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation:

Common trees: ponderosa pine

Other plants: Gambel oak, mountain muhly, muttongrass

Land capability subclass (nonirrigated): 4e

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; gravelly sandy loam

BA—4 to 8 inches; gravelly sandy loam

Bt1—8 to 21 inches; gravelly sandy clay loam

Bt2—21 to 39 inches; very gravelly sandy clay loam

Bt/BC—39 to 55 inches; very gravelly sandy clay loam

BC/Bt—55 to 65 inches; gravelly sandy loam

2Btb—65 to 73 inches; sandy clay loam

Soil Survey of Santa Fe County Area, New Mexico

2Bkb1—73 to 86 inches; sandy loam

2Bkb2—86 to 101 inches; sandy loam

Minor Components Composition

Zafarano and similar soils: About 3 percent

Rock outcrop: About 2 percent

307—Urban land-Ustorthents-Ustarents complex, 1 to 65 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,700 to 7,600 feet (2,042 to 2,316 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Urban land: 45 percent

Ustorthents and similar soils: 30 percent

Ustarents and similar soils: 20 percent

Minor components: 5 percent

Component Descriptions

Urban land

Description: Urban land consists of asphalt highway and frontage road lanes and the steel and concrete of bridges and overpasses. This Urban land is along highway corridor Interstate 25 and U.S. highway 285 where they are cut through granite bedrock.

Landscape: Foothills

Landform: Hills

Slope: 1 to 10 percent

Shape (down/across): Linear/linear

Drainage class: Well drained

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Ustorthents soils

Landscape: Foothills

Landform: Hills

Parent material: Residuum weathered from granite, gneiss, and schist

Slope: 1 to 10 percent

Shape (down/across): Concave/linear

Surface fragments: About 80 percent subrounded gravel; about 5 percent subrounded cobbles

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.5 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Land capability subclass (nonirrigated): 7s

Typical Profile

C1—0 to 2 inches; extremely gravelly sandy loam

C2—2 to 30 inches; gravel

R—30 to 40 inches; bedrock

Ustarents soils

Landscape: Foothills

Landform: Hills

Parent material: Roadfill derived from granite, gneiss, and schist

Slope: 35 to 65 percent

Shape (down/across): Linear/linear

Surface fragments: Less than 1 percent subrounded stones; about 40 percent subrounded cobbles; about 40 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 11.6 inches (high)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Land capability subclass (nonirrigated): 8s

Typical Profile

A—0 to 2 inches; extremely cobbly sandy loam

C—2 to 80 inches; extremely cobbly sandy loam

Minor Components Composition

Enmedio and similar soils: About 2 percent

Antonchico and similar soils: About 1 percent

Atalaya and similar soils: About 1 percent

Setonville and similar soils: About 1 percent

308—Enmedio-Zafarano-Rock outcrop complex, 35 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 6,600 to 9,200 feet (2,012 to 2,804 meters)

Mean annual precipitation: 15 to 17 inches (381 to 432 millimeters)

Mean annual air temperature: 43 to 47 degrees F (6.1 to 8.3 degrees C)

Frost-free period: 110 to 150 days

Map Unit Composition

Enmedio and similar soils: 45 percent

Zafarano and similar soils: 40 percent

Rock outcrop: 10 percent

Minor components: 5 percent

Component Descriptions

Enmedio soils

Landscape: Foothills

Landform: South-facing high hills

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 35 to 60 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent subrounded stones; about 10 percent subrounded cobbles; about 40 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.2 inches (very low)

Shrink-swell potential: About 3.2 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Hills

Potential native vegetation: oneseed juniper, sideoats grama, black grama, little bluestem

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 7 inches; very gravelly sandy loam

Bt1—7 to 13 inches; very gravelly sandy clay loam

Bt2—13 to 19 inches; extremely gravelly sandy clay loam

BCt—19 to 34 inches; gravel

2C—34 to 48 inches; gravel

2R—48 to 58 inches; cemented bedrock

Zafarano soils

Landscape: Foothills

Landform: North-facing high hills

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 35 to 60 percent

Shape (down/across): Linear/linear

Surface fragments: About 40 percent subrounded gravel; about 5 percent subrounded cobbles; less than 1 percent subrounded stones

Depth class: Deep

Depth to restrictive feature: 16 to 30 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.3 inches (very low)

Shrink-swell potential: About 3.0 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation: ponderosa pine, Gambel oak, mountain muhly, muttongrass

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A1—1 inch to 5 inches; very gravelly sandy loam

A2—5 to 12 inches; extremely gravelly sandy loam

Bt—12 to 20 inches; very gravelly sandy clay loam

2C1—20 to 31 inches; gravel

2C2—31 to 43 inches; gravel

2R—43 to 53 inches; bedrock

Rock outcrop

Description: Rock outcrop consists of exposed granite bedrock. It occurs as steeply sloping bedrock and knobs intermingled with the Lazaro soils.

Landscape: Foothills

Landform: High hills

Position on landform: Backslopes

Parent material: Granite and gneiss

Slope: 30 to 160 percent

Shape (down/across): Linear/linear

Runoff class: Very high

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Lazaro, steep and similar soils: About 2 percent

Urban land: About 1 percent

Lazaro, rolling and similar soils: About 1 percent

Atalaya and similar soils: About 1 percent

309—Lazaro complex, 5 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 7,300 to 9,000 feet (2,225 to 2,743 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 45 to 47 degrees F (7.2 to 8.3 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Lazaro, steep and similar soils: 65 percent

Lazaro, rolling and similar soils: 25 percent

Minor components: 10 percent

Component Descriptions

Lazaro, steep soils

Landscape: Foothills

Landform: High hills

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 30 to 45 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded cobbles; about 35 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 12 to 30 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.4 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation: ponderosa pine, Gambel oak, Arizona fescue, muttongrass, blue grama, sedge

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A1—1 inch to 4 inches; very gravelly coarse sandy loam

A2—4 to 16 inches; extremely gravelly coarse sandy loam

2C1—16 to 30 inches; gravel

2C2—30 to 50 inches; gravel

2R—50 to 60 inches; cemented bedrock

Lazaro, rolling soils

Landscape: Foothills

Landform: High hills

Position on landform: Beveled summits, shoulders

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 5 to 15 percent

Shape (down/across): Convex/linear

Surface fragments: About 0 percent subrounded cobbles; about 30 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 10 to 30 inches to strongly contrasting textural stratification; 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 1.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation: ponderosa pine, Gambel oak, Arizona fescue, muttongrass, blue grama, sedge

Land capability subclass (nonirrigated): 7s

Typical Profile

A1—0 to 2 inches; gravelly sandy loam

A2—2 to 5 inches; very gravelly coarse sandy loam

C1—5 to 12 inches; extremely gravelly loamy coarse sand

2C2—12 to 25 inches; gravel

2C3—25 to 43 inches; gravel

2Ct—43 to 45 inches; gravel

2R—45 to 55 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 5 percent

Zafarano and similar soils: About 3 percent

Enmedio and similar soils: About 2 percent

310—Santa Fe-Rock outcrop complex, 25 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 7,200 to 8,400 feet (2,195 to 2,560 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Santa Fe and similar soils: 60 percent

Rock outcrop: 30 percent

Minor components: 10 percent

Component Descriptions

Santa Fe soils

Landscape: Foothills (fig. 40)

Landform: High hills (fig. 36)

Position on landform: Backslopes

Parent material: Colluvium derived from granite, gneiss, and schist over residuum weathered from granite

Slope: 25 to 45 percent

Shape (down/across): Linear/convex

Surface fragments: About 30 percent subrounded gravel; about 25 percent subrounded cobbles; less than 1 percent subrounded stones

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 3.7 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii

Potential native vegetation: sideoats grama, twoneedle pinyon, black grama, little bluestem, Gambel oak, blue grama

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 7 inches; very cobbly fine sandy loam

Bt1—7 to 11 inches; very gravelly sandy clay loam

Bt2—11 to 14 inches; extremely gravelly sandy clay loam

2R—14 to 24 inches; bedrock

Rock outcrop

Description: Rock outcrop consists of exposed granite bedrock. It occurs as steeply sloping bedrock and knobs intermingled with the Santa Fe soils.

Landscape: Foothills (fig. 40)

Landform: High hills (fig. 36)

Parent material: Granite and gneiss

Slope: 40 to 180 percent

Shape (down/across): Convex/convex

Runoff class: Very high

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Enmedio and similar soils: About 5 percent

Sancturario and similar soils: About 3 percent

Atalaya and similar soils: About 2 percent



Figure 40.—An area of Santa Fe-Rock outcrop complex, 25 to 45 percent slopes. Many of the piñon trees have died in the recent drought and because of the effects of the bark beetle.

400—Chiminet-Canuela-Rock outcrop complex, 2 to 20 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,900 to 7,100 feet (1,798 to 2,164 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Canuela and similar soils: 30 percent

Chiminet and similar soils: 25 percent

Rock outcrop: 20 percent

Chiminet, thick surface and similar soils: 15 percent

Minor components: 10 percent

Component Descriptions

Chiminet soils

Landscape: Lava plateaus (fig. 41)

Landform: Interfluves on undulating plateaus, interfluves on mesas (fig. 42)

Position on landform: Shoulders, backslopes

Parent material: Slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 8 to 20 percent

Shape (down/across): Convex/convex

Surface fragments: Less than 1 percent subangular boulders; about 10 percent subangular cobbles; less than 1 percent subangular stones; about 15 percent angular gravel

Depth class: Very shallow

Depth to restrictive feature: 4 to 10 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 0.6 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain mahogany, twoneedle pinyon, Indian ricegrass, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; paracobbly ashy coarse sandy loam

2Bw—2 to 6 inches; very paracobbly ashy coarse sandy loam

2Cr—6 to 16 inches; cemented bedrock

Chiminet, thick surface soils

Landscape: Lava plateaus (fig. 41)

Landform: Interfluves on undulating plateaus, interfluves on mesas (fig. 42)

Position on landform: Backslopes, shoulders

Parent material: Eolian deposits and slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 5 to 15 percent

Shape (down/across): Convex/linear, convex

Surface fragments: About 5 percent angular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 1.3 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain mahogany, twoneedle pinyon, Indian ricegrass, blue grama

Land capability subclass (nonirrigated): 6s

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; ashy coarse sandy loam

Bw1—5 to 10 inches; paragravelly ashy coarse sandy loam

2Bw2—10 to 15 inches; very paracobbly ashy coarse sandy loam

2Cr—15 to 25 inches; cemented bedrock

Canuela soils

Landscape: Lava plateaus (fig. 41)

Landform: Interfluves on undulating plateaus, interfluves on mesas (fig. 42)

Position on landform: Summits

Parent material: Eolian deposits and slope alluvium derived from mixed sources over residuum weathered from rhyolitic tuff

Slope: 2 to 6 percent

Shape (down/across): Linear/linear

Surface fragments: About 15 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.7 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Soil Survey of Santa Fe County Area, New Mexico

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-
Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, skunkbush sumac,
twoneedle pinyon, mountain mahogany, needleandthread

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 2 inches; paragravelly fine sandy loam

Bt1—2 to 7 inches; paragravelly clay loam

2Bt2—7 to 15 inches; very paracobbly sandy clay loam

2Cr—15 to 25 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed tuff bedrock. It occurs as gently sloping bedrock and knobs intermingled with the Chiminet and Chiminet, thick surface, soils.

Landscape: Lava plateaus (fig. 41)

Landform: Mesas, plateaus (fig. 42)

Parent material: Rhyolitic tuff

Slope: 5 to 25 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: 0 inches to bedrock, lithic

Runoff class: High

Land capability subclass (nonirrigated): 8

Minor Components Composition

Andanada and similar soils: About 5 percent

Nyjack and similar soils: About 3 percent

Adornado and similar soils: About 1 percent

Hackroy and similar soils: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 41.—An area of Chiminet-Canuela-Rock outcrop complex, 2 to 20 percent slopes on Frijoles Mesa. The Canuela soils are on the open area on summits. The Chiminets have a thick surface and are on areas under the tree canopy.

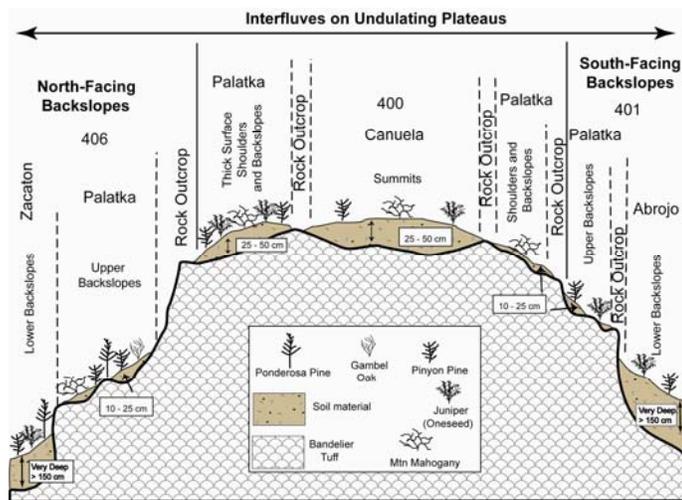


Figure 42.—Cross-section diagram of landform and landform position for map units of plateaus on Tsankawi and low elevations of Bandelier east and south of Los Alamos.

401—Rock outcrop-Abrojo-Chiminet complex, 25 to 65 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,200 feet (1,737 to 2,195 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Rock outcrop: 40 percent

Abrojo and similar soils: 30 percent

Chiminet and similar soils: 20 percent

Minor components: 10 percent

Component Descriptions

Rock outcrop

Description: Rock outcrop consists of exposed tuff and tuff breccia bedrock. It occurs as steeply sloping bedrock and vertical cliffs intermingled with the Chiminet soil and above the Abrojo soil.

Landscape: Lava plateaus (fig. 43)

Landform: Undulating mesas, plateaus, canyons (fig. 42 and fig. 45)

Parent material: Rhyolitic tuff

Slope: 35 to 160 percent

Shape (down/across): Concave/linear

Depth to restrictive feature: At the surface bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8

Abrojo soils

Landscape: Lava plateaus (fig. 43)

Landform: Undulating plateaus, mesas, canyons, south-facing plateaus, mesas, canyons (fig. 42 and fig. 45)

Position on landform: Backslopes

Parent material: Colluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 25 to 65 percent

Shape (down/across): Concave/linear

Surface fragments: About 10 percent subangular boulders; about 4 percent subangular stones; about 30 percent subangular gravel; about 25 percent subangular cobbles

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid)

Available water capacity: About 4.4 inches (low)

Shrink-swell potential: About 1.1 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 4 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 22
(moderately sodic)

Ecological site: Hills

Potential native vegetation: blue grama, oneseed juniper, skunkbush sumac, black
grama, galleta

Land capability subclass (nonirrigated): 8

Typical Profile

A—0 to 2 inches; extremely cobbly ashy loamy coarse sand (fig. 28)

C1—2 to 9 inches; very gravelly ashy loamy coarse sand

C2—9 to 23 inches; very gravelly ashy loamy coarse sand

C3—23 to 30 inches; very cobbly ashy loamy coarse sand

2C4—30 to 64 inches; ashy loamy sand

3C5—64 to 80 inches; gravelly ashy loamy coarse sand

Chiminet soils

Landscape: Lava plateaus (fig. 43)

Landform: Undulating plateaus, mesas, canyons (fig. 42 and fig. 45)

Position on landform: Backslopes

Parent material: Colluvium derived from rhyolitic tuff over residuum weathered from
rhyolitic tuff

Slope: 25 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent subrounded stones

Depth class: Very shallow

Depth to restrictive feature: 6 to 10 inches to bedrock, paralithic

Drainage class: Somewhat excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid)

Available water capacity: About 0.5 inches (very low)

Shrink-swell potential: About 0.0 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-
Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, Indian ricegrass, blue grama, twoneedle
pinyon, skunkbush sumac, true mountain mahogany

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; paracobbly ashy loamy coarse sand (fig. 28)

2C—2 to 7 inches; paragravelly ashy loamy coarse sand

2Cr—7 to 17 inches; cemented bedrock

Minor Components Composition

Canuela and similar soils: About 7 percent

Piojillo and similar soils: About 3 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 43.—An area of Rock outcrop-Abrojo-Chiminet complex, 25 to 65 percent slopes, in Alamo Canyon, is the right foreground. An area of Metate loam, 0 to 3 percent slopes, is on the canyon bottom with tall ponderosa pines.

402—Navajita complex, 2 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,900 feet (1,768 to 2,103 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Navajita and similar soils: 60 percent

Navajita, thick surface and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Navajita soils

Landscape: Lava plateaus

Landform: North-facing valley sides (fig. 45)

Position on landform: Toeslopes, footslopes

Parent material: Eolian deposits and slope alluvium derived from rhyolitic tuff

Slope: 6 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 3.5 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-
Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, muttongrass, twoneedle
pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam

BA—2 to 5 inches; loam

Btk1—5 to 13 inches; loam

Btk2—13 to 22 inches; sandy clay loam

2Btk3—22 to 32 inches; sandy clay loam

2BCt—32 to 42 inches; coarse sandy loam

3Bk—42 to 63 inches; paragravelly coarse sandy loam

3C—63 to 110 inches; paragravelly loamy coarse sand

Navajita, thick surface soils

Landscape: Lava plateaus

Landform: North-facing valley sides

Position on landform: Toeslopes, footslopes

Parent material: Eolian deposits and slope alluvium derived from rhyolitic tuff

Slope: 2 to 10 percent

Shape (down/across): Concave/concave

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 3.1 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-
Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, muttongrass, twoneedle
pinyon

Land capability subclass (nonirrigated): 4c

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 8 inches; sandy loam

Bt1—8 to 22 inches; sandy loam

Bt2—22 to 29 inches; sandy clay loam

Btk1—29 to 38 inches; sandy clay loam

Btk2—38 to 57 inches; sandy loam

BC—57 to 80 inches; paragravelly sandy loam

Minor Components Composition

Zacaton and similar soils: About 4 percent

Piojillo and similar soils: About 3 percent

Abrojo and similar soils: About 2 percent

Gullied land: About 1 percent

403—Piojillo paragravelly ashy loamy coarse sand, 3 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,200 feet (1,737 to 2,195 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Piojillo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Piojillo soils

Landscape: Lava plateaus

Landform: South-facing valley sides (fig. 45)

Position on landform: Toeslopes, footslopes

Parent material: Slope alluvium derived from volcanic ash and pumice

Slope: 3 to 15 percent

Shape (down/across): Concave/concave

Surface fragments: About 20 percent subangular gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid)

Available water capacity: About 5.3 inches (low)

Shrink-swell potential: About 1.4 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis/Rhus trilobata/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, blue grama, twoneedle pinyon, black grama

Land capability subclass (nonirrigated): 4s

Typical Profile

A1—0 to 3 inches; paragravelly ashy loamy coarse sand

A2—3 to 6 inches; paragravelly ashy loamy coarse sand

Bw1—6 to 10 inches; paragravelly ashy loamy coarse sand

Bw2—10 to 21 inches; ashy loamy coarse sand

C1—21 to 35 inches; paragravelly ashy loamy coarse sand

C2—35 to 84 inches; paragravelly ashy loamy coarse sand

C3—84 to 110 inches; paragravelly ashy loamy coarse sand

Minor Components Composition

Navajita and similar soils: About 4 percent

Abrojo and similar soils: About 3 percent

Totavi and similar soils: About 2 percent

Zacaton and similar soils: About 1 percent

404—Totavi ashy loamy coarse sand, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,000 feet (1,676 to 2,134 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Totavi and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Totavi soils

Landscape: Lava plateaus (fig. 44)

Landform: Low stream terraces on valley floors (fig. 45)

Position on landform: Tread

Parent material: Alluvium derived from latite, dacite, and rhyolitic tuff

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid)

Available water capacity: About 4.6 inches (low)

Shrink-swell potential: About 0.8 percent (low)

Flooding hazard: Very rare

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, twoneedle pinyon, Rocky Mountain juniper, blue grama, needleandthread

Land capability subclass (nonirrigated): 4s

Typical Profile

A1—0 to 3 inches; ashy loamy coarse sand

A2—3 to 31 inches; ashy coarse sand

2C1—31 to 52 inches; gravelly ashy loamy sand

3C2—52 to 80 inches; gravelly ashy coarse sand

Minor Components Composition

Navajita and similar soils: About 7 percent

Piojillo and similar soils: About 5 percent

Riverwash: About 3 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 44.—An area of Totavi ashy loamy coarse sand, 1 to 3 percent slopes in Sandia Canyon.

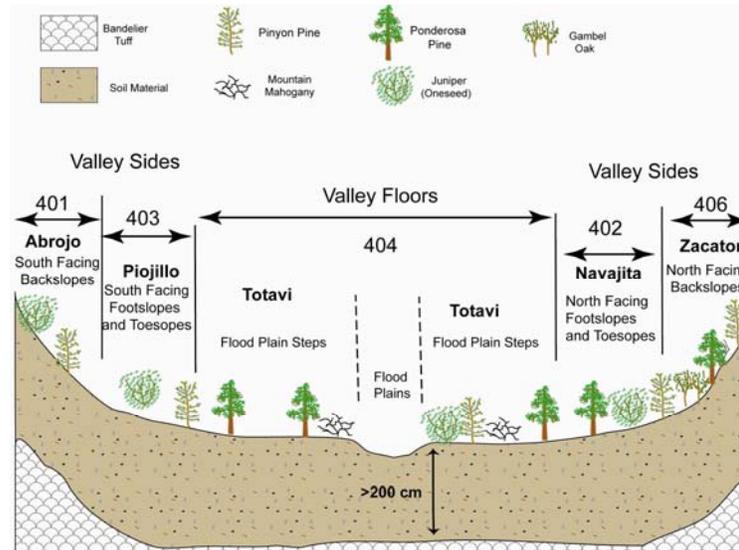


Figure 45.—Cross-section diagram of landform and landform position for map units of valley floors and sides in inter-plateau valleys without perennial streams east of Los Alamos.

405—Espiritu-Pedregal complex, 3 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,900 feet (1,768 to 2,103 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Espiritu and similar soils: 50 percent

Pedregal and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Espiritu soils

Landscape: Lava plateaus (fig. 46)

Landform: High stream terraces

Position on landform: Riser

Parent material: Alluvium derived from latite, dacite, and rhyolitic tuff

Slope: 25 to 50 percent

Shape (down/across): Concave/linear

Surface fragments: About 2 percent subangular stones; about 65 percent subangular gravel; about 10 percent subangular cobbles

Depth class: Very deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 8.5 inches (moderate)

Shrink-swell potential: About 3.3 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: oneseed juniper, Gambel oak, twoneedle pinyon, blue grama

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; extremely gravelly coarse sandy loam

Bt1—3 to 6 inches; very gravelly sandy clay loam

Bt2—6 to 11 inches; very gravelly sandy clay loam

Bt3—11 to 16 inches; very gravelly coarse sandy loam

2Bt4—16 to 23 inches; loam

2Bt5—23 to 44 inches; loam

2BC—44 to 80 inches; loam

Pedregal soils

Landscape: Lava plateaus (fig. 46)

Landform: High stream terraces

Position on landform: Tread

Parent material: Alluvium derived from latite, dacite, and rhyolitic tuff

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular cobbles; about 25 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to strongly contrasting textural stratification; 20 to 39 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 2.7 inches (very low)

Shrink-swell potential: About 2.4 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 48 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: oneseed juniper, Gambel oak, twoneedle pinyon, blue grama, skunkbush sumac

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; gravelly loam

Bt1—3 to 6 inches; clay loam

Bt2—6 to 9 inches; clay loam

Bk1—9 to 13 inches; gravelly loam

Bk2—13 to 17 inches; gravelly sandy loam

2Bk3—17 to 22 inches; very gravelly loamy coarse sand

2Bk4—22 to 26 inches; very gravelly coarse sand

2Bkqm—26 to 34 inches; cemented material

2Bk5—34 to 41 inches; extremely gravelly loamy coarse sand

2C—41 to 70 inches; sandy loam

Minor Components Composition

Navajita and similar soils: About 5 percent

Piojillo and similar soils: About 3 percent

Totavi and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 46.—An area of Espiritu-Pedregal complex, 3 to 50 percent slopes near Los Alamos Canyon. The Pedregal soils are on the flat summit positions.

406—Rock outcrop-Zacaton-Chiminet complex, 25 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,100 feet (1,676 to 2,164 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Rock outcrop: 40 percent

Zacaton and similar soils: 30 percent

Chiminet and similar soils: 25 percent

Minor components: 5 percent

Component Descriptions

Rock outcrop

Description: Rock outcrop consists of exposed tuff and tuff breccia bedrock. It occurs as steeply sloping bedrock and vertical cliffs intermingled with the Chiminet soil and above the Zacaton soil.

Landscape: Lava plateaus (fig. 47)

Landform: Canyons, mesas, plateaus (fig. 42 and fig. 45)

Parent material: Rhyolitic tuff

Slope: 35 to 180 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: At the surface bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8s

Zacaton soils

Landscape: Lava plateaus (fig. 47)

Landform: Lower canyons, mesas, plateaus (fig. 42 and fig. 45)

Position on landform: Backslopes

Parent material: Colluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 25 to 50 percent

Shape (down/across): Concave/linear

Surface fragments: About 25 percent subangular gravel; about 8 percent subangular stones; about 5 percent subangular boulders; about 25 percent subangular cobbles

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 7.3 inches (moderate)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 16 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 11 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis
Potential native vegetation: oneseed juniper, twoneedle pinyon, muttongrass, Indian ricegrass
Land capability subclass (nonirrigated): 6s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 inch to 3 inches; very cobbly ashy sandy loam
Bw—3 to 9 inches; cobbly ashy sandy loam
Bk1—9 to 18 inches; very gravelly ashy sandy loam
Bk2—18 to 32 inches; very cobbly ashy loam
Bk3—32 to 48 inches; cobbly ashy sandy loam
2Bk4—48 to 63 inches; gravelly ashy sandy loam
2Bk5—63 to 76 inches; gravelly ashy loamy coarse sand
2C—76 to 102 inches; gravelly ashy loamy coarse sand

Chiminet soils

Landscape: Lava plateaus (fig. 47)
Landform: Upper canyons, mesas, plateaus (fig. 42 and fig. 45)
Position on landform: Backslopes
Parent material: Colluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff
Slope: 35 to 60 percent
Shape (down/across): Convex/linear
Surface fragments: About 10 percent subangular gravel; about 1 percent subangular stones; about 2 percent subangular boulders
Depth class: Very shallow
Depth to restrictive feature: 6 to 10 inches to bedrock, paralithic
Drainage class: Somewhat excessively drained
Slowest permeability: Greater than 20 in/hr (very rapid)
Available water capacity: About 0.6 inches (very low)
Shrink-swell potential: About 1.2 percent (low)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: None
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)
Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis
Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain mahogany, twoneedle pinyon, Indian ricegrass, blue grama
Land capability subclass (nonirrigated): 7s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 inch to 2 inches; ashy loamy sand
AB—2 to 5 inches; ashy loamy sand
Bw—5 to 7 inches; paragravelly ashy loamy sand
2Cr—7 to 17 inches; cemented bedrock

Minor Components Composition

Navajita and similar soils: About 3 percent
Canuela and similar soils: About 2 percent



Figure 47.—An area of Rock outcrop-Zacaton-Chiminet complex, 25 to 60 percent slopes in Canon de los Frijoles. The robust vegetation contrasts the sparse vegetation of the opposing south-facing slopes.

407—Rock outcrop-Chiminet complex, 20 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 6,800 feet (1,829 to 2,073 meters)

Mean annual precipitation: 12 to 16 inches (305 to 406 millimeters)

Mean annual air temperature: 47 to 50 degrees F (8.3 to 10.0 degrees C)

Frost-free period: 130 to 160 days

Map Unit Composition

Rock outcrop: 55 percent

Chiminet and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Rock outcrop

Description: Rock outcrop consists of exposed tuff bedrock. It occurs as steeply sloping bedrock, short cliffs, and knobs intermingled with the Chiminet soil.

Landscape: Lava plateaus (fig. 48)

Landform: Plateaus (fig. 54)

Parent material: Rhyolitic tuff

Slope: 30 to 140 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: 0 inches to bedrock, lithic

Runoff class: Very high

Land capability subclass (nonirrigated): 8s

Chiminet soils

Landscape: Lava plateaus (fig. 48)

Landform: Undulating plateaus (fig. 54)

Position on landform: Shoulders, backslopes

Parent material: Slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 20 to 50 percent

Shape (down/across): Convex/linear

Surface fragments: About 20 percent subangular gravel; about 5 percent subangular stones; about 5 percent subangular boulders; about 5 percent subangular cobbles

Depth class: Very shallow

Depth to restrictive feature: 6 to 10 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Soil Survey of Santa Fe County Area, New Mexico

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-
Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain
mahogany, twoneedle pinyon, Indian ricegrass, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 3 inches; paragravelly ashy coarse sandy loam

2Bw—3 to 8 inches; very paracobbly ashy coarse sandy loam

2Cr—8 to 18 inches; cemented bedrock

Minor Components Composition

Canuela and similar soils: About 5 percent

Abrojo and similar soils: About 3 percent

Zacaton and similar soils: About 2 percent



Figure 48.—An area of Rock outcrop-Chiminet complex, 20 to 50 percent slopes on Frijoles Mesa.

408—Adornado very paragravelly ashy coarse sandy loam, 8 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Adornado and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Adornado soils

Landscape: Lava plateaus (fig. 49)

Landform: Interfluves on undulating plateaus

Position on landform: Backslopes, footslopes

Parent material: Slope alluvium derived from pumice

Slope: 8 to 15 percent

Shape (down/across): Concave/linear

Surface fragments: About 35 percent subangular gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to abrupt textural change; 59 to 79 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.1 inches (low)

Shrink-swell potential: About 0.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation: ponderosa pine, Gambel oak, little bluestem, blue grama, bottlebrush squirreltail, Rocky Mountain juniper

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 3 inches; very paragravelly ashy coarse sandy loam (fig. 50)

Bw1—3 to 9 inches; very paragravelly ashy coarse sandy loam

Bw2—9 to 17 inches; extremely paragravelly ashy coarse sandy loam

Bk—17 to 23 inches; extremely paragravelly ashy coarse sand

2E and Bt1—23 to 42 inches; extremely paragravelly ashy coarse sand

2E and Bt2—42 to 72 inches; extremely paragravelly ashy coarse sand

3Ab—72 to 78 inches; very fine sandy loam

3Btb—78 to 104 inches; sandy clay loam

Minor Components Composition

Nyjack and similar soils: About 7 percent
Navajita and similar soils: About 2 percent
Canuela and similar soils: About 1 percent



Figure 49.—An area of Adornado very paragravelly ashy coarse sandy loam, 8 to 15 percent slopes near Juniper Campground. This pumice derived soil supports a stand of ponderosa pine trees in a moisture regime that commonly has piñon and juniper.

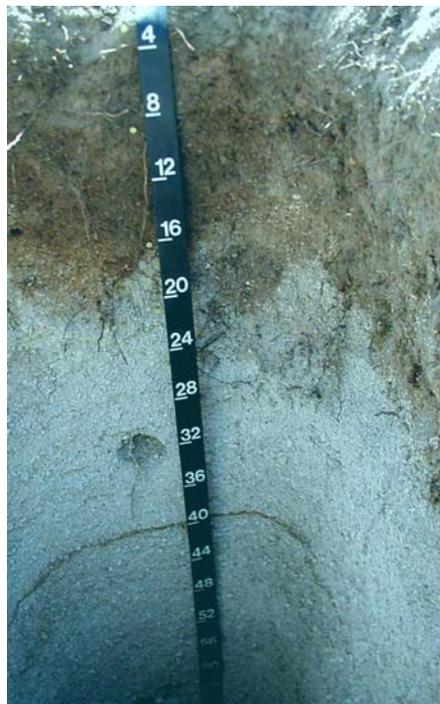


Figure 50.—Typical profile of Adornado very paragravelly ashy coarse sandy loam, 8 to 15 percent slopes. Pumice begins at about 20 cm.

409—Hackroy-Nyjack complex, 2 to 12 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Hackroy and similar soils: 35 percent

Nyjack and similar soils: 30 percent

Hackroy, thick surface and similar soils: 25 percent

Minor components: 10 percent

Component Descriptions

Hackroy soils

Landscape: Lava plateaus (fig. 51)

Landform: Interfluves on undulating plateaus

Position on landform: Shoulders

Parent material: Eolian deposits and slope alluvium derived from mixed sources over residuum weathered from rhyolitic tuff

Slope: 5 to 12 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 8.0 percent (high)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: oneseed juniper, Gambel oak, blue grama, twoneedle pinyon, muhly

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 3 inches; loam

Bt1—3 to 9 inches; clay

2Bt2—9 to 16 inches; very paracobbly clay

2Cr—16 to 26 inches; cemented bedrock

Hackroy, thick surface soils

Landscape: Lava plateaus (fig. 51)

Landform: Interfluves on undulating plateaus

Position on landform: Summits

Parent material: Eolian deposits and slope alluvium derived from mixed sources over residuum weathered from rhyolitic tuff

Slope: 3 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 8 to 18 inches to abrupt textural change; 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.8 inches (very low)

Shrink-swell potential: About 5.1 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, broom snakeweed, plains prickly pear, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; fine sandy loam

AB—5 to 9 inches; fine sandy loam

Bt1—9 to 16 inches; clay loam

2Bt2—16 to 19 inches; paracobbly clay

2Cr—19 to 29 inches; cemented bedrock

Nyjack soils

Landscape: Lava plateaus (fig. 51)

Landform: Interfluves on undulating plateaus

Position on landform: Summits

Parent material: Eolian deposits and slope alluvium derived from mixed sources over residuum weathered from rhyolitic tuff

Slope: 2 to 6 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change; 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 6.1 inches (moderate)

Shrink-swell potential: About 3.7 percent (moderate)

Runoff class: Medium

Soil Survey of Santa Fe County Area, New Mexico

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-
Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, twoneedle pinyon, big
sagebrush

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 2 inches; loam

Bt1—2 to 12 inches; clay loam

Bt2—12 to 20 inches; clay loam

BCt—20 to 28 inches; sandy clay loam

2C—28 to 32 inches; very paragravelly loam

2Cr—32 to 42 inches; cemented bedrock

Minor Components Composition

Canuela and similar soils: About 7 percent

Navajita and similar soils: About 2 percent

Rock outcrop: About 1 percent



Figure 51.—An area of Hackroy-Nyjack complex, 2 to 12 percent slopes on Frijoles Mesa.

410—Chiminet-Canuela-Rock outcrop complex, low precipitation, 3 to 20 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 6,800 feet (1,859 to 2,073 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.5 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Chiminet and similar soils: 30 percent

Canuela and similar soils: 25 percent

Rock outcrop: 20 percent

Chiminet, thick surface and similar soils: 15 percent

Minor components: 10 percent

Component Descriptions

Chiminet soils

Landscape: Lava plateaus (fig. 52 and fig. 53)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Backslopes

Parent material: Slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 8 to 15 percent

Shape (down/across): Convex/linear

Surface fragments: About 20 percent subangular gravel; about 5 percent subangular cobbles; about 2 percent subangular stones

Depth class: Very shallow

Depth to restrictive feature: 6 to 10 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 0.9 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain mahogany, twoneedle pinyon, Indian ricegrass, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 3 inches; paragravelly ashy sandy loam

2Bw—3 to 8 inches; very paracobbly ashy sandy loam

2Cr—8 to 18 inches; cemented bedrock

Chiminet, thick surface soils

Landscape: Lava plateaus (fig. 52 and fig. 53)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Backslopes, shoulders

Parent material: Slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 3 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 5 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, true mountain mahogany, twoneedle pinyon, Indian ricegrass, blue grama

Land capability subclass (nonirrigated): 6s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 3 inches; ashy sandy loam

Bw1—3 to 7 inches; paragravelly ashy sandy loam

2Bw2—7 to 14 inches; very paracobbly ashy sandy loam

2Cr—14 to 24 inches; cemented bedrock

Canuela soils

Landscape: Lava plateaus (fig. 52 and fig. 53)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Summits

Parent material: Eolian deposits and slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 2 to 4 inches to abrupt textural change; 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, skunkbush sumac, twoneedle pinyon, mountain mahogany, needleandthread

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 2 inches; sandy loam

Bt—2 to 7 inches; loam

2Btk—7 to 16 inches; very paracobbly loam

2Cr—16 to 26 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed tuff bedrock. It occurs as gently sloping bedrock and knobs intermingled with the Chiminet and Chiminet, thick surface, soils.

Landscape: Lava plateaus (fig. 52 and fig. 53)

Landform: Interfluves on undulating plateaus (fig. 54)

Parent material: Rhyolitic tuff

Slope: 5 to 25 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: At the surface bedrock, lithic

Runoff class: High

Land capability subclass (nonirrigated): 8s

Minor Components Composition

Hackroy and similar soils: About 5 percent

Nyjack and similar soils: About 3 percent

Chiminet and similar soils: About 2 percent



Figure 52.—An area of Chiminet-Canuela-Rock outcrop complex, low precipitation, 3 to 20 percent slopes, near Lummis Canyon. The Chiminet soils are on shoulder positions.

Soil Survey of Santa Fe County Area, New Mexico



Figure 53.—An area of Chiminet-Canuela-Rock outcrop complex, low precipitation, 3 to 20 percent slopes, near Lummis Canyon. The Canuela soils are on this summit position.

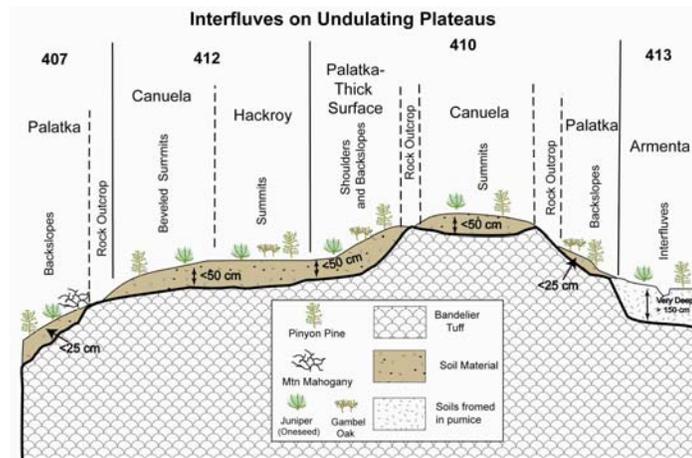


Figure 54.—Cross-section diagram of landform and landform position for map units of plateaus on the lowest elevations of Bandelier, southeast of Los Alamos.

412—Canuela-Hackroy complex, 1 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 6,500 feet (1,859 to 1,981 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.5 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Canuela and similar soils: 50 percent

Hackroy and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Canuela soils

Landscape: Lava plateaus (fig. 55)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Summits

Parent material: Eolian deposits and slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff

Slope: 2 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.8 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 11 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, skunkbush sumac, twoneedle pinyon, mountain mahogany, needleandthread

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 3 inches; sandy loam

Bt1—3 to 6 inches; loam

Bt2—6 to 10 inches; clay loam

2Btk—10 to 17 inches; very paracobbly loam

2Cr—17 to 27 inches; cemented bedrock

Hackroy soils

Landscape: Lava plateaus (fig. 55)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Summits

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Slope alluvium derived from rhyolitic tuff over residuum weathered from rhyolitic tuff
Slope: 1 to 5 percent
Shape (down/across): Linear/linear
Surface fragments: About 5 percent subangular gravel
Depth class: Shallow
Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 2.6 inches (very low)
Shrink-swell potential: About 6.6 percent (high)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 1 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 8 mmhos/cm (slightly saline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis
Potential native vegetation: oneseed juniper, blue grama, broom snakeweed, plains prickly pear, twoneedle pinyon
Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 3 inches; fine sandy loam
Bt1—3 to 8 inches; clay
Bt2—8 to 12 inches; clay
2Btk—12 to 19 inches; paracobbly sandy clay loam
2Cr—19 to 29 inches; cemented bedrock

Minor Components Composition

Chiminet and similar soils: About 6 percent
Rock outcrop: About 4 percent



Figure 55.—An area of Canuela-Hackroy complex, 1 to 8 percent slopes, near Lummis Canyon.

413—Armenta very paragravelly ashy coarse sand, 3 to 20 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,000 feet (1,646 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.5 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Armenta and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Armenta soils

Landscape: Lava plateaus (fig. 56)

Landform: Interfluves on undulating plateaus (fig. 54)

Position on landform: Backslopes, footslopes

Parent material: Slope alluvium derived from pumice

Slope: 3 to 20 percent

Shape (down/across): Convex/convex

Surface fragments: About 55 percent subrounded gravel

Depth class: Very deep

Drainage class: Somewhat excessively drained

Slowest permeability: 6.0 to 20 in/hr (rapid)

Available water capacity: About 3.3 inches (low)

Shrink-swell potential: About 0.2 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Pinus edulis/Rhus trilobata/Bouteloua gracilis

Potential native vegetation: oneseed juniper, skunkbush sumac, Apache plume, blue grama

Land capability subclass (nonirrigated): 4s

Typical Profile

A—0 to 2 inches; very paragravelly ashy coarse sand

Bw—2 to 10 inches; very paragravelly ashy coarse sandy loam

Bk—10 to 13 inches; very paragravelly ashy coarse sand

E and Bt—13 to 55 inches; extremely paragravelly ashy coarse sand

C—55 to 80 inches; extremely paragravelly ashy coarse sand

Minor Components Composition

Chiminet and similar soils: About 7 percent

Canuela and similar soils: About 3 percent



Figure 56.—An area of Armenta very paragravelly ashy coarse sand, 3 to 20 percent slopes, near Lummis Canyon. The pumice derived Armenta soils have a white surface that has a sharp contrast with the darker surface. Chiminet soils are in the foreground.

414—Metate loam, 0 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,200 to 6,800 feet (1,890 to 2,073 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 47 to 49 degrees F (8.3 to 9.4 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Metate and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Metate soils

Landscape: Lava plateaus (fig. 43 and fig. 57)

Landform: Flood plain steps on valley floors

Position on landform: Tread

Parent material: Alluvium derived from dacite and rhyolitic tuff

Slope: 0 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Somewhat poorly drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 6.1 inches (moderate)

Shrink-swell potential: About 1.1 percent (low)

Flooding hazard: Rare

Seasonal high water table depth: About 24 to 42 inches

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Populus fremontii/Salix exigua-Salix/Carex

Potential native vegetation: cottonwood, blue grama, bottlebrush squirreltail, Gambel oak, Rocky Mountain maple, ponderosa pine

Land capability subclass (nonirrigated): 4s

Typical Profile

A1—0 to 3 inches; ashy loam

A2—3 to 8 inches; ashy loam

A3—8 to 17 inches; ashy loam

AC—17 to 28 inches; ashy loamy sand

C1—28 to 33 inches; stratified ashy coarse sand to ashy sandy loam

C2—33 to 44 inches; stratified ashy coarse sand to sandy loam

2C3—44 to 70 inches; extremely gravelly coarse sand

Minor Components Composition

Espiritu and similar soils: About 2 percent
Navajita and similar soils: About 2 percent
Pedregal and similar soils: About 2 percent
Piojillo and similar soils: About 2 percent
Riverwash: About 1 percent
Water: About 1 percent



Figure 57.—An area of Metate loam, 0 to 3 percent slopes, in Canon de los Frijoles, near the visitor center.

500—Sedillo very gravelly loam, 2 to 6 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,400 feet (1,676 to 2,256 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Sedillo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Sedillo soils

Landscape: Fan piedmonts (fig. 58 and fig. 59)

Landform: Fan remnants (fig. 60)

Position on landform: Tread

Parent material: Alluvium derived from monzonite

Slope: 2 to 6 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent subrounded cobbles; about 35 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 2.7 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 27 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, blue grama, twoneedle pinyon, sideoats grama, banana yucca

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 4 inches; very gravelly loam

Bt—4 to 11 inches; very gravelly clay loam

Btk—11 to 19 inches; very cobbly clay loam

Bk1—19 to 31 inches; extremely cobbly loam

Bk2—31 to 43 inches; extremely cobbly sandy loam

BCK—43 to 102 inches; extremely cobbly coarse sand

Minor Components Composition

Cerrillos and similar soils: About 4 percent

Ildefonso and similar soils: About 3 percent

Truehill and similar soils: About 3 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 58.—An area of Sedillo very gravelly loam, 2 to 6 percent slopes.



Figure 59.—An area of Sedillo very gravelly loam, 2 to 6 percent slopes. There are many rock fragments throughout the soil.

Soil Survey of Santa Fe County Area, New Mexico

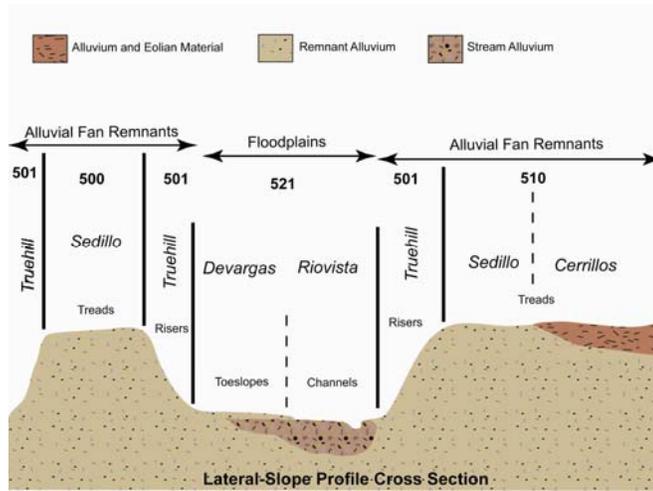


Figure 60.—Cross-section diagram of landform and landform position for remnant alluvial soils of the Ortiz, San Pedro, and South Mountain system.

501—Truehill extremely gravelly loam, 25 to 55 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 7,400 feet (1,676 to 2,256 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Truehill and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Truehill soils

Landscape: Fan piedmonts

Landform: Fan remnants (fig. 60)

Position on landform: Riser

Parent material: Alluvium derived from monzonite

Slope: 25 to 55 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent well rounded stones; about 15 percent well rounded cobbles; about 41 percent well rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.8 inches (very low)

Shrink-swell potential: About 2.8 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 40 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 8

Typical Profile

A—0 to 4 inches; extremely gravelly loam

Bt—4 to 7 inches; very gravelly clay loam

Btk—7 to 12 inches; very gravelly clay loam

Bk1—12 to 22 inches; extremely cobbly sandy loam

Bk2—22 to 40 inches; extremely gravelly coarse sandy loam

Bk3—40 to 49 inches; extremely gravelly coarse sand

Bk4—49 to 67 inches; extremely gravelly sandy clay loam

Bk5—67 to 80 inches; extremely gravelly loamy coarse sand

Minor Components Composition

Ildefonso and similar soils: About 5 percent
Cerropon and similar soils: About 2 percent
Sedillo and similar soils: About 2 percent
Rock outcrop: About 1 percent

502—Khapo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,800 feet (1,676 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Khapo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Khapo soils

Landscape: Semi-bolsos

Landform: Eroded fan remnants

Position on landform: Toeslopes

Parent material: Eolian deposits derived from sandstone and shale over slope alluvium derived from monzonite

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 7.5 inches (moderate)

Shrink-swell potential: About 2.9 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; fine sandy loam

Bt—3 to 8 inches; fine sandy loam

Btk1—8 to 27 inches; fine sandy loam

Btk2—27 to 37 inches; sandy clay loam

Btk3—37 to 47 inches; sandy clay loam

2BCK—47 to 81 inches; gravelly sandy loam

Minor Components Composition

Cerrillos and similar soils: About 6 percent

Zepol and similar soils: About 4 percent

503—Espinosa very gravelly coarse sandy loam, 5 to 40 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,600 feet (1,707 to 2,012 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.0 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Espinosa and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Espinosa soils

Landscape: Semi-bolsos

Landform: Low hills

Position on landform: Summits, shoulders, backslopes

Parent material: Slope alluvium derived from tuff breccia and monzonite over residuum weathered from tuff breccia

Slope: 5 to 40 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent subrounded gravel; about 5 percent subrounded cobbles; about 30 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, sideoats grama, New Mexico feathergrass, black grama, galleta, juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; very gravelly coarse sandy loam

Bk1—1 inch to 6 inches; very gravelly coarse sandy loam

2Bk2—6 to 12 inches; very gravelly sandy loam

2BCk—12 to 16 inches; very gravelly loamy sand

2Crk—16 to 26 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 5 percent

Puertecito and similar soils: About 3 percent

Idefonso and similar soils: About 2 percent

504—Sandoval-Badland complex, 15 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,800 feet (1,646 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Sandoval and similar soils: 70 percent

Badland: 20 percent

Minor components: 10 percent

Component Descriptions

Sandoval soils

Landscape: Semi-bolsons (fig. 61)

Landform: Low hills (fig. 62)

Position on landform: Backslopes

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from shale

Slope: 15 to 45 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent rounded cobbles; about 15 percent rounded medium and coarse gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 12 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Shale Hills

Potential native vegetation: alkali sacaton, broom snakeweed, fourwing saltbush, black grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; gravelly clay loam

C1—3 to 10 inches; extremely paragravelly clay loam

C2—10 to 16 inches; extremely paragravelly clay loam

Cr—16 to 26 inches; cemented bedrock

Badland

Description: Badland consists of exposed shale bedrock. It occurs as moderately to steeply sloping shale slopes intermingled with the Sandoval soils.

Landscape: Semi-bolsons (fig. 61)

Landform: Low hills (fig. 62)

Parent material: Shale

Slope: 40 to 160 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: 0 to 10 inches to bedrock, lithic

Land capability subclass (nonirrigated): 8

Minor Components Composition

Cumacho and similar soils: About 5 percent

Rock outcrop: About 4 percent

Charalito and similar soils: About 1 percent



Figure 61.—An area of Sandoval-Badland complex, 15 to 45 percent slopes. The Sandoval soils are on the left on steeper slopes, with some Badland intermixed. Badland is on some of the less sloping areas on the right.

Soil Survey of Santa Fe County Area, New Mexico

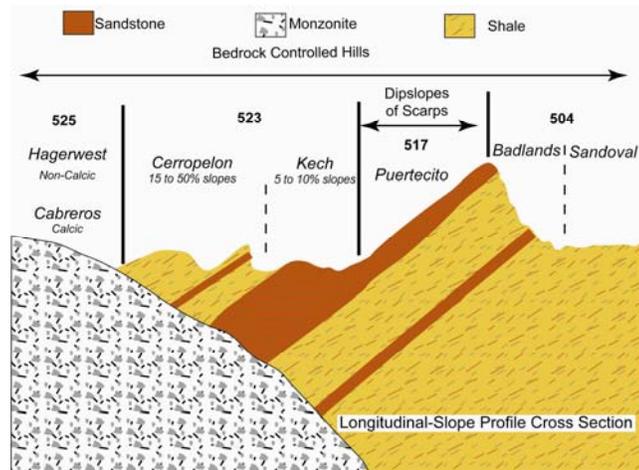


Figure 62.—Cross section diagram of landform and landform position for map units in the Galisteo Basin.

505—Puertecito-Paraje complex, 15 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,100 feet (1,707 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Puertecito and similar soils: 50 percent

Paraje and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Puertecito soils

Landscape: Fault block mountains (fig. 63 and fig. 64)

Landform: Low hills

Position on landform: Shoulders

Parent material: Slope alluvium derived from monzonite over residuum weathered from monzonite

Slope: 15 to 35 percent

Shape (down/across): Convex/convex

Surface fragments: About 1 percent angular (shape or size unspecified); about 20 percent angular (shape or size unspecified); about 40 percent angular channers

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.0 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Hills

Potential native vegetation: oneseed juniper, blue grama, Gambel oak, black grama, galleta, snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; extremely cobbly sandy loam (fig. 65)

Bt—2 to 10 inches; very cobbly sandy clay loam

2R—10 to 20 inches; cemented bedrock

Paraje soils

Landscape: Fault block mountains (fig. 63 and fig. 64)

Landform: Low hills

Position on landform: Backslopes

Parent material: Colluvium and/or slope alluvium derived from monzonite

Slope: 30 to 50 percent

Shape (down/across): Linear/linear

Soil Survey of Santa Fe County Area, New Mexico

Surface fragments: Less than 1 percent angular rounded stones; about 35 percent angular rounded cobbles; about 20 percent angular rounded gravel
Depth class: Very deep
Depth to restrictive feature: 2 to 6 inches to abrupt textural change
Drainage class: Well drained
Slowest permeability: 0.06 to 0.2 in/hr (slow)
Available water capacity: About 5.8 inches (low)
Shrink-swell potential: About 4.8 percent (moderate)
Runoff class: High
Calcium carbonate average in horizon of maximum accumulation: About 19 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)
Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis
Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very cobbly sandy loam (fig. 64)
Bt1—3 to 9 inches; very cobbly clay loam
Bt2—9 to 16 inches; very cobbly clay loam
Bt3—16 to 30 inches; very cobbly sandy clay loam
Btk—30 to 59 inches; very cobbly sandy clay loam

Minor Components Composition

Rock outcrop: About 5 percent
Wandurn and similar soils: About 3 percent
Penistaja and similar soils: About 2 percent



Figure 63.—An area of Puertecito-Paraje complex, 15 to 50 percent slopes in the background. An area of Khapo fine sandy loam, 1 to 3 percent slopes in the foreground. The Paraje soils are on backslopes in the lower slopes of the hill. The Puertecito soils are on shoulders and summits on the upper part of the hill.

Soil Survey of Santa Fe County Area, New Mexico



Figure 64.—An area of Puertecito-Paraje complex, 15 to 50 percent slopes. Puertecito soils are on the right on a shoulder position. The Paraje soils are on the left on a backslope position.



Figure 65.—Typical profile of the Puertecito soils in an area of Puertecito-Paraje complex, 15 to 50 percent slopes. The knife is about 9 inches long.

506—Ildefonso-Sandoval complex, 5 to 35 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,700 feet (1,646 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Ildefonso and similar soils: 50 percent

Sandoval and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Ildefonso soils

Landscape: Fan piedmonts (fig. 66)

Landform: Eroded fan remnants

Position on landform: Shoulders, beveled summits

Parent material: Slope alluvium derived from monzonite

Slope: 5 to 25 percent

Shape (down/across): Convex/convex

Surface fragments: About 35 percent subrounded gravel; about 10 percent subrounded cobbles

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.4 inches (low)

Shrink-swell potential: About 2.3 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; very gravelly sandy loam

Bk1—4 to 11 inches; gravelly sandy loam

Bk2—11 to 29 inches; extremely gravelly coarse sandy loam

Bc—29 to 59 inches; gravelly sandy loam

Sandoval soils

Landscape: Basins (fig. 66)

Landform: Eroded fan remnants

Position on landform: Backslopes

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from calcareous shale
Slope: 15 to 35 percent
Shape (down/across): Convex/convex
Surface fragments: About 10 percent subrounded cobbles; about 35 percent subrounded gravel
Depth class: Shallow
Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.0 to 0.001 in/hr (impermeable)
Available water capacity: About 2.7 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 11 percent
Gypsum average in horizon of maximum accumulation: About 1 percent
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Shale Hills
Potential native vegetation: alkali sacaton, broom snakeweed, fourwing saltbush, black grama
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; very gravelly very fine sandy loam
C1—2 to 13 inches; gravelly sandy clay loam
C2—13 to 19 inches; extremely paragravelly sandy clay loam
Cr—19 to 29 inches; cemented

Minor Components Composition

Truehill and similar soils: About 4 percent
Rock outcrop: About 3 percent
Penistaja and similar soils: About 3 percent

507—Ildefonso extremely gravelly sandy loam, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,000 feet (1,646 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Ildefonso and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Ildefonso soils

Landscape: Semi-bolsos

Landform: Eroded fan remnants

Position on landform: Shoulders

Parent material: Slope alluvium derived from monzonite

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Surface fragments: About 4 percent subrounded gravel; about 10 percent subrounded cobbles

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.3 inches (low)

Shrink-swell potential: About 2.2 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very gravelly sandy loam

Bk1—3 to 8 inches; gravelly sandy loam

Bk2—8 to 28 inches; extremely gravelly coarse sandy loam

Bk3—28 to 80 inches; gravelly sandy loam

Minor Components Composition

Truehill and similar soils: About 5 percent

Cerrillos and similar soils: About 3 percent

Penistaja and similar soils: About 2 percent

508—Charalito-Riverwash complex, 1 to 3 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,500 feet (1,646 to 1,981 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Charalito and similar soils: 65 percent

Riverwash: 20 percent

Minor components: 15 percent

Component Descriptions

Charalito soils

Landscape: Semi-bolsons (fig. 66)

Landform: Inset fans on valley floors

Parent material: Alluvium derived from monzonite, limestone, and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/convex

Surface fragments: About 2 percent angular (shape or size unspecified); about 40 percent angular channers; about 25 percent angular channers

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.4 inches (moderate)

Shrink-swell potential: About 2.5 percent (low)

Flooding hazard: Frequent

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, New Mexico feathergrass, sideoats grama, little bluestem, galleta, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; gravelly sandy loam

AC—1 inch to 5 inches; gravelly sandy clay loam

C1—5 to 22 inches; gravelly coarse sandy loam

C2—22 to 40 inches; gravelly sandy clay loam

C3—40 to 60 inches; paragravelly sandy loam

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from

Soil Survey of Santa Fe County Area, New Mexico

prolonged high-intensity storms. In some places it is intermingled with the Charalito soil.

Landscape: Semi-bolsos (fig. 66)

Landform: Channels on valley floors

Parent material: Alluvium derived from mixed

Slope: 1 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 45 percent rounded gravel; about 5 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.3 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Seasonal high water table depth: About 0 to 60 inches

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Chupe and similar soils: About 7 percent

Cumacho and similar soils: About 4 percent

Galisteo and similar soils: About 3 percent

Zia and similar soils: About 1 percent



Figure 66.—An area of Charalito-Riverwash complex, 1 to 3 percent slopes, flooded, is in the foreground. An area of Ildefonso-Sandoval complex, 5 to 35 percent slopes, is in the background.

509—Puertecito-Wandurn-Rock outcrop complex, 30 to 60 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,100 to 7,600 feet (1,859 to 2,316 meters)

Mean annual precipitation: 10 to 15 inches (254 to 381 millimeters)

Mean annual air temperature: 48 to 52 degrees F (8.9 to 11.1 degrees C)

Frost-free period: 130 to 170 days

Map Unit Composition

Puertecito and similar soils: 60 percent

Wandurn and similar soils: 20 percent

Rock outcrop: 10 percent

Minor components: 10 percent

Component Descriptions

Puertecito soils

Landscape: Fault block mountains (fig. 67)

Landform: South-facing high hills

Position on landform: Shoulders, backslopes

Parent material: Colluvium derived from monzonite over residuum weathered from monzonite

Slope: 30 to 60 percent

Shape (down/across): Convex/convex

Surface fragments: About 2 percent angular stones; about 10 percent angular cobbles; about 50 percent angular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Hills

Potential native vegetation: blue grama, Gambel oak, oneseed juniper, black grama, broom snakeweed, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely gravelly coarse sandy loam

Bt1—2 to 6 inches; very gravelly sandy clay loam

Bt2—6 to 10 inches; very gravelly clay loam

Btk—10 to 12 inches; very gravelly loam

2R—12 to 22 inches; cemented bedrock

Wandurn soils

Landscape: Fault block mountains (fig. 67)
Landform: North-facing high hills
Position on landform: Backslopes
Parent material: Slope alluvium and colluvium derived from monzonite
Slope: 30 to 60 percent
Shape (down/across): Linear/linear
Surface fragments: About 9 percent subangular stones; about 40 percent subangular cobbles; about 25 percent subangular gravel
Depth class: Deep
Depth to restrictive feature: 39 to 59 inches to bedrock, lithic; 39 to 59 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 3.2 inches (low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: High
Calcium carbonate average in horizon of maximum accumulation: About 6 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis
Potential native vegetation: oneseed juniper, twoneedle pinyon, muttongrass, true mountain mahogany, sideoats grama
Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely cobbly sandy clay loam
Bt1—2 to 7 inches; cobbly clay loam
Bt2—7 to 14 inches; very cobbly clay loam
Bt3—14 to 25 inches; extremely cobbly sandy clay loam
Btk—25 to 40 inches; extremely cobbly sandy clay loam
2Bt4—40 to 43 inches; sandy clay loam
2Cr—43 to 50 inches; cemented bedrock
2R—50 to 60 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed monzonite bedrock. It occurs as steeply sloping bedrock, short cliffs, and knobs intermingled with the Puertecito and Wandurn soils.
Landscape: Fault block mountains (fig. 67)
Landform: High hills
Parent material: Monzonite
Slope: 40 to 160 percent
Shape (down/across): Linear/linear

Minor Components Composition

Paraje and similar soils: About 6 percent
Penistaja and similar soils: About 3 percent
Rubble land: About 1 percent



Figure 67.—An area of Puertecito-Wandurn-Rock outcrop complex, 30 to 60 percent slopes. The Puertecito soils are on areas with less trees. The Wandurn soils are on areas where the tree density exceeds 35 percent.

510—Cerrillos-Sedillo complex, 1 to 5 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 7,200 feet (1,707 to 2,195 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.0 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Cerrillos and similar soils: 60 percent

Sedillo and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Cerrillos soils

Landscape: Fan piedmonts (fig. 68)

Landform: Fan remnants (fig. 60)

Position on landform: Tread

Parent material: Eolian deposits derived from sandstone and shale over alluvium derived from monzonite

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.7 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 28 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; fine sandy loam

Bt—4 to 12 inches; clay loam

Btk—12 to 20 inches; clay loam

Bk1—20 to 36 inches; gravelly sandy clay loam

Bk2—36 to 46 inches; sandy clay loam

Bk3—46 to 59 inches; gravelly sandy clay loam

Bk4—59 to 86 inches; gravelly sandy clay loam

Bk5—86 to 94 inches; sandy clay loam

Sedillo soils

Landscape: Fan piedmonts (fig. 68)

Landform: Fan remnants (fig. 60)

Position on landform: Tread

Parent material: Eolian deposits and alluvium derived from sandstone, shale, and monzonite

Slope: 2 to 5 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 5.9 inches (low)

Shrink-swell potential: About 3.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 40 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 8 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: blue grama, black grama, galleta, New Mexico feathergrass, oneseed juniper, sideoats grama, twoneedle pinyon

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; very fine sandy loam

BA—3 to 9 inches; loam

Btk—9 to 15 inches; very cobbly clay loam

Bk1—15 to 25 inches; extremely gravelly loam

Bk2—25 to 39 inches; very cobbly sandy loam

Bk3—39 to 52 inches; cobbly sandy clay loam

Bk4—52 to 69 inches; gravelly sandy clay loam

Bk5—69 to 80 inches; gravelly sandy loam

Minor Components Composition

Penistaja and similar soils: About 5 percent

Truehill and similar soils: About 3 percent

Ildefonso and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 68.—An area of Cerrillos-Sedillo complex, 1 to 5 percent slopes. The Cerrillos soils are in the foreground. The Sedillo soils are in the background, where the density of trees is greater.

511—Wandurn-Alchonzo-Rubble land complex, 35 to 90 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,200 to 8,900 feet (1,890 to 2,713 meters)

Mean annual precipitation: 14 to 18 inches (356 to 457 millimeters)

Mean annual air temperature: 45 to 49 degrees F (7.2 to 9.4 degrees C)

Frost-free period: 110 to 150 days

Map Unit Composition

Wandurn and similar soils: 50 percent

Alchonzo and similar soils: 30 percent

Rubble land: 10 percent

Minor components: 10 percent

Component Descriptions

Wandurn soils

Landscape: Fault block mountains

Landform: South-facing mountains

Position on landform: Mountainflank

Parent material: Slope alluvium and colluvium derived from monzonite

Slope: 35 to 75 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subangular stones; about 40 percent subangular cobbles; about 25 percent subangular gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.7 inches (low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: Gambel oak, twoneedle pinyon, muttongrass, oneseed juniper, sideoats grama, wolftail

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 3 inches; extremely cobbly loam

Bt1—3 to 11 inches; very cobbly sandy clay loam

Bt2—11 to 20 inches; very cobbly sandy clay loam

Bt3—20 to 30 inches; very gravelly sandy clay loam

Bt4—30 to 40 inches; extremely gravelly sandy clay loam

Bt5—40 to 47 inches; extremely gravelly sandy clay loam

R—47 to 57 inches; cemented bedrock

Alchonzo soils

Landscape: Fault block mountains

Landform: North-facing mountains

Position on landform: Mountainflank

Parent material: Slope alluvium and colluvium derived from monzonite

Slope: 45 to 90 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular stones; about 10 percent subangular cobbles; about 60 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii

Potential native vegetation:

Common trees: ponderosa pine

Other plants: Gambel's oak, muttongrass, mountain muhly, sedge, eriogonum

Land capability subclass (nonirrigated): 8

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 12 inches; extremely gravelly sandy loam

Bw1—12 to 27 inches; extremely gravelly sandy loam

Bw2—27 to 29 inches; very gravelly sandy loam

R—29 to 39 inches; cemented bedrock

Rubble land

Description: Rubble land consists of talus of irregularly shaped cobbles, stones, and boulders that are devoid of vegetation. It is on very steeply sloping backslopes below basalt cliffs and is the result of parts of the cliff breaking off and tumbling downslope.

Landscape: Fault block mountains

Landform: Mountains

Parent material: Monzonite

Slope: 40 to 80 percent

Shape (down/across): Linear/linear

Depth to restrictive feature: 0 to 10 inches to bedrock, paralithic

Minor Components Composition

Rock outcrop: About 6 percent

Cochiti and similar soils: About 3 percent

Pastorius and similar soils: About 1 percent

512—Cochiti extremely cobbly loam, 15 to 35 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,200 to 8,300 feet (1,890 to 2,530 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Cochiti and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Cochiti soils

Landscape: Fault block mountains

Landform: Mountains

Position on landform: Mountainbase

Parent material: Slope alluvium and colluvium derived from monzonite

Slope: 15 to 35 percent

Shape (down/across): Concave/concave

Surface fragments: About 3 percent subangular boulders; about 7 percent subangular stones; about 40 percent subangular cobbles; about 25 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 4.7 inches (low)

Shrink-swell potential: About 6.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: Gambel oak, twoneedle pinyon, mountain mahogany, blue grama, oneseed juniper, sideoats grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 4 inches; extremely cobbly loam

Bt1—4 to 10 inches; extremely cobbly clay loam

Bt2—10 to 31 inches; very cobbly clay loam

Bt3—31 to 57 inches; extremely cobbly sandy clay loam

BC—57 to 80 inches; extremely cobbly sandy loam

Minor Components Composition

Rubble land: About 3 percent
Predawn and similar soils: About 2 percent
Wandurn and similar soils: About 2 percent
Alchonzo and similar soils: About 2 percent
Pastorius and similar soils: About 1 percent

513—Pedregal very cobbly loam, 8 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,300 to 7,800 feet (1,920 to 2,377 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Pedregal and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Pedregal soils

Landscape: Fan piedmonts

Landform: Fan remnants

Position on landform: Tread

Parent material: Alluvium derived from monzonite

Slope: 8 to 15 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent subrounded stones; about 15 percent subrounded cobbles; about 25 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 20 to 36 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 3.5 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 60 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: oneseed juniper, true mountain mahogany, twoneedle pinyon, pricklypear, skunkbush sumac

Land capability subclass (nonirrigated): 7s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material (fig. 69)

A—1 inch to 3 inches; very cobbly loam

Bt1—3 to 7 inches; very cobbly clay loam

Bt2—7 to 12 inches; very cobbly clay loam

Btk—12 to 18 inches; very cobbly clay loam

Bk1—18 to 25 inches; very gravelly sandy loam

Bkkm—25 to 33 inches; very gravelly sandy loam

2Bk2—33 to 42 inches; very gravelly loamy coarse sand

2Bk3—42 to 79 inches; extremely gravelly coarse sand

Minor Components Composition

Cochiti and similar soils: About 6 percent
Predawn and similar soils: About 3 percent
Pastorius and similar soils: About 1 percent



Figure 69.—Typical profile of Pedregal very cobbly loam, 8 to 15 percent slopes, with the dark surface, red subsoil, and white substratum. A well developed petrocalcic horizon, cemented by calcium carbonate, exists in this soil in the upper part of the white area. There are many rock fragments throughout this soil.

514—Pegasus extremely cobbly loam, 20 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 7,700 feet (1,737 to 2,347 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Pegasus and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Pegasus soils

Landscape: Fault block mountains

Landform: Low hills

Position on landform: Summits, backslopes, shoulders

Parent material: Slope alluvium and colluvium derived from monzonite

Slope: 20 to 50 percent

Shape (down/across): Convex/convex

Surface fragments: About 2 percent angular stones; about 35 percent angular cobbles; about 35 percent angular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Cercocarpus montanus-Chrysothamnus nauseosus/Bouteloua gracilis

Potential native vegetation: twoneedle pinyon, oneseed juniper, true mountain mahogany, blue grama, sideoats grama

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 4 inches; extremely cobbly loam

Bt1—4 to 10 inches; cobbly loam

Bt2—10 to 14 inches; very gravelly clay loam

2R—14 to 24 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 4 percent

Wandurn and similar soils: About 4 percent

Alchonzo and similar soils: About 2 percent

515—Pastorius very cobbly loam, 3 to 5 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 8,100 feet (1,829 to 2,469 meters)

Mean annual precipitation: 14 to 18 inches (356 to 457 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 110 to 130 days

Map Unit Composition

Pastorius and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Pastorius soils

Landscape: Fault block mountains

Landform: Low stream terraces on valley floors

Position on landform: Tread

Parent material: Alluvium derived from monzonite

Slope: 3 to 5 percent

Shape (down/across): Linear/concave

Surface fragments: About 25 percent subrounded gravel; about 20 percent subrounded cobbles

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.9 inches (low)

Shrink-swell potential: About 3.9 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus ponderosa/Festuca arizonica-Danthonia parryi

Potential native vegetation: ponderosa pine, Gambel oak, mountain muhly, muttongrass, blue grama

Land capability subclass (nonirrigated): 4c

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 6 inches; very cobbly loam

Bt1—6 to 17 inches; very cobbly loam

Bt2—17 to 28 inches; extremely cobbly loam

Bt3—28 to 43 inches; extremely cobbly loam

Bt4—43 to 82 inches; extremely cobbly loam

Minor Components Composition

Pedregal and similar soils: About 5 percent

Cochiti and similar soils: About 3 percent

Riverwash: About 2 percent

516—Cerrillos fine sandy loam, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,900 feet (1,646 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Cerrillos and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Cerrillos soils

Landscape: Semi-bolsos (fig. 70)

Landform: Alluvial flats

Parent material: Eolian deposits derived from sandstone and shale over alluvium derived from monzonite

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 7.8 inches (moderate)

Shrink-swell potential: About 2.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 26 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 4 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 8 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; fine sandy loam

Bt—4 to 14 inches; sandy clay loam

Btk—14 to 20 inches; sandy clay loam

Bk1—20 to 28 inches; loam

Bk2—28 to 43 inches; gravelly sandy loam

Bk3—43 to 53 inches; gravelly sandy loam

Bk4—53 to 65 inches; fine sandy loam

Bk5—65 to 72 inches; gravelly fine sandy loam

Bk6—72 to 110 inches; very fine sandy loam

Minor Components Composition

Penistaja and similar soils: About 5 percent

Sedillo and similar soils: About 3 percent

Cumacho and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 70.—An area of Cerrillos fine sandy loam, 1 to 4 percent slopes. In the background is an area of Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes. The top of the Ortiz Mountains is on the horizon.

517—Puertecito extremely gravelly fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,100 feet (1,646 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Puertecito and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Puertecito soils

Landscape: Semi-bolsos

Landform: Dipslopes on cuestras (fig. 62)

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 15 to 25 percent

Shape (down/across): Linear/linear

Surface fragments: About 55 percent subangular gravel; about 15 percent subangular cobbles

Depth class: Shallow

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 0.8 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 9 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Hills

Potential native vegetation: blue grama, oneseed juniper, Gambel oak, black grama, broom snakeweed, galleta, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely gravelly fine sandy loam

Bt—2 to 6 inches; gravelly loam

Btk—6 to 11 inches; very gravelly loam

R—11 to 21 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 6 percent

Sandoval and similar soils: About 4 percent

518—Rock outcrop-Skyvillage complex, 5 to 35 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,100 feet (1,646 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Rock outcrop: 50 percent

Skyvillage and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Rock outcrop

Description: Rock outcrop consists of exposed sandstone bedrock. It occurs as gently to moderately sloping bedrock, knobs, ledges, and cliffs intermingled with the Skyvillage soil.

Landscape: Semi-bolsions (fig. 71)

Landform: Ridges, structural benches

Parent material: Sandstone

Slope: 15 to 150 percent

Shape (down/across): Convex/convex

Depth to restrictive feature: At the surface bedrock, lithic

Skyvillage soils

Landscape: Semi-bolsions (fig. 71)

Landform: Ridges, structural benches

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from sandstone

Slope: 5 to 35 percent

Shape (down/across): Convex/convex

Surface fragments: About 15 percent subrounded gravel

Depth class: Very shallow

Depth to restrictive feature: 2 to 10 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.4 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 10 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Shallow Sandstone

Potential native vegetation: sideoats grama, blue grama, New Mexico feathergrass, black grama, true mountain mahogany, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; gravelly loamy sand
C—3 to 6 inches; gravelly sandy loam
R—6 to 16 inches; cemented bedrock

Minor Components Composition

Sandoval and similar soils: About 4 percent
Ceropelon and similar soils: About 3 percent
Cumacho and similar soils: About 3 percent



Figure 71.—An area of Rock outcrop-Skyvillage complex, 5 to 35 percent slopes. Rock outcrop dominates this area. Skyvillage soils are on the areas of vegetation.

519—Cumacho fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,800 feet (1,646 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Cumacho and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Cumacho soils

Landscape: Semi-bolsons (fig. 73)

Landform: Pediments (fig. 72)

Position on landform: Footslopes, backslopes

Parent material: Eolian deposits and alluvium derived from sandstone and shale over residuum weathered from shale

Slope: 2 to 8 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, densic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 8.2 inches (moderate)

Shrink-swell potential: About 3.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: About 2 percent

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, ring muhly, galleta, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; fine sandy loam (fig. 74)

Bt—1 inch to 7 inches; loam

Btk—7 to 11 inches; clay loam

2Bk—11 to 19 inches; clay loam

2BCky—19 to 33 inches; paragravelly clay loam

2C—33 to 46 inches; extremely paragravelly fine sandy loam

2Cd—46 to 64 inches; cemented bedrock

Minor Components Composition

Penistaja and similar soils: About 5 percent

Cerrillos and similar soils: About 3 percent

Ildefonso and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico

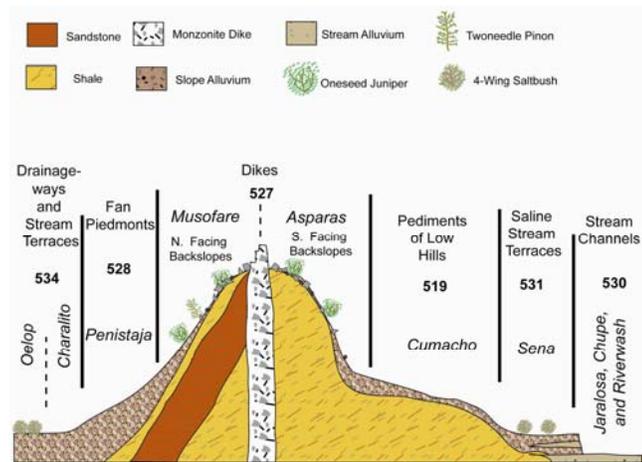


Figure 72.—Cross-section diagram of landform and landform position for map units in the Galisteo Basin, close to Galisteo.



Figure 73.—An area of Cumacho fine sandy loam, 2 to 8 percent slopes, showing a hand-dug soil pit. Many tools of the trade are surrounding the pit.



Figure 74.—Typical profile of Cumacho fine sandy loam, 2 to 8 percent slopes.

520—Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,900 feet (1,646 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Cielito and similar soils: 35 percent

Netoma and similar soils: 30 percent

Tanbark and similar soils: 25 percent

Minor components: 10 percent

Component Descriptions

Cielito soils

Landscape: Semi-bolsos (fig. 70, fig. 75, and fig. 76)

Landform: Low hills

Position on landform: Footslopes, shoulders

Parent material: Eolian material and slope alluvium derived from sandstone and gypsum over residuum weathered from gypsum

Slope: 1 to 10 percent

Shape (down/across): Convex/concave

Surface fragments: About 1 percent subrounded medium and coarse gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 6.4 inches (moderate)

Shrink-swell potential: About 3.2 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 12 percent

Gypsum average in horizon of maximum accumulation: About 90 percent

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 11 (slightly sodic)

Ecological site: Limy

Potential native vegetation: sand dropseed, New Mexico feathergrass, black grama, ephedra, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; very fine sandy loam (fig. 77)

Bt—1 inch to 6 inches; gypsiferous clay loam

2By1—6 to 20 inches; gypsiferous loam

2By2—20 to 28 inches; gypsiferous loam

2By/C—28 to 47 inches; stratified gypsiferous coarse sand to gypsiferous coarse sandy loam

2R—47 to 57 inches; cemented bedrock

Netoma soils

Landscape: Semi-bolsons (fig. 70, fig. 75, and fig. 76)
Landform: Low hills
Position on landform: Toeslopes
Parent material: Slope alluvium derived from gypsum and sandstone
Slope: 4 to 8 percent
Shape (down/across): Linear/linear
Surface fragments: About 5 percent rounded medium and coarse gravel
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 8.2 inches (moderate)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 11 percent
Gypsum average in horizon of maximum accumulation: About 80 percent
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 10 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed
Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 1 inch; fine sandy loam (fig. 77)
By1—1 inch to 10 inches; gypsiferous very fine sandy loam
By2—10 to 17 inches; gypsiferous loam
By3—17 to 32 inches; gypsiferous loam
By4—32 to 46 inches; gypsiferous fine sandy loam
By5—46 to 72 inches; gypsiferous fine sandy loam
C—72 to 106 inches; gypsiferous sandy loam

Tanbark soils

Landscape: Semi-bolsons (fig. 70, fig. 75, and fig. 76)
Landform: Low hills
Position on landform: Backslopes
Parent material: Residuum weathered from gypsum
Slope: 15 to 25 percent
Shape (down/across): Convex/convex
Surface fragments: About 5 percent rounded medium and coarse gravel
Depth class: Very shallow
Depth to restrictive feature: 4 to 10 inches to bedrock, lithic
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 0.7 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: High
Calcium carbonate average in horizon of maximum accumulation: About 48 percent
Gypsum average in horizon of maximum accumulation: About 90 percent
Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Soil Survey of Santa Fe County Area, New Mexico

Sodium adsorption ratio average in horizon of maximum accumulation: About 12 (slightly sodic)

Ecological site: Gyp Hills

Potential native vegetation: ephedra, galleta, gyp dropseed, black grama, sideoats grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 3 inches; gypsiferous coarse sandy loam (fig. 77)

By—3 to 7 inches; gypsiferous coarse sandy loam

Cr—7 to 17 inches; cemented bedrock

Minor Components Composition

Badland: About 7 percent

Rock outcrop: About 3 percent



Figure 75.—An area of Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes, showing a landscape of the Cielito soil. The white areas are where gypsum is close to the soil surface.



Figure 76.—An area of Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes. The foreground shows an area of Netoma soil. An inclusion of Badland is intermixed with the Tanbark soil in the background.



Figure 77.—A profile of the Tanbark soil in an area of Cielito-Netoma-Tanbark complex, 1 to 25 percent slopes. This very shallow soil has strong accumulations of gypsum over gypsum bedrock, with very well developed cryptogams (microbiotic crusts) on the surface.

521—Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,400 feet (1,646 to 2,256 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Devargas and similar soils: 50 percent

Riovista and similar soils: 30 percent

Riverwash: 10 percent

Minor components: 10 percent

Component Descriptions

Devargas soils

Landscape: Fan piedmonts (fig. 78 and fig. 79)

Landform: Stream terraces (fig. 60)

Position on landform: Tread

Parent material: Alluvium derived from monzonite and sandstone

Slope: 1 to 5 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 20 to 39 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.9 inches (low)

Shrink-swell potential: About 2.3 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, black grama, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; sandy loam

Bt—2 to 6 inches; loam

Btk1—6 to 18 inches; loam

Btk2—18 to 30 inches; sandy loam

2BCk—30 to 60 inches; extremely cobbly coarse sand

Riovista soils

Landscape: Fan piedmonts (fig. 78 and fig. 79)
Landform: Flood plain steps on valley floors (fig. 60)
Position on landform: Tread
Parent material: Alluvium derived from monzonite
Slope: 0 to 2 percent
Shape (down/across): Linear/linear
Surface fragments: About 1 percent rounded stones; about 10 percent rounded cobbles; about 15 percent rounded gravel
Depth class: Very deep
Drainage class: Excessively drained
Slowest permeability: 6.0 to 20 in/hr (rapid)
Available water capacity: About 1.6 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Flooding hazard: Rare
Runoff class: Very low
Calcium carbonate average in horizon of maximum accumulation: None
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)
Ecological site: Gravelly
Potential native vegetation: blue grama, New Mexico feathergrass, black grama, galleta, juniper, sideoats grama, twoneedle pinyon
Land capability subclass (nonirrigated): 7s

Typical Profile

A1—0 to 5 inches; cobbly sandy loam
A2—5 to 14 inches; extremely cobbly sandy loam
C1—14 to 30 inches; extremely cobbly coarse sand
C2—30 to 60 inches; stratified coarse sand to extremely cobbly loamy sand

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Riovista soil.
Landscape: Fan piedmonts (fig. 78 and fig. 79)
Landform: Channels on valley floors (fig. 60)
Parent material: Alluvium derived from mixed
Slope: 0 to 2 percent
Shape (down/across): Linear/linear
Surface fragments: About 5 percent rounded cobbles; about 20 percent rounded gravel
Drainage class: Excessively drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 2.9 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Flooding hazard: Frequent
Runoff class: Negligible
Calcium carbonate average in horizon of maximum accumulation: About 1 percent
Gypsum average in horizon of maximum accumulation: About 1 percent
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Soil Survey of Santa Fe County Area, New Mexico

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Penistaja and similar soils: About 6 percent

Idefonso and similar soils: About 4 percent



Figure 78.—An area of Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, flooded. This is a typical area of the Devargas soil.



Figure 79.—An area of Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, flooded. This is a typical area of Riovista soil. Notice the amount of surface rock fragments and sparseness of vegetation as opposed to the Devargas soil in the previous picture.

522—Penistaja family fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,500 to 6,900 feet (1,676 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Penistaja family and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Penistaja family soils

Landscape: Semi-bolsons

Landform: Alluvial flats

Parent material: Slope alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/concave

Surface fragments: About 5 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.7 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom
snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

Btk1—2 to 13 inches; loam

Btk2—13 to 25 inches; clay loam

Btk3—25 to 47 inches; clay loam

Btk4—47 to 91 inches; clay loam

Btk5—91 to 98 inches; sandy clay loam

Minor Components Composition

Cerrillos and similar soils: About 5 percent

Ildefonso and similar soils: About 4 percent

Truehill and similar soils: About 1 percent

523—Kech-Cerropelon-Rock outcrop complex, 5 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,100 feet (1,646 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Kech and similar soils: 45 percent

Cerropelon and similar soils: 35 percent

Rock outcrop: 10 percent

Minor components: 10 percent

Component Descriptions

Kech soils

Landscape: Semi-bolsons

Landform: Bedrock controlled structural benches on hills (fig. 62)

Position on landform: Shoulders, summits

Parent material: Slope alluvium derived from sandstone over residuum weathered from sandstone

Slope: 5 to 10 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 2 to 6 inches to abrupt textural change; 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.8 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Shallow Sandstone

Potential native vegetation: sideoats grama, Gambel oak, black grama, oneseed juniper, skunkbush sumac

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 2 inches; loamy fine sand

A2—2 to 4 inches; fine sandy loam

Bt1—4 to 8 inches; gravelly sandy clay loam

Bt2—8 to 12 inches; sandy clay loam

Bt3—12 to 18 inches; sandy clay loam

R—18 to 28 inches; cemented bedrock

Cerropelon soils

Landscape: Semi-bolsons

Landform: Bedrock controlled hills (fig. 62)

Position on landform: Shoulders, backslopes

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from shale

Slope: 15 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent subrounded stones; about 15 percent subrounded cobbles; about 20 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 4.6 inches (low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Sandstone Hills

Potential native vegetation: blue grama, Gambel oak, mountain mahogany, oneseed juniper, sideoats grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; very cobbly sandy loam

Bt1—1 inch to 6 inches; gravelly clay loam

Bt2—6 to 12 inches; clay loam

Btk—12 to 21 inches; clay loam

BCK—21 to 28 inches; clay loam

Cr—28 to 39 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed sandstone bedrock. It occurs as moderately sloping bedrock, ledges, and cliffs intermingled with the Bond and Cerropelon soils.

Landscape: Semi-bolsons

Landform: Bedrock controlled hills (fig. 62)

Parent material: Sandstone

Slope: 25 to 70 percent

Shape (down/across): Convex/convex

Minor Components Composition

Skyvillage and similar soils: About 5 percent

Cumacho and similar soils: About 3 percent

Badland: About 2 percent

524—Zia-Gullied land complex, 2 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,100 feet (1,646 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Zia and similar soils: 65 percent

Gullied land: 25 percent

Minor components: 10 percent

Component Descriptions

Zia soils

Landscape: Semi-bolsons

Landform: Low stream terraces

Position on landform: Backslopes, shoulders

Position on landform: Tread

Parent material: Alluvium derived from sandstone and shale

Slope: 2 to 10 percent

Shape (down/across): Linear/convex

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 7.6 inches (moderate)

Shrink-swell potential: About 2.5 percent (low)

Flooding hazard: Very rare

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, black grama, galleta, ring muhly, broom
snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 3 inches; fine sandy loam

A2—3 to 13 inches; fine sandy loam

C1—13 to 27 inches; fine sandy loam

2C2—27 to 41 inches; loamy fine sand

2C3—41 to 79 inches; fine sandy loam

Gullied land

Landscape: Semi-bolsons

Landform: Low stream terraces

Soil Survey of Santa Fe County Area, New Mexico

Position on landform: Riser

Parent material: Alluvium derived from sandstone and shale

Slope: 50 to 200 percent

Shape (down/across): Convex/convex

Minor Components Composition

Charalito and similar soils: About 4 percent

Sena and similar soils: About 3 percent

Galisteo and similar soils: About 3 percent

525—Hagerman-Cabreros complex, 2 to 6 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,000 to 7,000 feet (1,829 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Hagerman and similar soils: 50 percent

Cabreros and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Hagerman soils

Landscape: Fault block mountains

Landform: Structural benches on sills (fig. 62)

Position on landform: Footslopes

Parent material: Eolian deposits and slope alluvium derived from sandstone, shale, and andesite over residuum weathered from andesite

Slope: 2 to 6 percent

Shape (down/across): Concave/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, lithic; 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 5.3 inches (low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; sandy loam

Bt1—3 to 7 inches; clay loam

Bt2—7 to 22 inches; clay loam

Btk—22 to 30 inches; sandy clay loam

Cr—30 to 35 inches; cemented bedrock

R—35 to 45 inches; cemented bedrock

Cabrerros soils

Landscape: Fault block mountains

Landform: Structural benches on sills (fig. 62)

Position on landform: Toeslopes

Parent material: Eolian material and alluvium derived from sandstone over residuum derived from monzonite, eolian deposits and slope alluvium derived from sandstone, shale, and andesite over residuum weathered from andesite

Slope: 2 to 6 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 59 inches to bedrock, lithic; 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 5.0 inches (low)

Shrink-swell potential: About 3.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 32 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Hills

Potential native vegetation: blue grama, oak, oneseed juniper, black grama, galleta

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

Bt1—2 to 9 inches; loam

Bt2—9 to 18 inches; clay loam

Btk—18 to 25 inches; loam

BCk—25 to 34 inches; gravelly sandy loam

Cr—34 to 47 inches; cemented bedrock

R—47 to 57 inches; cemented bedrock

Minor Components Composition

Penistaja and similar soils: About 4 percent

Rock outcrop: About 4 percent

Ildefonso and similar soils: About 2 percent

526—Penistaja family-Truehill complex, 3 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,800 to 6,900 feet (1,768 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Penistaja family and similar soils: 50 percent

Truehill and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Penistaja family soils

Landscape: Semi-bolsons

Landform: Fan aprons

Position on landform: Footslopes

Parent material: Slope alluvium derived from sandstone, shale, and monzonite

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 11.0 inches (high)

Shrink-swell potential: About 4.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom
snakeweed

Land capability subclass (nonirrigated): 6s

Typical Profile

A—0 to 3 inches; sandy loam (fig. 80)

Bt—3 to 9 inches; loam

Btk1—9 to 27 inches; loam

Btk2—27 to 53 inches; loam

Bk1—53 to 83 inches; gravelly loam

Bk2—83 to 102 inches; sandy loam

Truehill soils

Landscape: Basins

Landform: Inset fans on fan aprons

Position on landform: Summits

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Slope alluvium derived from sandstone, shale, and monzonite
Slope: 5 to 15 percent
Shape (down/across): Linear/convex
Surface fragments: About 2 percent well rounded stones; about 15 percent well rounded cobbles; about 41 percent well rounded gravel
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 2.8 inches (very low)
Shrink-swell potential: About 3.6 percent (moderate)
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 40 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Gravelly
Potential native vegetation: blue grama, New Mexico feathergrass, black grama, sideoats grama, galleta, oneseed juniper, twoneedle pinyon
Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 4 inches; extremely gravelly loam (fig. 80)
Bt—4 to 7 inches; very gravelly clay loam
Btk—7 to 12 inches; very gravelly clay loam
Bk1—12 to 22 inches; extremely cobbly sandy loam
Bk2—22 to 40 inches; extremely gravelly coarse sandy loam
Bk3—40 to 49 inches; extremely gravelly coarse sand
Bk4—49 to 67 inches; extremely gravelly sandy clay loam
2BCk—67 to 80 inches; extremely gravelly loamy coarse sand

Minor Components Composition

Cerrillos and similar soils: About 4 percent
Cumacho and similar soils: About 3 percent
Ildfonso and similar soils: About 2 percent
Charalito and similar soils: About 1 percent



Figure 80.—Typical profile of the Truehill soil in an area of Penistaja family-Truehill complex, 3 to 15 percent slopes, with a dark surface, a red subsoil, and a white substratum. There are many rock fragments throughout this soil.

527—Musofare-Asparas complex, 20 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,600 to 6,900 feet (1,707 to 2,103 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Musofare and similar soils: 50 percent

Asparas and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Musofare soils

Landscape: Basins

Landform: South-facing dikes (fig. 72)

Position on landform: Backslopes

Parent material: Colluvium derived from diorite, andesite, sandstone, and shale

Slope: 20 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent angular stones; about 30 percent angular cobbles; about 35 percent angular gravel

Depth class: Moderately deep

Depth to restrictive feature: 2 to 4 inches to abrupt textural change; 20 to 59 inches to bedrock, lithic; 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.1 inches (low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 18 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Shallow Sandstone

Potential native vegetation: sideoats grama, blue grama, little bluestem, mountain mahogany, black grama, oneseed juniper

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely cobbly sandy loam

Bt—2 to 13 inches; very gravelly clay loam

Btk1—13 to 22 inches; very cobbly loam

Btk2—22 to 34 inches; very cobbly loam

2Cr—34 to 50 inches; cemented bedrock

2R—50 to 60 inches; cemented bedrock

Asparas soils

Landscape: Basins

Landform: North-facing dikes (fig. 72)

Position on landform: Backslopes

Parent material: Colluvium derived from diorite, andesite, sandstone, and shale

Slope: 20 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 30 percent angular gravel; about 30 percent angular cobbles; about 2 percent angular stones; about 1 percent angular boulders

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 5.7 inches (low)

Shrink-swell potential: About 7.9 percent (high)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Cinder

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, threeawn, oneseed juniper

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely cobbly loam

Bt1—2 to 7 inches; sandy clay loam

Bt2—7 to 11 inches; clay

Btk—11 to 30 inches; very cobbly clay loam

CBtk—30 to 43 inches; clay

Cr—43 to 53 inches; cemented bedrock

Minor Components Composition

Sandoval and similar soils: About 5 percent

Skyvillage and similar soils: About 3 percent

Rock outcrop: About 2 percent

528—Penistaja family loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 7,000 feet (1,646 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Penistaja family and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Penistaja family soils

Landscape: Basins

Landform: Fan aprons (fig. 72)

Position on landform: Toeslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 3 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.6 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, black grama, ring muhly, broom
snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 1 inch; loam

A2—1 inch to 5 inches; loam

Btk1—5 to 14 inches; clay loam

Btk2—14 to 24 inches; clay loam

Btk3—24 to 41 inches; clay loam

BCtk—41 to 83 inches; loam

Minor Components Composition

Truehill and similar soils: About 4 percent

Cumacho and similar soils: About 3 percent

Cerrillos and similar soils: About 3 percent

530—Jaralosa-Chupe-Riverwash complex, 0 to 1 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,300 to 7,200 feet (1,615 to 2,195 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Jaralosa and similar soils: 45 percent

Chupe and similar soils: 30 percent

Riverwash: 10 percent

Minor components: 15 percent

Component Descriptions

Jaralosa soils

Landscape: Basins

Landform: Point bars on valley floors (fig. 72)

Parent material: Alluvium derived from sandstone and shale over alluvium derived from granite, gneiss, schist, or monzonite

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Depth to restrictive feature: 30 to 39 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.8 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: *Populus fremontii*/*Salix exigua*-*Salix*/*Carex*

Potential native vegetation: cottonwood, willow, sedge

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; very fine sandy loam

AC—1 inch to 17 inches; very fine sandy loam

Cnyz1—17 to 24 inches; loamy very fine sand

Cnyz2—24 to 41 inches; loamy very fine sand

2C1—41 to 60 inches; gravelly coarse sand

2C2—60 to 85 inches; very gravelly coarse sand

Chupe soils

Landscape: Basins

Landform: Flood plains on valley floors (fig. 72)

Parent material: Alluvium derived from sandstone, granite, gneiss, and schist

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent rounded medium and coarse gravel

Depth class: Very deep

Depth to restrictive feature: 33 to 43 inches to strongly contrasting textural stratification

Drainage class: Somewhat excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 3.3 inches (low)

Shrink-swell potential: About 0.6 percent (low)

Flooding hazard: Occasional

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Sandy

Potential native vegetation: sand dropseed, black grama, blue grama, Bigelow's rubber rabbitbrush, galleta, spike dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

AC—0 to 3 inches; loamy coarse sand

C1—3 to 10 inches; gravelly coarse sand

C2—10 to 26 inches; gravelly coarse sand

C3—26 to 31 inches; gravelly coarse sand

C4—31 to 37 inches; gravelly coarse sand

C5—37 to 42 inches; very gravelly coarse sand

C6—42 to 50 inches; sandy clay loam

C7—50 to 65 inches; gravelly loamy coarse sand

C8—65 to 84 inches; coarse sand

C9—84 to 96 inches; gravelly coarse sand

Riverwash

Description: Riverwash consists of unstable sand and gravel that is reworked by water so frequently that it supports little or no vegetation. Riverwash occurs in arroyos and is subject to frequent, extremely brief periods of flooding from prolonged high-intensity storms. In some places it is intermingled with the Chupe soil.

Landscape: Basins

Landform: Channels on valley floors (fig. 72)

Parent material: Alluvium derived from mixed sources

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent rounded (shape or size unspecified); about 20 percent rounded gravel

Drainage class: Excessively drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Soil Survey of Santa Fe County Area, New Mexico

Available water capacity: About 2.9 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Flooding hazard: Frequent

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Sena and similar soils: About 5 percent

Galisteo and similar soils: About 5 percent

Mirada and similar soils: About 5 percent

531—Sena very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,400 to 6,600 feet (1,646 to 2,012 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Sena and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Sena soils

Landscape: Basins (fig. 81)

Landform: Flood plain steps on valley floors (fig. 72)

Position on landform: Tread

Parent material: Alluvium derived from shale

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Depth to restrictive feature: 2 inches to natric

Drainage class: Well drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 6.0 inches (low)

Shrink-swell potential: About 7.9 percent (high)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: About 2 percent

Salinity average in horizon of maximum accumulation: About 18 mmhos/cm (strongly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 20 (moderately sodic)

Ecological site: Salt Flats

Potential native vegetation: alkali sacaton, blue grama, fourwing saltbush, galleta

Land capability subclass (nonirrigated): 6s

Typical Profile

Akz1—0 to 1 inch; very fine sandy loam

Akz2—1 inch to 4 inches; loam

Btknyz1—4 to 11 inches; clay loam

Btknyz2—11 to 20 inches; clay

Btknyz3—20 to 30 inches; clay

Cz1—30 to 58 inches; clay

Cz2—58 to 83 inches; clay

Minor Components Composition

Riverwash: About 3 percent

Galisteo and similar soils: About 3 percent

Charalito and similar soils: About 2 percent

Zia and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



**Figure 81.—An area of Sena very fine sandy loam, 0 to 2 percent slopes.
The Cerro Pilon is in the upper left background.**

532—Galisteo silty clay loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,700 to 6,700 feet (1,737 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Galisteo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Galisteo soils

Landscape: Basins

Landform: Stream terraces

Position on landform: Tread

Parent material: Alluvium derived from shale

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.4 inches (high)

Shrink-swell potential: About 7.0 percent (high)

Flooding hazard: Very rare

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 8 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Salt Flats

Potential native vegetation: alkali sacaton, blue grama, fourwing saltbush, galleta

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; silty clay loam

AB—4 to 16 inches; clay

Bz1—16 to 45 inches; clay

Bz2—45 to 67 inches; clay loam

C—67 to 80 inches; gravelly sandy clay loam

Minor Components Composition

Gullied land: About 5 percent

Sena and similar soils: About 2 percent

Riverwash: About 2 percent

Penistaja and similar soils: About 1 percent

534—Oelop-Charalito complex, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 5,300 to 7,300 feet (1,615 to 2,225 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 50 to 52 degrees F (10.0 to 11.1 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Oelop and similar soils: 70 percent

Charalito and similar soils: 20 percent

Minor components: 10 percent

Component Descriptions

Oelop soils

Landscape: Basins

Landform: Stream terraces (fig. 72)

Position on landform: Tread

Parent material: Alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 55 to 63 inches to strongly contrasting textural stratification

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.9 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; sandy clay loam

Btk1—2 to 10 inches; clay loam

Btk2—10 to 27 inches; loam

Btk3—27 to 35 inches; clay loam

Btk4—35 to 60 inches; sandy clay loam

2BCK—60 to 79 inches; gravelly coarse sand

Charalito soils

Landscape: Basins

Landform: Flood plain steps on valley floors (fig. 72)

Soil Survey of Santa Fe County Area, New Mexico

Position on landform: Tread
Parent material: Alluvium derived from sandstone and shale
Slope: 1 to 3 percent
Shape (down/across): Linear/linear
Surface fragments: About 5 percent subrounded gravel
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 3.7 inches (low)
Shrink-swell potential: About 0.5 percent (low)
Flooding hazard: Rare
Runoff class: Very low
Calcium carbonate average in horizon of maximum accumulation: About 1 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)
Ecological site: Gravelly
Potential native vegetation: New Mexico feathergrass, blue grama, sideoats grama,
little bluestem, galleta, oneseed juniper
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 6 inches; loamy sand
C1—6 to 21 inches; loamy sand
2C2—21 to 34 inches; sandy loam
3C3—34 to 79 inches; very gravelly coarse sand

Minor Components Composition

Sedillo and similar soils: About 4 percent
Hagerman and similar soils: About 3 percent
Riverwash: About 3 percent

550—Pits, mine

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,500 to 8,000 feet (1,981 to 2,438 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 48 to 50 degrees F (8.9 to 10.0 degrees C)

Frost-free period: 140 to 170 days

Map Unit Composition

Pits, mine: 85 percent

Minor components: 15 percent

Component Descriptions

Pits, mine

Parent material: Mine spoil or earthy fill derived from monzonite

Slope: 8 to 40 percent

Shape (down/across): Convex/convex

Surface fragments: About 5 percent subrounded cobbles; about 35 percent subrounded gravel

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 4.5 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Land capability subclass (nonirrigated): 8

Minor Components Composition

Pegasus and similar soils: About 5 percent

Pedregal and similar soils: About 4 percent

Cochiti and similar soils: About 2 percent

Wandurn and similar soils: About 2 percent

Alchonzo and similar soils: About 2 percent

600—Hyer-Witt complex, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 11 to 14 inches (279 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Hyer and similar soils: 50 percent

Witt and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Hyer soils

Landscape: Intermontane basins

Landform: Lower areas on fan piedmonts (fig. 83)

Position on landform: Summits

Parent material: Eolian deposits and/or alluvium derived from sandstone and shale

Slope: 1 to 2 percent

Shape (down/across): Concave/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.1 inches (high)

Shrink-swell potential: About 3.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; silt loam

Bt1—2 to 6 inches; silty clay loam

Bt2—6 to 9 inches; silty clay loam

Bt3—9 to 15 inches; silty clay loam

Btk1—15 to 24 inches; silty clay loam

Btk2—24 to 45 inches; loam

Bk1—45 to 61 inches; very fine sandy loam

Bk2—61 to 79 inches; loam

C—79 to 100 inches; loam

Witt soils

Landscape: Intermontane basins

Landform: Higher areas on fan piedmonts (fig. 83)

Position on landform: Summits

Parent material: Eolian deposits and/or alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 10.7 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 18 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam
Bt1—2 to 10 inches; clay loam
Btk1—10 to 17 inches; clay loam
Btk2—17 to 33 inches; clay loam
Bk1—33 to 48 inches; loam
Bk2—48 to 88 inches; clay loam
Bk3—88 to 122 inches; clay loam

Minor Components Composition

Harvey and similar soils: About 4 percent
Ildefonso and similar soils: About 3 percent
Palma and similar soils: About 3 percent

601—Harvey loam, 3 to 12 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Harvey and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Harvey soils

Landscape: Intermontane basins

Landform: South-facing fan piedmonts (fig. 83)

Position on landform: Backslopes

Parent material: Alluvium derived from sandstone and shale

Slope: 3 to 12 percent

Shape (down/across): Convex/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 11.0 inches (high)

Shrink-swell potential: About 3.9 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 47 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Limy

Potential native vegetation: blue grama, galleta, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bk1—2 to 14 inches; fine sandy loam

Bk2—14 to 36 inches; clay loam

Bk3—36 to 53 inches; clay loam

Bk4—53 to 79 inches; clay loam

BC—79 to 121 inches; loam

Minor Components Composition

Palma and similar soils: About 5 percent

Witt and similar soils: About 2 percent

Lazarus and similar soils: About 2 percent

Hyer and similar soils: About 1 percent

602—Palma fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Palma and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Palma soils

Landscape: Intermontane basins

Landform: North-facing fan piedmonts (fig. 83)

Position on landform: Backslopes

Parent material: Alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Convex/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 2.9 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Sandy

Potential native vegetation: blue grama, sideoats grama, galleta

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

AE—2 to 5 inches; fine sandy loam

Bt—5 to 11 inches; loam

Btk1—11 to 17 inches; loam

Btk2—17 to 30 inches; fine sandy loam

Btk3—30 to 43 inches; fine sandy loam

Bk—43 to 74 inches; silt loam

BC—74 to 125 inches; sandy clay loam

Minor Components Composition

Hyer and similar soils: About 4 percent

Harvey and similar soils: About 3 percent

Lazarus and similar soils: About 2 percent

Witt and similar soils: About 1 percent

603—Lazarus silt loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Lazarus and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Lazarus soils

Landscape: Intermontane basins

Landform: Flood plains on valley floors (fig. 83 and fig. 85)

Parent material: Alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 11.3 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Flooding hazard: Occasional

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 4c

Typical Profile

A1—0 to 3 inches; silt loam

A2—3 to 14 inches; silt loam

Bt1—14 to 32 inches; silt loam

Bt2—32 to 53 inches; silty clay loam

Bt3—53 to 102 inches; silty clay loam

Minor Components Composition

Manzano and similar soils: About 5 percent

Harvey and similar soils: About 3 percent

Palma and similar soils: About 2 percent

604—Desario-Espadon complex, 5 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 8,000 feet (1,951 to 2,438 meters)

Mean annual precipitation: 13 to 15 inches (330 to 381 millimeters)

Mean annual air temperature: 48 to 51 degrees F (8.8 to 10.6 degrees C)

Frost-free period: 120 to 150 days

Map Unit Composition

Desario and similar soils: 50 percent

Espadon and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Desario soils

Landscape: Foothills (fig. 82)

Landform: South-facing low hills (fig. 83)

Position on landform: Backslopes

Parent material: Slope alluvium and/or residuum weathered from limestone

Slope: 5 to 45 percent

Shape (down/across): Convex/linear

Surface fragments: About 80 percent angular channers

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 12 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Fallugia paradoxa-

Chrysothamnus nauseosus/Bouteloua hirsuta-Bouteloua gracilis

Potential native vegetation: twoneedle pinyon, sideoats grama, oneseed juniper, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 1 inch; extremely gravelly loam

Bk1—1 inch to 3 inches; cobbly loam

Bk2—3 to 12 inches; very cobbly loam

R—12 to 22 inches; bedrock

Espadon soils

Landscape: Foothills (fig. 82)

Landform: North-facing low hills, cuestras (fig. 83)

Position on landform: Backslopes

Parent material: Colluvium and/or residuum weathered from limestone

Slope: 10 to 50 percent

Shape (down/across): Linear/convex

Surface fragments: About 45 percent angular channers

Soil Survey of Santa Fe County Area, New Mexico

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 36 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis

Potential native vegetation: Gambel oak, twoneedle pinyon, needlegrass, oneseed juniper

Land capability subclass (nonirrigated): 4e

Typical Profile

A—0 to 3 inches; very gravelly loam

Bt—3 to 9 inches; very gravelly loam

Bk1—9 to 16 inches; very gravelly loam

2Bk2—16 to 26 inches; extremely gravelly loam

2R—26 to 36 inches; bedrock

Minor Components Composition

Rock outcrop: About 5 percent

Manzano and similar soils: About 2 percent

Cochiti and similar soils: About 1 percent

Pastorius and similar soils: About 1 percent

Lazarus and similar soils: About 1 percent



Figure 82.—An area of Desario-Espadon complex, 5 to 50 percent slopes, in the background, that has a thick tree cover. An area of Lazarus-Manzano complex, 0 to 8 percent slopes, flooded, in the foreground, that has a thick grass cover.

Soil Survey of Santa Fe County Area, New Mexico

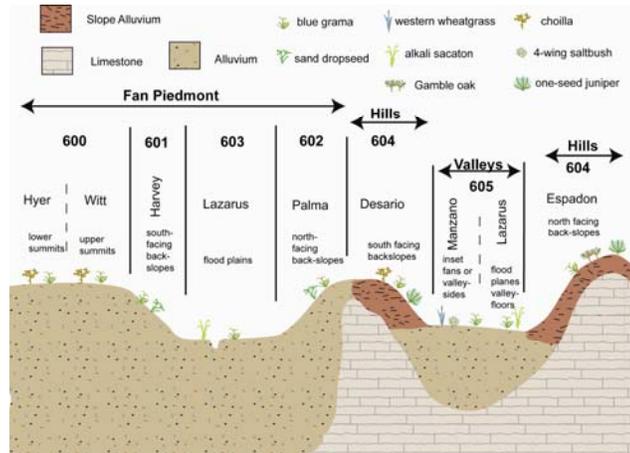


Figure 83.—Cross-section diagram of landform and landform position for map units south and east of South Mountain in the Estancia Basin.

605—Lazarus-Manzano complex, 0 to 8 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 7,300 feet (1,951 to 2,225 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Lazarus and similar soils: 50 percent

Manzano and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Lazarus soils

Landscape: Foothills (fig. 82)

Landform: Flood plains on valley floors (fig. 83)

Parent material: Alluvium derived from limestone, sandstone, and shale

Slope: 0 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent (shape or size unspecified)

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.8 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Flooding hazard: Occasional

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 2 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand
dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; silt loam

Bt1—3 to 8 inches; silty clay loam

Bt2—8 to 17 inches; silty clay loam

Btk1—17 to 27 inches; silty clay loam

Btk2—27 to 53 inches; silty clay loam

Btk3—53 to 82 inches; silt loam

Manzano soils

Landscape: Foothills (fig. 82)

Landform: Inset fans on valley sides (fig. 83)

Parent material: Slope alluvium derived from limestone, sandstone, and shale

Soil Survey of Santa Fe County Area, New Mexico

Slope: 4 to 8 percent
Shape (down/across): Concave/linear
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 9.1 inches (high)
Shrink-swell potential: About 4.0 percent (moderate)
Flooding hazard: Frequent
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 8 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)
Ecological site: Bottomland
Potential native vegetation: alkali sacaton, western wheatgrass, blue grama, fourwing
saltbush, cholla
Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 2 inches; silt loam
A2—2 to 8 inches; gravelly loam
A3—8 to 19 inches; gravelly loam
A4—19 to 43 inches; gravelly loam
Btb—43 to 62 inches; silty clay loam
Btkb—62 to 84 inches; silty clay loam

Minor Components Composition

Desario and similar soils: About 5 percent
Espadon and similar soils: About 3 percent
Riverwash: About 2 percent

606—Pastura-Nala complex, 3 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,200 feet (1,890 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Nala and similar soils: 50 percent

Pastura and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Pastura soils

Landscape: Intermontane basins (fig. 84)

Landform: Interfluves on undulating plains (fig. 85, fig. 86, and fig. 94)

Position on landform: Shoulders

Parent material: Slope alluvium derived from degrading petrocalcic horizons, granite, gneiss, schist, and limestone

Slope: 3 to 5 percent

Shape (down/across): Convex/convex

Surface fragments: About 50 percent rounded gravel

Depth class: Shallow

Depth to restrictive feature: 12 to 16 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.3 inches (very low)

Shrink-swell potential: About 0.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 78 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 1 inch; very gravelly very fine sandy loam

Bk1—1 inch to 5 inches; gravelly loam

Bk2—5 to 7 inches; very gravelly loam

Bk3—7 to 15 inches; very gravelly sandy loam

Bkkm1—15 to 22 inches; cemented material

Bkkm2—22 to 32 inches; cemented material

Nala soils

Landscape: Intermontane basins (fig. 84)

Landform: Interfluves on undulating plains (fig. 85, fig. 86, and fig. 94)

Position on landform: Footslopes

Parent material: Slope alluvium derived from degrading petrocalcic horizons, granite, gneiss, and schist

Soil Survey of Santa Fe County Area, New Mexico

Slope: 8 to 15 percent

Shape (down/across): Concave/linear

Surface fragments: About 1 percent subangular cobbles; about 30 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 4.6 inches (low)

Shrink-swell potential: About 0.8 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Limy

Potential native vegetation: New Mexico feathergrass, blue grama, winterfat, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; gravelly sandy loam
Bw—2 to 7 inches; gravelly sandy loam
Bk1—7 to 19 inches; gravelly sandy loam
Bk2—19 to 33 inches; gravelly sandy loam
Bk3—33 to 49 inches; gravelly sandy loam
2Ck—49 to 82 inches; extremely gravelly coarse sand

Minor Components Composition

Arojomil and similar soils: About 5 percent
Kinsell and similar soils: About 3 percent
Raydawn and similar soils: About 2 percent



Figure 84.—An area of Pastura-Nala complex, 3 to 15 percent slopes. Petrocalcic material (caliche) is exposed in many areas. The Sandia Mountains are on the skyline on the left, and the South Mountains, San Pedro Mountains, and Ortiz Mountains are closer from left to right.

Soil Survey of Santa Fe County Area, New Mexico

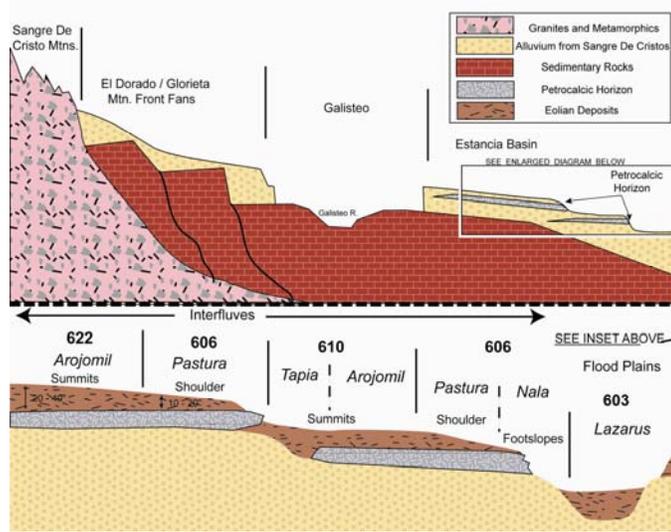


Figure 85.—Cross-section diagram of landform and landform position for showing geology from the Sangre de Cristo Mountains southward to the Estancia Basin. The bottom part shows the geology under several map units in the Estancia Basin.

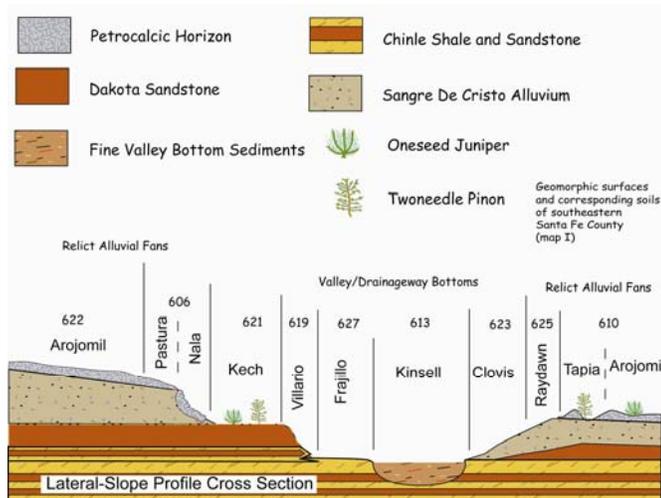


Figure 86.—Cross-section diagram of landform and landform position for several map units in the Estancia Basin around the White Lakes area.

607—Davishat-Palma complex, 1 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Davishat and similar soils: 45 percent

Palma and similar soils: 45 percent

Minor components: 10 percent

Component Descriptions

Davishat soils

Landscape: Intermontane basins

Landform: Undulating dunes on plains (fig. 87)

Position on landform: Toeslopes

Position on landform: Dip

Parent material: Eolian deposits and slope alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Shape (down/across): Linear/convex

Surface fragments: About 1 percent (shape or size unspecified)

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 1.8 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Deep Sand

Potential native vegetation: blue grama, galleta, Bigelow's sagebrush, black grama, sideoats grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loamy very fine sand

Bw—2 to 12 inches; loamy very fine sand

Bt—12 to 28 inches; fine sandy loam

Btk—28 to 57 inches; fine sandy loam

Bck—57 to 87 inches; fine sandy loam

Palma soils

Landscape: Intermontane basins

Landform: Undulating dunes on plains (fig. 87)

Position on landform: Toeslopes, summits

Position on landform: Rise

Parent material: Eolian deposits and slope alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Soil Survey of Santa Fe County Area, New Mexico

Shape (down/across): Convex/convex
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 7.7 inches (moderate)
Shrink-swell potential: About 3.4 percent (moderate)
Runoff class: Low
Calcium carbonate average in horizon of maximum accumulation: About 60 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Sandy
Potential native vegetation: blue grama, sideoats grama, galleta
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; fine sandy loam
 Bt1—4 to 11 inches; fine sandy loam
 Bt2—11 to 23 inches; fine sandy loam
 Btk—23 to 43 inches; very fine sandy loam
 Bk—43 to 79 inches; very paragravelly sandy loam

Minor Components Composition

Tamarindo and similar soils: About 5 percent
 Raydawn and similar soils: About 3 percent
 Davishat and similar soils: About 2 percent

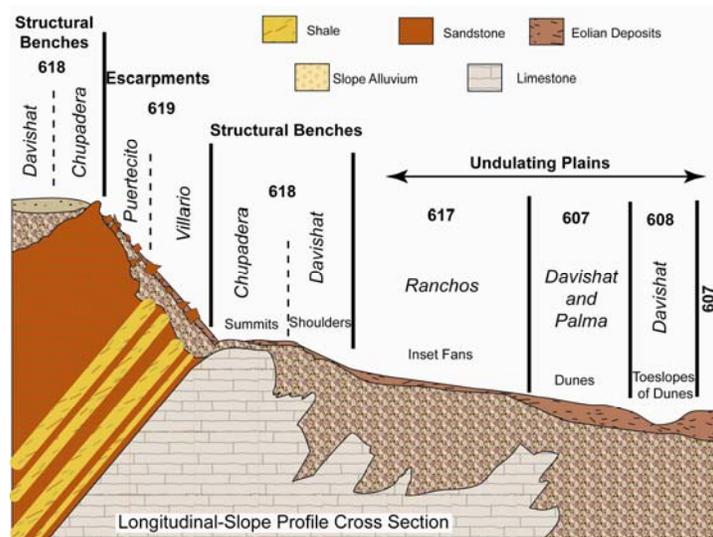


Figure 87.—Cross-section diagram of landform and landform position for map units in the central to eastern side of the Estancia Basin.

608—Davishat loamy very fine sand, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,100 feet (1,890 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Davishat and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Davishat soils

Landscape: Intermontane basins

Landform: Undulating interdunes on plains (fig. 87)

Position on landform: Toeslopes

Parent material: Eolian deposits and slope alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Linear/concave

Surface fragments: About 2 percent (shape or size unspecified)

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 7.6 inches (moderate)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Deep Sand

Potential native vegetation: blue grama, galleta, Bigelow's sagebrush, black grama, sideoats grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; loamy very fine sand

Bw—3 to 10 inches; very fine sandy loam

Bt—10 to 41 inches; fine sandy loam

BCK—41 to 79 inches; gravelly sandy loam

Minor Components Composition

Palma and similar soils: About 5 percent

Tamarindo and similar soils: About 3 percent

Davishat and similar soils: About 2 percent

610—Arojomil-Tapia complex, 1 to 5 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,200 feet (1,890 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Arojomil and similar soils: 50 percent

Tapia and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Arojomil soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 85 and fig. 86)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and siltstone over alluvium derived from granite, gneiss, and schist

Slope: 3 to 5 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 35 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 4.5 inches (low)

Shrink-swell potential: About 3.6 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 60 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

B—2 to 10 inches; clay loam

B—10 to 15 inches; loam

B1—15 to 22 inches; very gravelly loam

B2—22 to 33 inches; very gravelly loam

Bkkm1—33 to 41 inches; cemented material

Bkkm2—41 to 46 inches; cemented material

Tapia soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 85 and fig. 86)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and siltstone over alluvium derived from granite, gneiss, and schist

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 6.7 inches (moderate)

Shrink-swell potential: About 2.4 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 33 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; silt loam

Bt—2 to 8 inches; silt loam

Btk—8 to 20 inches; gravelly silt loam

Bk1—20 to 30 inches; gravelly sandy loam

Bk2—30 to 52 inches; extremely cobbly loam

Bk3—52 to 67 inches; gravelly loam

Bk4—67 to 100 inches; very gravelly very fine sandy loam

Minor Components Composition

Pastura and similar soils: About 5 percent

Nala and similar soils: About 4 percent

Raydawn and similar soils: About 1 percent

611—Spyglass silt loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 6,900 feet (1,890 to 2,103 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Spyglass and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Spyglass soils

Landscape: Intermontane basins

Landform: Flood plain steps on basin floors (fig. 88)

Parent material: Alluvium and/or lacustrine deposits derived from sandstone, shale, and gypsum

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.7 inches (high)

Shrink-swell potential: About 3.8 percent (moderate)

Flooding hazard: Rare

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: About 50 percent

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Gyp Upland

Potential native vegetation: alkali sacaton, blue grama, fourwing saltbush, sideoats grama, ephedra

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; very fine sandy loam

Bt1—2 to 11 inches; clay

Bt2—11 to 20 inches; clay

Btk—20 to 23 inches; clay

2ABk—23 to 26 inches; clay

2By1—26 to 30 inches; loam

2By2—30 to 46 inches; loam

2By3—46 to 67 inches; clay loam

3BCk—67 to 108 inches; very gravelly sand

Minor Components Composition

Trofes and similar soils: About 5 percent

Tamarindo and similar soils: About 3 percent

Hyer and similar soils: About 2 percent

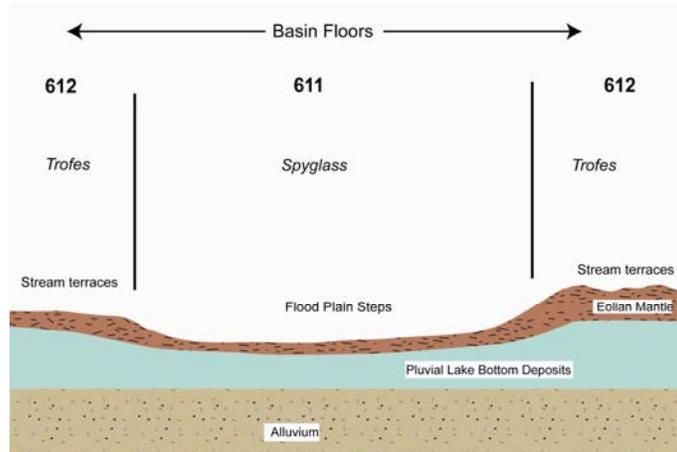


Figure 88.—Cross-section diagram of landform and landform position for map units in fluvial lake bottom sequences of the Estancia Basin.

612—Trofes loam, 0 to 2 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 6,900 feet (1,890 to 2,103 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Trofes and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Trofes soils

Landscape: Intermontane basins

Landform: Low stream terraces on basin floors (fig. 88)

Parent material: Alluvium and/or lacustrine deposits derived from sandstone, shale, and gypsum

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 11.5 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 17 percent

Gypsum average in horizon of maximum accumulation: About 14 percent

Salinity average in horizon of maximum accumulation: About 8 mmhos/cm (moderately saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 9 (slightly sodic)

Ecological site: Gyp Upland

Potential native vegetation: alkali sacaton, blue grama, fourwing saltbush, sideoats grama, ephedra

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt—2 to 9 inches; clay loam

Btk1—9 to 15 inches; clay loam

Btk2—15 to 23 inches; clay loam

Btky1—23 to 41 inches; clay loam

Btky2—41 to 55 inches; clay loam

Bky—55 to 72 inches; fine sandy loam

By1—72 to 76 inches; clay loam

By2—76 to 80 inches; clay loam

2BCy—80 to 98 inches; loamy sand

Minor Components Composition

Spyglass and similar soils: About 5 percent
Tamarindo and similar soils: About 3 percent
Nala and similar soils: About 2 percent

613—Kinsell silt loam, 0 to 2 percent slopes, flooded

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,200 feet (1,890 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Kinsell and similar soils: 85 percent

Minor components: 15 percent

Component Descriptions

Kinsell soils

Landscape: Intermontane basins

Landform: Flood plains on valley floors (fig. 86, fig. 89, and fig. 92)

Parent material: Alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 10.7 inches (high)

Shrink-swell potential: About 5.9 percent (moderate)

Flooding hazard: Occasional

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, sand dropseed, broom snakeweed,
ring muhly

Land capability subclass (irrigated): 2e

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; silt loam

Bt1—2 to 8 inches; silt loam

Bt2—8 to 17 inches; silt loam

Bt3—17 to 32 inches; silt loam

Btk1—32 to 43 inches; silty clay loam

Btk2—43 to 80 inches; silty clay loam

Minor Components Composition

Kinsell and similar soils: About 9 percent

Tamarindo and similar soils: About 4 percent

Gullied land: About 1 percent

Riverwash: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico

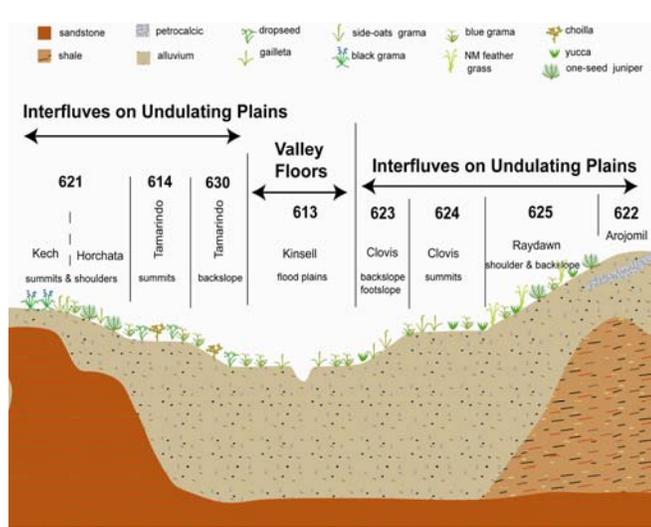


Figure 89.—Cross-section diagram of landform and landform position for map units on the eastern side of the Estancia Basin.

614—Tamarindo loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,100 feet (1,890 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Tamarindo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Tamarindo soils

Landscape: Intermontane basins

Landform: Interfluvial on undulating plains (fig. 89 and fig. 92)

Position on landform: Summits

Parent material: Eolian material and alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.5 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; loam

AB—4 to 9 inches; loam

Bt—9 to 16 inches; clay loam

Btk1—16 to 24 inches; clay loam

Btk2—24 to 38 inches; loam

Btk3—38 to 83 inches; loam

Minor Components Composition

Harvey and similar soils: About 3 percent

Palma and similar soils: About 3 percent

Witt and similar soils: About 2 percent

Clovis and similar soils: About 2 percent

615—Kwahe-Stanley complex, 0 to 1 percent slopes, ponded

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,000 to 7,200 feet (1,829 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Kwahe and similar soils: 55 percent

Stanley and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Kwahe soils

Landscape: Intermontane basins

Landform: Playa steps on playas (fig. 90)

Position on landform: Talf

Parent material: Lacustrine deposits derived from clayey shale

Slope: 0 to 1 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Poorly drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 8.8 inches (moderate)

Shrink-swell potential: About 9.5 percent (very high)

Ponding hazard: Occasional

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 17 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 8 (slightly sodic)

Ecological site: Swale

Potential native vegetation: western wheatgrass, galleta, blue grama, fourwing saltbush

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; clay

Bss—3 to 15 inches; clay

Bssg1—15 to 30 inches; clay

Bssg2—30 to 45 inches; clay

Bssg3—45 to 59 inches; clay

Stanley soils

Landscape: Intermontane basins

Landform: Playa floors on playas (fig. 90)

Position on landform: Dip

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Lacustrine deposits derived from clayey shale

Slope: 0 to 1 percent

Shape (down/across): Concave/concave

Surface fragments: About 2 percent subangular gravel

Depth class: Very deep

Drainage class: Poorly drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 10.0 percent (very high)

Ponding hazard: Occasional

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: About 1 percent

Salinity average in horizon of maximum accumulation: About 6 mmhos/cm (slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Salty Bottomland

Potential native vegetation: western wheatgrass, scarlet globemallow

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; clay

Bsszg1—3 to 17 inches; clay

Bsszg2—17 to 28 inches; clay

Bsszg3—28 to 38 inches; clay

Bsszg4—38 to 56 inches; clay

Bssyzg—56 to 101 inches; clay

Minor Components Composition

Triane and similar soils: About 5 percent

Clovis and similar soils: About 3 percent

Tamarindo and similar soils: About 2 percent

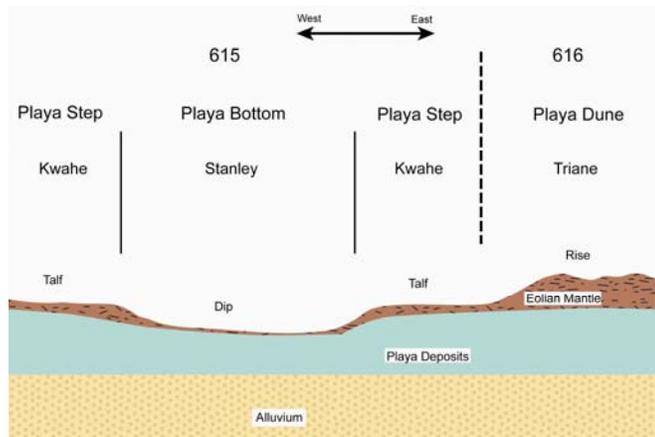


Figure 90.—Cross-section diagram of landform and landform position for map units in playa sequences of the Estancia Basin.

616—Triane silty clay loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,200 feet (1,890 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 150 to 170 days

Map Unit Composition

Triane and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Triane soils

Landscape: Intermontane basins

Landform: Playa rims on playas (fig. 90)

Position on landform: Rise

Parent material: Eolian deposits derived from clayey shale

Slope: 1 to 3 percent

Shape (down/across): Convex/linear

Depth class: Very deep

Drainage class: Somewhat poorly drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 8.7 inches (moderate)

Shrink-swell potential: About 10.0 percent (very high)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 24 percent

Gypsum average in horizon of maximum accumulation: About 3 percent

Salinity average in horizon of maximum accumulation: About 11 mmhos/cm
(moderately saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 18
(moderately sodic)

Ecological site: Bottomland

Potential native vegetation: alkali sacaton, western wheatgrass, blue grama, fourwing saltbush, cholla

Land capability subclass (irrigated): 3e

Land capability subclass (nonirrigated): 6c

Typical Profile

A1—0 to 2 inches; silty clay loam

A2—2 to 4 inches; silty clay loam

Btyz—4 to 14 inches; clay

Byzg1—14 to 27 inches; clay

Byzg2—27 to 42 inches; clay

2BCzg—42 to 59 inches; clay

Minor Components Composition

Kwahe and similar soils: About 4 percent

Stanley and similar soils: About 3 percent

Clovis and similar soils: About 2 percent

Tamarindo and similar soils: About 1 percent

617—Ranchos fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,300 to 7,000 feet (1,920 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Ranchos and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Ranchos soils

Landscape: Intermontane basins

Landform: Undulating inset fans on plains (fig. 87)

Parent material: Alluvium and eolian deposits and alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Convex/convex

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Very low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, sand dropseed, broom snakeweed, ring muhly

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

BA—2 to 9 inches; fine sandy loam

Bt—9 to 21 inches; fine sandy loam

Btk—21 to 30 inches; fine sandy loam

Bk1—30 to 50 inches; sandy loam

Bk2—50 to 85 inches; fine sandy loam

Bk3—85 to 100 inches; fine sandy loam

Minor Components Composition

Davishat and similar soils: About 5 percent

Chupadera and similar soils: About 3 percent

Clovis and similar soils: About 2 percent

618—Davishat-Chupadera complex, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Davishat and similar soils: 55 percent

Chupadera and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Davishat soils

Landscape: Intermontane basins

Landform: Structural benches on plateaus (fig. 87)

Position on landform: Footslopes

Parent material: Eolian deposits and alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent subrounded gravel; about 1 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 85 to 91 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 3.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam

Bt—2 to 11 inches; fine sandy loam

Btk1—11 to 17 inches; fine sandy loam

Btk2—17 to 31 inches; fine sandy loam

Btk3—31 to 49 inches; fine sandy loam

Btk4—49 to 71 inches; very fine sandy loam

Btk5—71 to 87 inches; very fine sandy loam

R—87 to 97 inches; cemented bedrock

Chupadera soils

Landscape: Intermontane basins

Landform: Structural benches on plateaus (fig. 87)

Position on landform: Summits, shoulders

Parent material: Eolian material and alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 1 percent subrounded gravel; about 1 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 24 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 3.6 inches (low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 15 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 1 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; fine sandy loam

Bw—1 inch to 12 inches; fine sandy loam

Bk1—12 to 20 inches; sandy loam

Bk2—20 to 35 inches; sandy loam

2R—35 to 40 inches; bedrock

Minor Components Composition

Ranchos and similar soils: About 5 percent

Clovis and similar soils: About 3 percent

Tamarindo and similar soils: About 2 percent

619—Villario-Puertecito complex, 25 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,000 to 7,100 feet (1,829 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Villario and similar soils: 60 percent

Puertecito and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Villario soils

Landscape: Intermontane basins (fig. 91)

Landform: Scarp slopes on plateaus, scarp slopes on mesas (fig. 86 and fig. 87)

Position on landform: Backslopes

Parent material: Colluvium derived from sandstone and shale over residuum weathered from shale

Slope: 30 to 45 percent

Shape (down/across): Linear/linear

Surface fragments: About 8 percent subrounded boulders; about 10 percent subrounded stones; about 10 percent subrounded cobbles; about 15 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.3 inches (very low)

Shrink-swell potential: About 3.0 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Shallow

Potential native vegetation: galleta, sideoats grama, black grama, blue grama, wolftail

Land capability subclass (nonirrigated): 6c

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 3 inches; very stony silt loam

Bt—3 to 8 inches; silty clay loam

2BC—8 to 14 inches; silt loam

2Cr—14 to 24 inches; cemented bedrock

Puertecito soils

Landscape: Intermontane basins (fig. 91)

Landform: Dipslopes on plateaus (fig. 86 and fig. 87)

Position on landform: Backslopes

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone
Slope: 1 to 5 percent
Shape (down/across): Linear/linear
Depth class: Moderately deep
Depth to restrictive feature: 20 to 39 inches to bedrock, lithic
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 3.7 inches (low)
Shrink-swell potential: About 2.7 percent (low)
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 32 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom snakeweed
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; very fine sandy loam
 Bt—4 to 11 inches; loam
 Btk—11 to 17 inches; sandy clay loam
 Bk—17 to 28 inches; very cobbly sandy loam
 R—28 to 38 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 5 percent
 Arojomil and similar soils: About 3 percent
 Villario and similar soils: About 2 percent

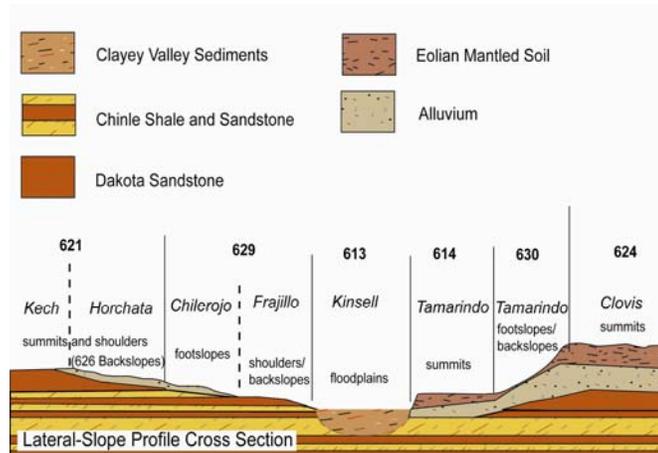


Figure 92.—Cross-section diagram of landform and landform position for map units on the eastern side of the Estancia Basin near White Lakes.

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Colluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 25 to 45 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel; about 15 percent subrounded cobbles; about 6 percent subrounded stones; about 3 percent subrounded boulders

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 1.3 inches (very low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Hills

Potential native vegetation: black grama, little bluestem, oneseed juniper, sideoats grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; very cobbly sandy loam

Bt1—2 to 6 inches; very cobbly sandy loam

Bt2—6 to 13 inches; very cobbly sandy clay loam

R—13 to 22 inches; cemented bedrock

Minor Components Composition

Rock outcrop: About 5 percent

Badland: About 3 percent

Raydown and similar soils: About 2 percent



Figure 91.—An area of Villario-Puertecito complex, 25 to 45 percent slopes. Many large rock fragments cover this area.

621—Kech-Horchata complex, 1 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 5,900 to 7,200 feet (1,798 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Kech and similar soils: 50 percent

Horchata and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Kech soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plateaus, interfluves on mesas (fig. 86, fig. 89, and fig. 92)

Position on landform: Shoulders, summits

Parent material: Eolian deposits derived from sandstone, shale, and limestone over residuum weathered from sandstone

Slope: 3 to 8 percent

Shape (down/across): Convex/linear

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 3.4 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 9 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Shallow

Potential native vegetation: blue grama, sideoats grama, black grama, wolftail, galleta

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 4 inches; fine sandy loam

Bt—4 to 9 inches; fine sandy loam

Btk1—9 to 14 inches; loam

Btk2—14 to 18 inches; gravelly loam

2R—18 to 28 inches; cemented bedrock

Horchata soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plateaus (fig. 87 and fig. 92)

Position on landform: Summits, shoulders

622—Arojomil silt loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,100 to 7,200 feet (1,859 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Arojomil and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Arojomil soils

Landscape: Intermontane basins

Landform: Interfluvial on undulating plains (fig. 85, fig. 86, and fig. 89)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over alluvium derived from mixed sources

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 24 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 0.001 to 0.06 in/hr (very slow)

Available water capacity: About 2.4 inches (very low)

Shrink-swell potential: About 3.1 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 52 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; silt loam (fig. 93)

Bt—2 to 8 inches; silt loam

Btk—8 to 14 inches; very gravelly loam

Bk—14 to 23 inches; extremely gravelly sandy loam

Bkkm—23 to 33 inches; cemented

Minor Components Composition

Tapia and similar soils: About 4 percent

Clovis and similar soils: About 2 percent

Raydawn and similar soils: About 2 percent

Tamarindo and similar soils: About 2 percent



**Figure 93.—Typical profile of Arojomil silt loam, 1 to 3 percent slopes.
This well developed soil has a strong argillic horizon and very well
developed calcic and petrocalcic horizon.**

623—Clovis loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,000 to 7,200 feet (1,829 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Clovis and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Clovis soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 86 and fig. 89)

Position on landform: Foothslopes, backslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 8.7 inches (moderate)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 26 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 3
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom
snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt—2 to 11 inches; loam

Btk1—11 to 22 inches; sandy clay loam

Btk2—22 to 32 inches; sandy clay loam

Bk1—32 to 42 inches; loam

Bk2—42 to 57 inches; gravelly sandy clay loam

Bk3—57 to 80 inches; very gravelly clay loam

Minor Components Composition

Chilerojo and similar soils: About 3 percent

Frajillo and similar soils: About 3 percent

Kinsell and similar soils: About 2 percent

Arojomil and similar soils: About 2 percent

624—Clovis very fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,500 to 7,200 feet (1,981 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Clovis and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Clovis soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 89 and fig. 92)

Position on landform: Summits

Parent material: Slope alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 10.6 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Negligible

Calcium carbonate average in horizon of maximum accumulation: About 18 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; very fine sandy loam

Bt—2 to 9 inches; sandy clay loam

Btk—9 to 14 inches; clay loam

Bk1—14 to 27 inches; loam

Bk2—27 to 36 inches; loam

2Bk3—36 to 48 inches; sandy clay loam

2Bck—48 to 118 inches; fine sandy loam

Minor Components Composition

Tamarindo and similar soils: About 5 percent

Arojomil and similar soils: About 3 percent

Tapia and similar soils: About 2 percent

625—Raydawn very cobbly sandy loam, 15 to 35 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 7,100 feet (1,951 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Raydawn and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Raydawn soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 86 and fig. 89)

Position on landform: Shoulders, backslopes

Position on landform: Riser

Parent material: Alluvium derived from granite, gneiss, and schist over residuum weathered from sandstone and shale

Slope: 15 to 35 percent

Shape (down/across): Convex/convex

Surface fragments: About 20 percent well rounded cobbles; about 30 percent well rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 5.6 inches (low)

Shrink-swell potential: About 4.7 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 46 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Gravelly

Potential native vegetation: black grama, galleta, sideoats grama, ephedra, oneseed juniper

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 6 inches; very cobbly sandy loam

Bk1—6 to 11 inches; very cobbly sandy loam

Bk2—11 to 30 inches; very gravelly loam

2Bk3—30 to 49 inches; very gravelly coarse sandy loam

3C—49 to 59 inches; silty clay loam

Minor Components Composition

Arojomil and similar soils: About 4 percent

Clovis and similar soils: About 3 percent

Tapia and similar soils: About 3 percent

626—Horchata loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 7,200 feet (1,951 to 2,195 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Horchata and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Horchata soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 94)

Position on landform: Backslopes

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent subrounded gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 5.3 inches (low)

Shrink-swell potential: About 3.1 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 20 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, ring muhly, sand dropseed, broom snakeweed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt1—2 to 5 inches; silt loam

Bt2—5 to 12 inches; silt loam

Btk—12 to 18 inches; silt loam

Bk—18 to 35 inches; sandy loam

2R—35 to 45 inches; bedrock

Minor Components Composition

Kech and similar soils: About 5 percent

Clovis and similar soils: About 3 percent

Tamarindo and similar soils: About 2 percent

627—Palabria-Frajillo complex, 1 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,400 to 7,100 feet (1,951 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Palabria and similar soils: 65 percent

Frajillo and similar soils: 25 percent

Minor components: 10 percent

Component Descriptions

Palabria soils

Landscape: Intermontane basins

Landform: Structural benches (fig. 86 and fig. 94)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 1 to 8 percent

Shape (down/across): Linear/linear

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.1 inches (high)

Shrink-swell potential: About 3.4 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 13 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 4 (slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, sand dropseed, broom snakeweed, ring muhly

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; very fine sandy loam

Bt—2 to 11 inches; clay loam

Btk—11 to 18 inches; clay loam

Bk—18 to 30 inches; loam

BCk—30 to 41 inches; very fine sandy loam

2Ck—41 to 52 inches; extremely parachannery very fine sandy loam

2R—52 to 62 inches; bedrock

Frajillo soils

Landscape: Intermontane basins

Landform: Structural benches (fig. 87 and fig. 94)

Soil Survey of Santa Fe County Area, New Mexico

Position on landform: Shoulders
Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone
Slope: 1 to 5 percent
Shape (down/across): Convex/linear
Depth class: Shallow
Depth to restrictive feature: 10 to 20 inches to bedrock, lithic
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 2.6 inches (very low)
Shrink-swell potential: About 3.6 percent (moderate)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 4 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Shallow Plains
Potential native vegetation: sideoats grama, New Mexico feathergrass, blue grama, big sagebrush, sand dropseed
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam
 Btk—2 to 13 inches; loam
 Bk—13 to 18 inches; gravelly sandy loam
 Cd—18 to 19 inches; bedrock
 R—19 to 29 inches; bedrock

Minor Components Composition

Chilerojo and similar soils: About 4 percent
 Tamarindo and similar soils: About 3 percent
 Clovis and similar soils: About 3 percent

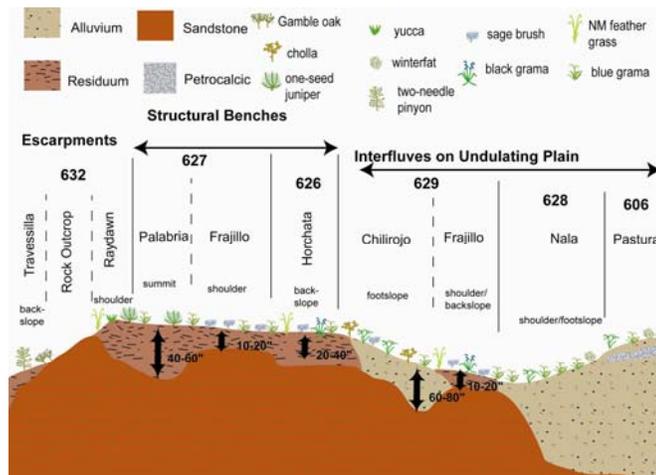


Figure 94.—Cross-section diagram of landform and landform position for map units on the eastern side of the Estancia Basin.

628—Nala gravelly sandy loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,000 feet (1,890 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 140 to 160 days

Map Unit Composition

Nala and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Nala soils

Landscape: Intermontane basins (fig. 95)

Landform: Interfluves on undulating plains (fig. 94)

Position on landform: Shoulders, backslopes

Parent material: Slope alluvium derived from degrading petrocalcic horizons, granite, gneiss, and schist

Slope: 3 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 20 percent rounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 5.5 inches (low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 25 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Limy

Potential native vegetation: New Mexico feathergrass, blue grama, winterfat, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; gravelly fine sandy loam

Bk1—2 to 11 inches; gravelly fine sandy loam

Bk2—11 to 24 inches; gravelly sandy loam

Bk3—24 to 54 inches; gravelly sandy loam

Bck—54 to 81 inches; gravelly sandy loam

Minor Components Composition

Pastura and similar soils: About 5 percent

Arojomil and similar soils: About 3 percent

Tapia and similar soils: About 2 percent



Figure 95.—An area of Nala gravelly sandy loam, 3 to 8 percent slopes. The Sandia Mountains are in the background on the left and the South Mountains on the right.

629—Frajillo-Chilerojo complex, 5 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,100 feet (1,890 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Frajillo and similar soils: 55 percent

Chilerojo and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Frajillo soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 92 and fig. 94)

Position on landform: Backslopes, shoulders

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 5 to 15 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent subangular gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Shallow Plains

Potential native vegetation: sideoats grama, New Mexico feathergrass, blue grama,
big sagebrush, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; sandy loam

Btk1—3 to 7 inches; sandy clay loam

2Btk2—7 to 10 inches; extremely paragravelly sandy clay loam

2Btk3—10 to 13 inches; paragravelly sandy clay loam

2R—13 to 23 inches; cemented bedrock

Chilerojo soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 92)

Position on landform: Footslopes

Soil Survey of Santa Fe County Area, New Mexico

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from sandstone
Slope: 5 to 8 percent
Shape (down/across): Concave/linear
Surface fragments: About 3 percent subrounded gravel
Depth class: Very deep
Depth to restrictive feature: 59 to 79 inches to densic material
Drainage class: Well drained
Slowest permeability: 0.0 to 0.001 in/hr (impermeable)
Available water capacity: About 10.1 inches (high)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Low
Calcium carbonate average in horizon of maximum accumulation: About 9 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 3 mmhos/cm (very slightly saline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Loamy
Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; fine sandy loam
Bt—2 to 9 inches; loam
Btk1—9 to 16 inches; loam
Btk2—16 to 29 inches; gravelly clay loam
Bk1—29 to 38 inches; gravelly clay loam
2Bk2—38 to 46 inches; clay loam
2Ctk—46 to 60 inches; very paragravelly clay loam
2Cd—60 to 80 inches; cemented

Minor Components Composition

Tamarindo and similar soils: About 4 percent
Clovis and similar soils: About 3 percent
Palabria and similar soils: About 3 percent

630—Tamarindo loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 6,200 to 7,100 feet (1,890 to 2,164 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 150 days

Map Unit Composition

Tamarindo and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Tamarindo soils

Landscape: Intermontane basins

Landform: Interfluves on undulating plains (fig. 89 and fig. 92)

Position on landform: Foothslopes, backslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 3 to 8 percent

Shape (down/across): Concave/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.6 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2
(slightly sodic)

Ecological site: Loamy

Potential native vegetation: blue grama, galleta, broom snakeweed, ring muhly, sand dropseed

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 2 inches; loam

Bt—2 to 13 inches; loam

Btk1—13 to 22 inches; clay loam

Btk2—22 to 35 inches; loam

Btk3—35 to 49 inches; loam

Btk4—49 to 74 inches; loam

Bk—74 to 110 inches; loam

2C—110 to 123 inches; gravelly loam

Minor Components Composition

Arojomil and similar soils: About 5 percent

Kinsell and similar soils: About 3 percent

Clovis and similar soils: About 2 percent

632—Travessilla-Raydawn-Sandoval-Rock outcrop complex, 5 to 45 percent slopes

Map Unit Setting

Major Land Resource Area: 70C

Elevation: 5,800 to 7,000 feet (1,767 to 2,134 meters)

Mean annual precipitation: 12 to 14 inches (305 to 356 millimeters)

Mean annual air temperature: 49 to 51 degrees F (9.4 to 10.6 degrees C)

Frost-free period: 130 to 160 days

Map Unit Composition

Travessilla and similar soils: 35 percent

Raydawn and similar soils: 25 percent

Sandoval and similar soils: 15 percent

Rock outcrop: 10 percent

Minor components: 10 percent

Component Descriptions

Travessilla soils

Landscape: Intermontane basins

Landform: Escarpments (fig. 94)

Position on landform: Backslopes

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 5 to 15 percent

Shape (down/across): Convex/convex

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 6 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)

Ecological site: Shallow Plains

Potential native vegetation: sideoats grama, New Mexico feathergrass, blue grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 1 inch; fine sandy loam

Bk1—1 inch to 7 inches; fine sandy loam

Bk2—7 to 15 inches; paragravelly fine sandy loam

2R—15 to 25 inches; cemented bedrock

Raydawn soils

Landscape: Intermontane basins

Landform: Escarpments (fig. 94)

Position on landform: Shoulders

Soil Survey of Santa Fe County Area, New Mexico

Position on landform: Riser
Parent material: Slope alluvium derived from granite, gneiss, and schist
Slope: 5 to 15 percent
Shape (down/across): Convex/convex
Surface fragments: About 20 percent well rounded cobbles; about 30 percent well rounded gravel
Depth class: Very deep
Drainage class: Well drained
Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)
Available water capacity: About 2.4 inches (very low)
Shrink-swell potential: About 1.5 percent (low)
Runoff class: Medium
Calcium carbonate average in horizon of maximum accumulation: About 46 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Deep Sand
Potential native vegetation: blue grama, galleta, Bigelow's sagebrush, black grama, sideoats grama
Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 6 inches; very cobbly sandy loam
Bk1—6 to 11 inches; very cobbly sandy loam
Bk2—11 to 30 inches; very gravelly loam
2Bk3—30 to 80 inches; very gravelly coarse sandy loam

Sandoval soils

Landscape: Intermontane basins
Landform: Escarpments (fig. 94)
Position on landform: Shoulders, backslopes
Position on landform: Riser
Parent material: Residuum weathered from clayey shale and/or slope alluvium derived from clayey shale
Slope: 15 to 45 percent
Shape (down/across): Convex/convex
Surface fragments: About 5 percent rounded cobbles; about 15 percent rounded medium and coarse gravel
Depth class: Shallow
Depth to restrictive feature: 10 to 20 inches to bedrock, paralithic
Drainage class: Well drained
Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)
Available water capacity: About 1.5 inches (very low)
Shrink-swell potential: About 4.5 percent (moderate)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 2 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 2 (slightly sodic)
Ecological site: Shale Hills

Soil Survey of Santa Fe County Area, New Mexico

Potential native vegetation: alkali sacaton, broom snakeweed, fourwing saltbush, black grama

Land capability subclass (nonirrigated): 6c

Typical Profile

A—0 to 3 inches; gravelly sandy loam

C—3 to 11 inches; gravelly loam

Cr—11 to 21 inches; cemented bedrock

Rock outcrop

Description: Rock outcrop consists of exposed sandstone bedrock. It occurs as steeply sloping bedrock, ledges, and cliffs intermingled with the Travessilla and Sandoval soils.

Landscape: Intermontane basins

Landform: Escarpments

Position on landform: Riser

Parent material: Sandstone

Slope: 40 to 160 percent

Shape (down/across): Convex/convex

Minor Components Composition

Villario and similar soils: About 6 percent

Scarpine and similar soils: About 4 percent

700—Aliante-Altega complex, 1 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,600 to 7,900 feet (2,012 to 2,408 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Aliante and similar soils: 50 percent

Altega and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Aliante soils

Landscape: Plateaus (fig. 96)

Landform: Interfluves on undulating plateaus (fig. 97)

Position on landform: Toeslopes, footslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.7 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail,
fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 1 inch; silt loam

Bt1—1 inch to 9 inches; silt loam

Bt2—9 to 19 inches; silt loam

Bt3—19 to 31 inches; silt loam

Bt4—31 to 39 inches; silt loam

Bt5—39 to 47 inches; silt loam

ABtb—47 to 65 inches; silty clay loam

BCb1—65 to 91 inches; clay

BCb2—91 to 111 inches; clay loam

Altega soils

Landscape: Plateaus (fig. 96)

Landform: Interfluves on undulating plateaus (fig. 97)

Position on landform: Summits, shoulders

Parent material: Eolian deposits derived from sandstone and shale over alluvium derived from sandstone and shale

Slope: 3 to 10 percent

Shape (down/across): Convex/linear

Surface fragments: About 2 percent subangular gravel

Depth class: Very deep

Depth to restrictive feature: 98 to 118 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.4 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail, fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam
Bt1—2 to 9 inches; loam
Bt2—9 to 19 inches; loam
Btk—19 to 24 inches; loam
BAtkb—24 to 29 inches; clay loam
Btkb1—29 to 43 inches; clay loam
Btkb2—43 to 58 inches; loam
Bkb1—58 to 81 inches; loam
Bkb2—81 to 101 inches; loam
2R—101 to 111 inches; bedrock

Minor Components Composition

Condesa and similar soils: About 5 percent
Bernal and similar soils: About 3 percent
Altezita and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 96.—An area of Aliante-Altega complex, 1 to 10 percent slopes. This area was once covered with piñon and juniper trees, but they were mechanically removed in the late 1960's. The Altega soils are on higher areas adjacent to the Aliante soils.

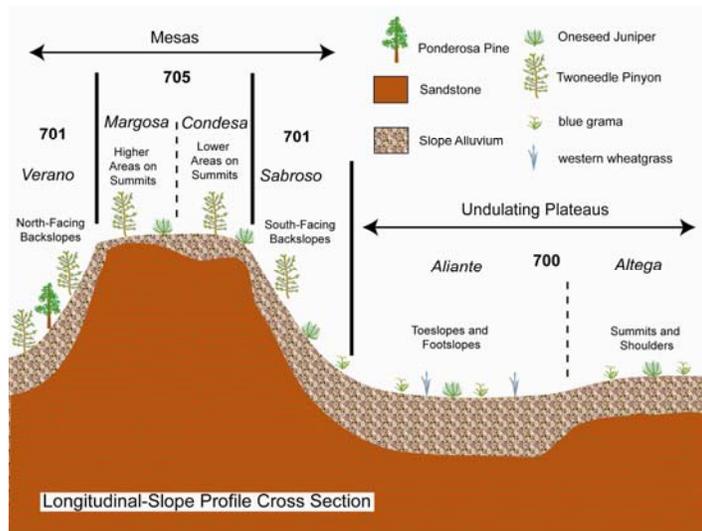


Figure 97.—Cross-section diagram of landform and landform position for map units on Glorieta Mesa in the south of Glorieta.

701—Sabroso-Verano complex, 35 to 65 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,200 to 8,000 feet (1,890 to 2,438 meters)

Mean annual precipitation: 14 to 17 inches (356 to 432 millimeters)

Mean annual air temperature: 43 to 47 degrees F (6.1 to 8.3 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Sabroso and similar soils: 50 percent

Verano and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Sabroso soils

Landscape: Plateaus

Landform: South-facing plateaus, mesas (fig. 97)

Position on landform: Backslopes

Parent material: Colluvium derived from sandstone and shale

Slope: 35 to 60 percent

Shape (down/across): Concave/convex

Surface fragments: About 2 percent subrounded stones; about 30 percent subrounded cobbles; about 35 percent subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 6.3 inches (moderate)

Shrink-swell potential: About 5.9 percent (moderate)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: Gambel oak, twoneedle pinyon, Rocky Mountain juniper, muttongrass, ponderosa pine

Land capability subclass (nonirrigated): 7e

Typical Profile

A—0 to 2 inches; extremely cobbly loam

AB—2 to 6 inches; very gravelly loam

Bt1—6 to 10 inches; very gravelly clay loam

Bt2—10 to 15 inches; very gravelly clay loam

Bt3—15 to 25 inches; very gravelly clay loam

Bt4—25 to 33 inches; very gravelly clay loam

Btk1—33 to 48 inches; gravelly clay loam

Btk2—48 to 66 inches; very cobbly clay loam

2R—66 to 76 inches; bedrock

Verano soils

Landscape: Plateaus

Landform: North-facing plateaus, mesas (fig. 97)

Position on landform: Backslopes

Parent material: Colluvium derived from sandstone, shale, and conglomerate

Slope: 35 to 65 percent

Shape (down/across): Concave/linear

Surface fragments: About 30 percent subrounded gravel; about 20 percent subrounded cobbles; less than 1 percent subrounded stones; about 2 percent fine subrounded gravel

Depth class: Very deep

Depth to restrictive feature: 59 to 79 inches to bedrock, paralithic; 79 to 98 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 5.5 inches (low)

Shrink-swell potential: About 6.8 percent (high)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-

Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, twoneedle pinyon, ponderosa pine, mountain muhly, Rocky Mountain juniper

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; very cobbly loam

BA—5 to 10 inches; very cobbly loam

Bt1—10 to 14 inches; very gravelly clay loam

Bt2—14 to 25 inches; very cobbly clay loam

Bt3—25 to 33 inches; very gravelly clay loam

Bt4—33 to 53 inches; very cobbly clay loam

Bt5—53 to 72 inches; very cobbly clay loam

2Cr—72 to 88 inches; bedrock

2R—88 to 98 inches; bedrock

Minor Components Composition

Altega and similar soils: About 4 percent

Bernal and similar soils: About 3 percent

Altezita and similar soils: About 3 percent

702—Estrada-Chacuaco complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,400 to 8,000 feet (1,951 to 2,438 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Estrada and similar soils: 65 percent

Chacuaco and similar soils: 25 percent

Minor components: 10 percent

Component Descriptions

Estrada soils

Landscape: Plateaus (fig. 98)

Landform: Valley sides (fig. 99)

Position on landform: Toeslopes

Parent material: Alluvium derived from sandstone and shale

Slope: 2 to 8 percent

Shape (down/across): Concave/linear

Surface fragments: About 1 percent angular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 10.1 inches (high)

Shrink-swell potential: About 5.3 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 1 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail,
fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A1—0 to 2 inches; very fine sandy loam

A2—2 to 7 inches; loam

Bt1—7 to 14 inches; silty clay loam

Bt2—14 to 23 inches; silty clay loam

Bt3—23 to 41 inches; gravelly clay loam

BCtk—41 to 57 inches; clay loam

Ck—57 to 87 inches; very gravelly loam

Chacuaco soils

Landscape: Plateaus (fig. 98)

Landform: Valley sides (fig. 99)

Position on landform: Footslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 2 to 6 percent

Soil Survey of Santa Fe County Area, New Mexico

Shape (down/across): Linear/linear

Surface fragments: About 2 percent angular gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 7.1 inches (moderate)

Shrink-swell potential: About 5.0 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 34 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail, fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A1—0 to 2 inches; very fine sandy loam

A2—2 to 6 inches; loam

Bt1—6 to 16 inches; clay loam

Bt2—16 to 22 inches; clay loam

Bt3—22 to 28 inches; clay loam

Btk—28 to 33 inches; clay loam

Bk—33 to 41 inches; gravelly sandy clay loam

R—41 to 51 inches; bedrock

Minor Components Composition

Aliante and similar soils: About 6 percent

Altega and similar soils: About 4 percent



Figure 98.—An Area of Estrada-Chacuaco complex, 2 to 8 percent slopes. This site that benefits from run on moisture supports a very robust grass cover.

Soil Survey of Santa Fe County Area, New Mexico

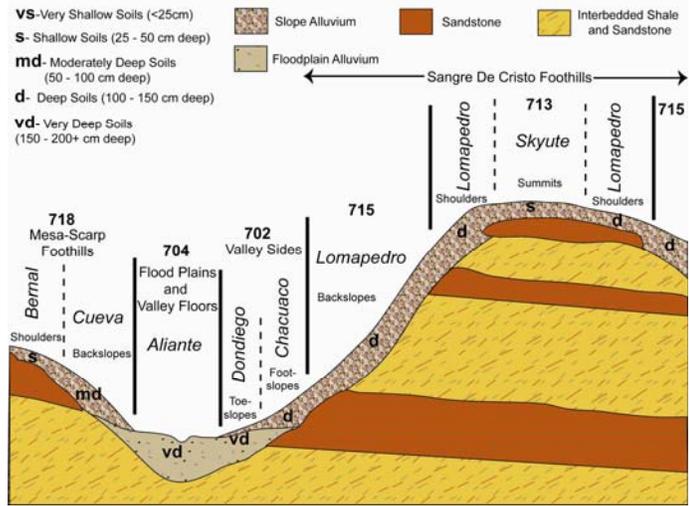


Figure 99.—Cross-section diagram of landform and landform position for map units south and east of Glorieta.

703—Estrada loam, 2 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,900 to 8,000 feet (2,103 to 2,438 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Estrada and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Estrada soils

Landscape: Plateaus

Landform: Valley sides (fig. 102)

Position on landform: Foothslopes, toeslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 2 to 15 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent subangular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.1 inches (high)

Shrink-swell potential: About 4.0 percent (moderate)

Flooding hazard: Very rare

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail,
fringed sagewort

Land capability subclass (nonirrigated): 4e

Typical Profile

A—0 to 2 inches; fine sandy loam

AB—2 to 4 inches; loam

Bt1—4 to 13 inches; loam

Bt2—13 to 19 inches; loam

Btk1—19 to 28 inches; loam

Btk2—28 to 41 inches; loam

B't1—41 to 55 inches; clay loam

B't2—55 to 104 inches; loam

BC—104 to 122 inches; loam

Minor Components Composition

Herrada and similar soils: About 4 percent

Riverwash: About 2 percent

Bernal and similar soils: About 2 percent

Estrada and similar soils: About 2 percent

704—Aliante loam, 0 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,500 to 7,900 feet (1,981 to 2,408 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Aliante and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Aliante soils

Landscape: Plateaus

Landform: Flood plains on valley floors (fig. 99)

Parent material: Alluvium derived from sandstone and shale

Slope: 0 to 3 percent

Shape (down/across): Linear/linear

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 10.0 inches (high)

Shrink-swell potential: About 5.5 percent (moderate)

Flooding hazard: Rare

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(slightly sodic)

Ecological site: Loamy Upland

Potential native vegetation: blue grama, western wheatgrass, bottlebrush squirreltail,
fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 6 inches; loam

Bt1—6 to 11 inches; loam

Bt2—11 to 17 inches; silty clay loam

Bt3—17 to 36 inches; silty clay

Bt4—36 to 60 inches; clay loam

CB—60 to 79 inches; gravelly sandy clay loam

Minor Components Composition

Altega and similar soils: About 6 percent

Moriartche and similar soils: About 4 percent

705—Margosa-Condesa complex, 2 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,400 to 8,100 feet (1,951 to 2,469 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Margosa and similar soils: 50 percent

Condesa and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Margosa soils

Landscape: Plateaus

Landform: Higher areas plateaus (fig. 97)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 2 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 10 percent subangular gravel; about 10 percent subangular cobbles; about 2 percent subrounded stones

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 3.9 percent (moderate)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 72 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: Gambel oak, twoneedle pinyon, needlegrass, oneseed juniper, Rocky Mountain juniper, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 5 inches; cobbly loam

Bt—5 to 8 inches; cobbly clay loam

Btk—8 to 12 inches; gravelly clay loam

Bk—12 to 17 inches; extremely gravelly loam

2R—17 to 27 inches; bedrock

Condesa soils

Landscape: Plateaus

Landform: Lower areas, plateaus (fig. 97)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 2 to 6 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent (shape or size unspecified)

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to bedrock, paralithic; 20 to 39 inches to petrocalcic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 3.6 inches (low)

Shrink-swell potential: About 4.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 74 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: Gambel oak, twoneedle pinyon, oneseed juniper, Rocky Mountain juniper, blue grama

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam
Bt1—2 to 5 inches; loam
Bt2—5 to 10 inches; clay loam
Bt3—10 to 16 inches; loam
Btk—16 to 24 inches; loam
Bkkm—24 to 27 inches; petrocalcic
2Cr—27 to 37 inches; bedrock

Minor Components Composition

Rock outcrop: About 5 percent
Predawn and similar soils: About 3 percent
Bernal and similar soils: About 2 percent

706—Verano-Altezita complex, 45 to 90 percent slopes

Map Unit Setting

Major Land Resource Area: 49

Elevation: 6,800 to 8,100 feet (2,073 to 2,469 meters)

Mean annual precipitation: 15 to 18 inches (381 to 457 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 100 to 120 days

Map Unit Composition

Verano and similar soils: 65 percent

Altezita and similar soils: 30 percent

Minor components: 5 percent

Component Descriptions

Verano soils

Landscape: Plateaus (fig. 100 and fig. 101)

Landform: Lower north-facing escarpments (fig. 102)

Position on landform: Backslopes

Parent material: Colluvium derived from sandstone and shale

Slope: 45 to 65 percent

Shape (down/across): Linear/linear

Surface fragments: About 10 percent subrounded gravel; about 20 percent subrounded cobbles; about 2 percent subrounded stones; about 1 percent subrounded stones

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 6.2 inches (moderate)

Shrink-swell potential: About 5.7 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, twoneedle pinyon, ponderosa pine, mountain muhly, Rocky Mountain juniper

Land capability subclass (nonirrigated): 7e

Typical Profile

Oi—0 to 1 inch; very stony slightly decomposed plant material

A1—1 inch to 4 inches; cobbly loam

A2—4 to 9 inches; cobbly sandy loam

E—9 to 13 inches; very cobbly fine sandy loam

Bt1—13 to 23 inches; very cobbly clay loam

Soil Survey of Santa Fe County Area, New Mexico

Bt2—23 to 32 inches; very gravelly clay
Bt3—32 to 40 inches; very gravelly clay loam
BC—40 to 51 inches; clay loam
Cr—51 to 61 inches; cemented

Altezita soils

Landscape: Plateaus (fig. 100 and fig. 101)
Landform: Upper north-facing escarpments (fig. 102)
Position on landform: Backslopes
Parent material: Colluvium derived from sandstone over residuum weathered from sandstone
Slope: 60 to 90 percent
Shape (down/across): Convex/linear
Surface fragments: About 2 percent subrounded stones; about 1 percent subrounded stones; about 20 percent subrounded cobbles; about 25 percent subrounded gravel
Depth class: Shallow
Depth to restrictive feature: 10 to 20 inches to bedrock, lithic
Drainage class: Well drained
Slowest permeability: 0.6 to 2.0 in/hr (moderate)
Available water capacity: About 1.1 inches (very low)
Shrink-swell potential: About 4.1 percent (moderate)
Runoff class: High
Calcium carbonate average in horizon of maximum accumulation: About 9 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana
Potential native vegetation: Gambel oak, ponderosa pine, twoneedle pinyon, Rocky Mountain juniper, mountain muhly, needlegrass
Land capability subclass (nonirrigated): 5s

Typical Profile

Oi—0 to 1 inch; very gravelly slightly decomposed plant material
A1—1 inch to 6 inches; very cobbly sandy loam
A2—6 to 14 inches; very cobbly sandy clay loam
BCk—14 to 18 inches; extremely cobbly sandy clay loam
R—18 to 28 inches; bedrock

Minor Components Composition

Rock outcrop: About 3 percent
Sabroso and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 100.—An area of Verano-Altezita complex, 45 to 90 percent slopes. This steep north-facing slope supports a vegetative community of ponderosa pine and Gambel oak.



Figure 101.—An area of Verano-Altezita complex, 45 to 90 percent slopes. The Altezita soil is shallow to bedrock and has many large rock fragments covering the surface. A backpack is directly in front of the soil pit contains tools used to help characterize this soil.

Soil Survey of Santa Fe County Area, New Mexico

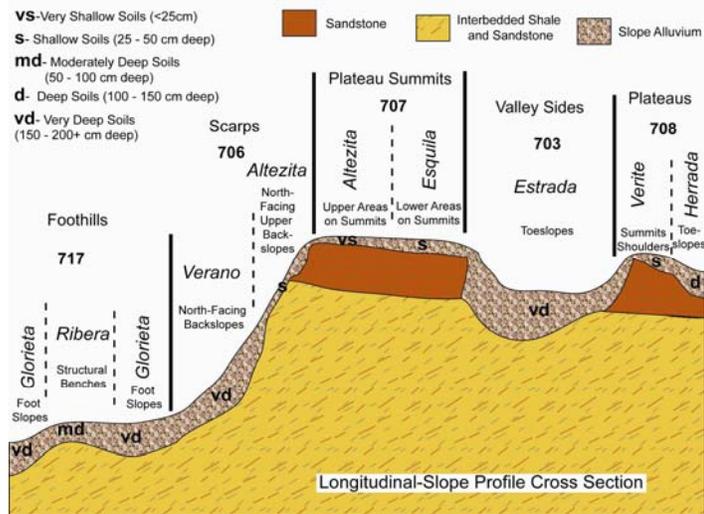


Figure 102.—Cross-section diagram of landform and landform position for map units on Glorieta Mesa and the northern escarpment south and east of Glorieta.

707—Altezita-Esquila-Rock outcrop complex, 2 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,700 to 8,100 feet (2,042 to 2,469 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 45 to 47 degrees F (7.2 to 8.3 degrees C)

Frost-free period: 110 to 130 days

Map Unit Composition

Altezita and similar soils: 50 percent

Esquila and similar soils: 30 percent

Rock outcrop: 10 percent

Minor components: 4 percent

Component Descriptions

Altezita soils

Landscape: Plateaus

Landform: Higher areas plateaus (fig. 102)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone over residuum weathered from sandstone

Slope: 5 to 10 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subrounded cobbles; about 2 percent subrounded gravel; about 1 percent subrounded stones

Depth class: Very shallow

Depth to restrictive feature: 1 to 10 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, ponderosa pine, twoneedle pinyon, Rocky Mountain juniper, mountain muhly, needlegrass

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; cobbly loam

Bw—2 to 7 inches; sandy loam

2R—7 to 17 inches; bedrock

Esquila soils

Landscape: Plateaus

Landform: Lower areas plateaus (fig. 102)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 2 to 5 percent

Shape (down/across): Concave/linear

Surface fragments: About 2 percent subrounded gravel; about 5 percent subrounded cobbles

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 2.2 inches (very low)

Shrink-swell potential: About 5.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, ponderosa pine, twoneedle pinyon, Rocky Mountain juniper, mountain muhly

Land capability subclass (nonirrigated): 4s

Typical Profile

Oi—0 to 2 inches; slightly decomposed plant material

A1—2 to 3 inches; sandy loam

A2—3 to 7 inches; sandy loam

E—7 to 9 inches; loamy sand

Bt1—9 to 17 inches; clay

2Bt2—17 to 20 inches; very paragravelly clay

2R—20 to 30 inches; bedrock

Rock outcrop

Description: Rock outcrop consists of exposed sandstone bedrock. It occurs as gently sloping bedrock intermingled with the Altezita and Esquila soils.

Landscape: Plateaus

Landform: Lower areas plateaus

Parent material: Sandstone

Slope: 5 to 15 percent

Shape (down/across): Linear/linear

Minor Components Composition

Bernal and similar soils: About 3 percent

Margosa and similar soils: About 1 percent

708—Uva-Herrada complex, 3 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,200 to 8,000 feet (1,890 to 2,438 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Uva and similar soils: 50 percent

Herrada and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Uva soils

Landscape: Plateaus

Landform: Undulating plateaus (fig. 102)

Position on landform: Shoulders, summits

Parent material: Eolian deposits derived from sandstone and shale over residuum weathered from sandstone

Slope: 3 to 15 percent

Shape (down/across): Convex/linear

Surface fragments: Less than 1 percent angular stones; about 10 percent angular gravel; about 10 percent cobbles

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: ponderosa pine, twoneedle pinyon, Rocky Mountain juniper, blue grama, muttongrass

Land capability subclass (nonirrigated): 4e

Typical Profile

Oi—0 to 0 inch; cobbly slightly decomposed plant material

A—0 to 3 inches; cobbly loamy fine sand

Bt1—3 to 6 inches; sandy loam

Bt2—6 to 9 inches; paragravelly sandy loam

Btk/Crk—9 to 17 inches; sandy loam

R—17 to 27 inches; bedrock

Herrada soils

Landscape: Plateaus

Landform: Undulating plateaus (fig. 102)

Position on landform: Foothills

Parent material: Alluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 3 to 10 percent

Shape (down/across): Concave/linear

Surface fragments: About 5 percent angular gravel

Depth class: Very deep

Depth to restrictive feature: 79 to 98 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.5 inches (high)

Shrink-swell potential: About 4.3 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 3 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-

Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, ponderosa pine, Rocky Mountain juniper, twoneedle pinyon, Junegrass, blue grama

Land capability subclass (nonirrigated): 3c

Typical Profile

A—0 to 2 inches; loam
AB—2 to 4 inches; loam
BA—4 to 9 inches; loam
Bt1—9 to 22 inches; loam
Bt2—22 to 31 inches; clay loam
Bt3—31 to 43 inches; silty clay loam
Btk1—43 to 51 inches; loam
Btk2—51 to 69 inches; loam
2C—69 to 91 inches; silt loam
3R—91 to 101 inches; bedrock

Minor Components Composition

Estrada and similar soils: About 5 percent

Bernal and similar soils: About 3 percent

Rock outcrop: About 2 percent

709—Moriartche clay loam, 0 to 3 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,600 to 7,300 feet (2,012 to 2,225 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Moriartche and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Moriartche soils

Landscape: Plateaus

Landform: Alluvial flats on valley floors (fig. 105)

Parent material: Alluvium derived from shale

Slope: 0 to 3 percent

Shape (down/across): Concave/linear

Surface fragments: About 1 percent angular gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 9.5 inches (high)

Shrink-swell potential: About 7.5 percent (high)

Runoff class: Medium

Calcium carbonate average in horizon of maximum accumulation: About 9 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Swale

Potential native vegetation: blue grama, western wheatgrass, fringed sagewort

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 1 inch; clay loam

BA—1 inch to 4 inches; clay loam

Bw—4 to 14 inches; clay

Bss1—14 to 27 inches; silty clay loam

Bss2—27 to 88 inches; silty clay

Minor Components Composition

Aliante and similar soils: About 5 percent

Altega and similar soils: About 4 percent

Water: About 1 percent

710—Predawn fine sandy loam, 1 to 4 percent slopes

Map Unit Setting

Major Land Resource Area: 36

Elevation: 6,600 to 8,000 feet (2,012 to 2,438 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Predawn and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Predawn soils

Landscape: Plateaus

Landform: Eroded fan remnants (fig. 105)

Position on landform: Summits

Parent material: Eolian deposits derived from sandstone and shale over alluvium derived from granite, gneiss, and schist

Slope: 1 to 4 percent

Shape (down/across): Linear/linear

Surface fragments: About 1 percent subrounded gravel

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.06 to 0.2 in/hr (slow)

Available water capacity: About 10.6 inches (high)

Shrink-swell potential: About 5.2 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 20 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: oneseed juniper, twoneedle pinyon, Rocky Mountain juniper, blue grama, muttongrass

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 1 inch; fine sandy loam

BA—1 inch to 3 inches; clay loam

Bt—3 to 16 inches; clay loam

Btk1—16 to 25 inches; clay loam

Btk2—25 to 33 inches; clay loam

2Bk—33 to 49 inches; clay loam

2Btk3—49 to 66 inches; clay loam

2Btk4—66 to 119 inches; loam

Minor Components Composition

Fangio and similar soils: About 5 percent

Herrada and similar soils: About 3 percent

Urraca and similar soils: About 2 percent

711—Fangio-Ortiz complex, 15 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,600 to 8,000 feet (2,012 to 2,438 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Fangio and similar soils: 50 percent

Ortiz and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Fangio soils

Landscape: Plateaus (fig. 103 and fig. 104)

Landform: Upper eroded fan remnants (fig. 105)

Position on landform: Backslopes

Parent material: Alluvium and colluvium derived from granite, gneiss, and schist over residuum weathered from shale

Slope: 15 to 50 percent

Shape (down/across): Convex/convex

Surface fragments: Less than 1 percent rounded stones; about 30 percent rounded cobbles; about 35 percent rounded gravel

Depth class: Very deep

Depth to restrictive feature: 69 to 94 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 6.0 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 35 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis-Bouteloua curtipendula

Potential native vegetation: oneseed juniper, twoneedle pinyon, black grama, sideoats grama, blue grama

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 4 inches; extremely cobbly loam (fig. 106)

AB—4 to 8 inches; extremely cobbly loam

Btk1—8 to 12 inches; very cobbly loam

Btk2—12 to 20 inches; very cobbly clay loam

Btk3—20 to 28 inches; cobbly clay loam

BCK—28 to 36 inches; cobbly clay loam

2Ck—36 to 79 inches; clay loam

2Cr—79 to 89 inches; extremely paragravelly cemented

Ortiz soils

Landscape: Plateaus (fig. 103 and fig. 104)

Landform: Lower eroded fan remnants (fig. 105)

Position on landform: Backslopes

Parent material: Alluvium derived from granite, gneiss, and schist over residuum weathered from shale

Slope: 15 to 40 percent

Shape (down/across): Concave/linear

Surface fragments: About 30 percent rounded cobbles; about 40 percent rounded gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 6.0 percent (high)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis-Bouteloua curtipendula

Potential native vegetation: oneseed juniper, twoneedle pinyon, blue grama, black grama, pricklypear

Land capability subclass (nonirrigated): 7s

Typical Profile

A—0 to 2 inches; extremely cobbly loam (fig. 107)

Bt1—2 to 5 inches; clay

Bt2—5 to 10 inches; clay

Bt3—10 to 18 inches; gravelly clay

Btk—18 to 31 inches; gravelly clay loam

Bk—31 to 45 inches; gravelly clay loam

2Ck—45 to 57 inches; extremely paragravelly clay loam

2Cr1—57 to 67 inches; extremely paragravelly cemented silty clay loam

2Cr2—67 to 77 inches; cemented

Minor Components Composition

Cueva and similar soils: About 4 percent

Altega and similar soils: About 3 percent

Predawn and similar soils: About 2 percent

Rock outcrop: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 103.—An area of Fangio-Ortiz complex, 15 to 50 percent slopes. The soil surface is covered with large numbers of rock fragments.



Figure 104.—An area of Fangio-Ortiz complex, 15 to 50 percent slopes. The Ortiz soils are on lower backslopes below the Fangio soils. The Ortiz soils have less rock fragments in the profile and covering the soil surface.

Soil Survey of Santa Fe County Area, New Mexico

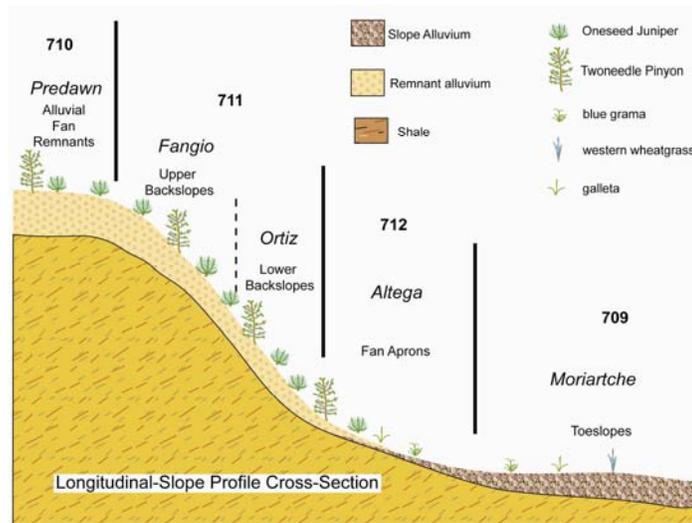


Figure 105.—Cross-section diagram of landform and landform position for map units farther south on Glorieta Mesa.



Figure 106.—Typical profile of the Fangio soil in an area of Fangio-Ortiz complex, 15 to 50 percent slopes. Numerous rock fragments are in the profile. Strong accumulations of calcium carbonate, make the profile very white in color.

Soil Survey of Santa Fe County Area, New Mexico



Figure 107.—Typical profile of the Ortiz soil in an area of the Fangio-Ortiz complex, 15 to 50 percent slopes. Note there are far less rock fragments than in the Fangio soil, and calcium carbonate accumulations are much fewer.

712—Altega very fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,500 to 7,400 feet (1,981 to 2,256 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Altega and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Altega soils

Landscape: Plateaus (fig. 108)

Landform: Fan aprons (fig. 105)

Parent material: Slope alluvium derived from mixed sources

Slope: 3 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 2 percent rounded (shape or size unspecified)

Depth class: Very deep

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 9.6 inches (high)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 4 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm
(nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0
(nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua
curtipendula-Poa fernaldiana

Potential native vegetation: twoneedle pinyon, blue grama, oneseed juniper, broom
snakeweed, western wheatgrass

Land capability subclass (nonirrigated): 4c

Typical Profile

A—0 to 2 inches; loam

AB—2 to 11 inches; loam

Bt—11 to 27 inches; clay loam

Btk1—27 to 50 inches; silt loam

Btk2—50 to 98 inches; loam

Minor Components Composition

Moriartche and similar soils: About 5 percent

Ortiz and similar soils: About 2 percent

Cueva and similar soils: About 2 percent

Rock outcrop: About 1 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 108.—An area of Altega very fine sandy loam, 3 to 8 percent slopes. The hand dug pit helped to characterize the soil.

713—Lomapedro-Skyute complex, 2 to 10 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 7,200 to 8,500 feet (2,195 to 2,591 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 100 to 120 days

Map Unit Composition

Lomapedro and similar soils: 60 percent

Skyute and similar soils: 30 percent

Minor components: 10 percent

Component Descriptions

Lomapedro soils

Landscape: Foothills (fig. 109 and fig. 110)

Landform: Hills (fig. 99)

Position on landform: Shoulders

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from shale

Slope: 2 to 8 percent

Shape (down/across): Linear/linear

Surface fragments: About 17 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 7.6 inches (moderate)

Shrink-swell potential: About 6.2 percent (high)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: oneseed juniper, ponderosa pine, Douglas fir, twoneedle pinyon, sedge

Land capability subclass (nonirrigated): 3c

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 4 inches; gravelly sandy loam

Bt1—4 to 7 inches; gravelly clay loam

Bt2—7 to 24 inches; clay

Btk—24 to 39 inches; silty clay loam

BCK—39 to 49 inches; extremely paragravelly clay loam

Cr—49 to 59 inches; cemented

Skyute soils

Landscape: Foothills (fig. 109 and fig. 110)

Landform: Hills (fig. 99)

Position on landform: Summits

Parent material: Residuum weathered from sandstone and shale

Slope: 2 to 10 percent

Shape (down/across): Convex/linear

Surface fragments: About 5 percent subrounded cobbles; about 15 percent subrounded gravel

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 2.7 percent (low)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-

Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: Gambel oak, twoneedle pinyon, ponderosa pine, little bluestem, sedge

Land capability subclass (nonirrigated): 4s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 3 inches; gravelly sandy loam

Bt1—3 to 6 inches; sandy loam

Bt2—6 to 9 inches; sandy clay loam

C—9 to 12 inches; gravelly sandy loam

R—12 to 22 inches; bedrock

Minor Components Composition

Rock outcrop: About 5 percent

Glorieta and similar soils: About 3 percent

Cueva and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 109.—An area of Lomapedro-Skyute complex, 2 to 10 percent slopes. This area is characterized by Gambel oak and ponderosa pine.



Figure 110.—A variety of tools are used to determine the characteristics of a soil. This is an area of Lomapedro-Skyute complex, 2 to 10 percent slopes.

715—Lomapedro gravelly sandy clay loam, 25 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 48A

Elevation: 7,000 to 8,400 feet (2,134 to 2,560 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 43 to 45 degrees F (6.1 to 7.2 degrees C)

Frost-free period: 100 to 120 days

Map Unit Composition

Lomapedro and similar soils: 90 percent

Minor components: 10 percent

Component Descriptions

Lomapedro soils

Landscape: Foothills (fig. 111)

Landform: Hills (fig. 99)

Position on landform: Backslopes

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from shale

Slope: 25 to 50 percent

Shape (down/across): Linear/linear

Surface fragments: About 25 percent subrounded gravel

Depth class: Deep

Depth to restrictive feature: 39 to 59 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 7.5 inches (moderate)

Shrink-swell potential: About 7.2 percent (high)

Runoff class: Very high

Calcium carbonate average in horizon of maximum accumulation: About 5 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-

Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana

Potential native vegetation: oneseed juniper, ponderosa pine, Douglas fir, twoneedle pinyon, sedge

Land capability subclass (nonirrigated): 6e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A—1 inch to 4 inches; gravelly sandy clay loam

Bt1—4 to 7 inches; sandy clay loam

Bt2—7 to 18 inches; very gravelly clay

Bt3—18 to 25 inches; clay

Bk—25 to 50 inches; paragravelly clay loam

Cr—50 to 60 inches; cemented

Minor Components Composition

Rock outcrop: About 5 percent

Skyute and similar soils: About 2 percent

Cueva and similar soils: About 2 percent

Glorieta and similar soils: About 1 percent



Figure 111.—An area of Lomapedro gravelly sandy clay loam, 25 to 50 percent slopes.

717—Glorieta-Ribera complex, 1 to 15 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,500 to 7,800 feet (1,981 to 2,377 meters)

Mean annual precipitation: 16 to 18 inches (406 to 457 millimeters)

Mean annual air temperature: 45 to 47 degrees F (7.2 to 8.3 degrees C)

Frost-free period: 110 to 130 days

Map Unit Composition

Glorieta and similar soils: 55 percent

Ribera and similar soils: 35 percent

Minor components: 10 percent

Component Descriptions

Glorieta soils

Landscape: Foothills (fig. 112 and fig. 113)

Landform: Hills, scarps (fig. 102)

Position on landform: Foothslopes, toeslopes

Parent material: Slope alluvium derived from sandstone and shale

Slope: 5 to 15 percent

Shape (down/across): Concave/linear

Depth class: Very deep

Depth to restrictive feature: 79 to 98 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 6.8 percent (high)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 11 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 2 mmhos/cm (very slightly saline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (nonsodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: Gambel oak, twoneedle pinyon, Rocky Mountain juniper, blue grama, muttongrass, sideoats grama

Land capability subclass (nonirrigated): 3e

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material

A1—1 inch to 3 inches; sandy loam

A2—3 to 6 inches; sandy loam

Bt—6 to 14 inches; clay

Btk1—14 to 30 inches; clay

Btk2—30 to 50 inches; sandy clay

Btk3—50 to 85 inches; coarse sandy loam

Cr—85 to 94 inches; cemented

Ribera soils

Landscape: Foothills (fig. 112 and fig. 113)

Landform: Structural benches (fig. 102)

Position on landform: Summits

Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 1 to 8 percent

Shape (down/across): Convex/linear

Surface fragments: About 1 percent angular gravel

Depth class: Moderately deep

Depth to restrictive feature: 20 to 39 inches to densic material; 20 to 39 inches to bedrock, paralithic

Drainage class: Well drained

Slowest permeability: 0.0 to 0.001 in/hr (impermeable)

Available water capacity: About 3.8 inches (low)

Shrink-swell potential: About 5.5 percent (moderate)

Runoff class: Low

Calcium carbonate average in horizon of maximum accumulation: None

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Juniperus monosperma-Pinus edulis/Bouteloua gracilis-Bouteloua curtipendula

Potential native vegetation: Gambel oak, twoneedle pinyon, oneseed juniper, sedge, true mountain mahogany, ponderosa pine

Land capability subclass (nonirrigated): 5s

Typical Profile

A1—0 to 1 inch; loamy fine sand

A2—1 inch to 8 inches; fine sandy loam

Bt1—8 to 13 inches; sandy clay loam

Bt2—13 to 23 inches; clay loam

Cd—23 to 26 inches; noncemented material

Cr—26 to 36 inches; cemented material

Minor Components Composition

Cueva and similar soils: About 4 percent

Rock outcrop: About 2 percent

Bernal and similar soils: About 2 percent

Estrada and similar soils: About 2 percent

Soil Survey of Santa Fe County Area, New Mexico



Figure 112.—Vegetation is sparse in this area of Glorieta-Ribera complex, 1 to 15 percent slopes.



Figure 113.—An area of Glorieta-Ribera complex, 1 to 15 percent slopes.

718—Bernal-Cueva complex, 10 to 50 percent slopes

Map Unit Setting

Major Land Resource Area: 70A

Elevation: 6,100 to 7,900 feet (1,859 to 2,408 meters)

Mean annual precipitation: 14 to 16 inches (356 to 406 millimeters)

Mean annual air temperature: 46 to 48 degrees F (7.8 to 8.9 degrees C)

Frost-free period: 120 to 140 days

Map Unit Composition

Bernal and similar soils: 50 percent

Cueva and similar soils: 40 percent

Minor components: 10 percent

Component Descriptions

Bernal soils

Landscape: Foothills (fig. 114)

Landform: Hills (fig. 99)

Position on landform: Shoulders

Parent material: Fine-loamy colluvium derived from sandstone and shale, slope alluvium derived from sandstone and shale over residuum weathered from sandstone

Slope: 10 to 25 percent

Shape (down/across): Convex/linear

Depth class: Shallow

Depth to restrictive feature: 10 to 20 inches to bedrock, lithic

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow)

Available water capacity: About 2.7 inches (very low)

Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: High

Calcium carbonate average in horizon of maximum accumulation: About 14 percent

Gypsum average in horizon of maximum accumulation: None

Salinity average in horizon of maximum accumulation: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)

Ecological site: Pinus edulis-Juniperus monosperma/Quercus gambelii/Bouteloua curtipendula-Poa fernaldiana

Potential native vegetation: Gambel oak, twoneedle pinyon, Rocky Mountain juniper, sedge

Land capability subclass (nonirrigated): 4s

Typical Profile

Oi—0 to 1 inch; slightly decomposed plant material (fig. 115)

A—1 inch to 3 inches; loam

Bt1—3 to 12 inches; clay loam

Bt2—12 to 17 inches; clay loam

2R—17 to 27 inches; bedrock

Cueva soils

Landscape: Foothills (fig. 114)

Landform: Hills (fig. 99)

Position on landform: Backslopes

Parent material: Residuum weathered from shale

Slope: 20 to 50 percent

Shape (down/across): Linear/convex

Soil Survey of Santa Fe County Area, New Mexico

Surface fragments: About 5 percent very angular flagstones; about 15 percent very angular channers
Depth class: Moderately deep
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Slowest permeability: 0.0 to 0.001 in/hr (impermeable)
Available water capacity: About 5.9 inches (low)
Shrink-swell potential: About 7.5 percent (high)
Runoff class: Very high
Calcium carbonate average in horizon of maximum accumulation: About 6 percent
Gypsum average in horizon of maximum accumulation: None
Salinity average in horizon of maximum accumulation: About 1 mmhos/cm (nonsaline)
Sodium adsorption ratio average in horizon of maximum accumulation: About 0 (slightly sodic)
Ecological site: Pinus ponderosa-Juniperus scopulorum/Quercus gambelii-Cercocarpus montanus/Poa fendleriana-Muhlenbergia montana
Potential native vegetation: Gambel oak, twoneedle pinyon, Douglas fir, Rocky Mountain juniper, sideoats grama
Land capability subclass (nonirrigated): 5s

Typical Profile

A—0 to 2 inches; channery loam (fig. 116)
Bt1—2 to 6 inches; clay
Bt2—6 to 19 inches; clay loam
Btk—19 to 33 inches; clay loam
Cd—33 to 43 inches; noncemented material

Minor Components Composition

Badland: About 4 percent
Rock outcrop: About 3 percent
Glorieta and similar soils: About 2 percent
Ribera and similar soils: About 1 percent



Figure 114.—An area of Bernal-Cueva complex, 10 to 50 percent slopes. Common vegetation is the piñon tree and Gambel oak.

Soil Survey of Santa Fe County Area, New Mexico



Figure 115.—Typical profile of the Bernal soil in an area of Bernal-Cueva complex, 10 to 50 percent slopes. This shallow soil has hard sandstone bedrock within 20 inches of the soil surface.



Figure 116.—Typical profile of the Cueva soil in an area of Bernal-Cueva complex, 10 to 50 percent slopes. This soil has much more clay than the Bernal component. It is also moderately deep to a soft bedrock contact.

W—Water

Map Unit Setting

Major Land Resource Area: 36

Map Unit Composition

Water: 100 percent
Minor components: None

Component Descriptions

Water

Landform: Lakes, rivers
Ponding hazard: Frequent
Seasonal high water table depth: About 0 to 5 inches

Use and Management of the Soils

For general and detailed information regarding the use and management of the soil map units in this survey, see the soil reports and report descriptions available from Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov>. These reports are an inventory and evaluation of the soils in the survey area. The reports can be used to adjust land uses to the limitations and potentials of natural resources and the environment related to rangeland, recreation, wildlife habitat, engineering to include, building site development, sanitary facilities, construction materials, and water management; soil properties that includes engineering index properties, physical properties, chemical properties, soil features, and water features.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information developed during a soil survey can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use a survey to locate sources of sand, gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find a soil survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. Only normal practices for the rated use are considered. Unusual modifications to the site or soil material are not considered in the ratings. Where soils have limitations, engineers and others may be able to modify soil features or adjust the plans for a structure to compensate for most of the limitations. Most of these modifications, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

Rangeland

Livestock grazing in northern New Mexico has a long tradition, with the Spanish introducing cattle to the area in the 1500's. Historically, grazing was done for subsistence. Today many small operations are run by Hispanic families to whom ranching is a way of life and a much needed form of supplemental income. Many of

these families have been residents since before New Mexico became a territory in 1848. Their livelihood and traditional way of life is being threatened by the rapidly increasing value of real estate in Santa Fe County.

Approximately 59 percent of the land in Santa Fe County is currently rangeland, about 3.5 percent has been subdivided or converted into urban land. As the county has become more developed, there has been an increasing trend toward small acreage horse grazing. This is especially true for the southern part of the county.

Grazing was traditionally sheep and goats with some cattle. Currently, the area is grazed predominantly by cattle. There is still some sheep and goat grazing, horse grazing, and a few people graze alpacas and llamas.

The mountains, foothills, and the shortgrass steppe are the three major areas used for grazing. The mountains and parts of the foothills are primarily grazed in spring and summer while the shortgrass steppe tends to be grazed year round.

Specific Rangeland reports and report descriptions can be found on Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov>.

Range management requires knowledge of the kinds of soil and the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the "National Range and Pasture Handbook" which is available on the internet at <http://www.qlti.nrcs.usda.gov> or in local offices of the Natural Resources Conservation Service.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils, vegetation, and water.

Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available on the internet at <http://www.nrcs.usda.gov/technical/efotg> or in local offices of the Natural Resources Conservation Service.

Forest Management

The general information provided in this section is intended as a guide. It may help resource managers, landowners, and visitors to understand the characteristics and management of forest soils within the survey area. Onsite investigation by resource professionals is needed for the acquisition of site-specific data. Such investigation may result in better solutions to specific resource problems than the general information in the forest management reports and descriptions that are available on the internet at <http://websoilsurvey.nrcs.usda.gov>. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet at <http://soils.usda.gov/technical/nfmanual>.

Classification of the Soils

This section describes the system of soil classification. Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, which is typical of the series is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual." (17) Many of the technical terms used in the descriptions are defined in "Soil Taxonomy." (20)

The system of soil classification used by the National Cooperative Soil Survey has six categories. (19, 20) Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are described in the following paragraphs.

ORDER. Twelve soil orders are recognized. Five of the orders occur in this survey area. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in "sols". An example is Alfisol. Alfisols, Aridisols, Entisols, Inceptisols, and Mollisols occur in this survey area.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Ustoll ("Ust" meaning an ustic moisture regime and "oll" from Mollisol indicating a mollic epipedon high in base saturation.)

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Argiustolls ("Argi" meaning presence of an argillic horizon and "ustoll", the suborder of mollisols in an ustic moisture regime.)

SUBGROUP. Each great group has a "typic" subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The subgroup "Pachic" identifies the extragrade that indicates an over thickened mollic epipedon.) An example is Pachic Argiustolls

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is Fine-loamy, mixed, superactive, mesic Pachic Argiustolls.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example of a soil series with the taxonomic classification is the Dondiego series.

Soil Series

The official soil series descriptions, including the range of important characteristics of the soils for the series in this survey area are available on the internet at <http://soils.usda.gov/technical/classification/osd>. Each series listed below has been linked to the official series description.

[Abrojo Series](#)

[Adellern Series](#)

[Adornado Series](#)

[Agua Fria Series](#)

[Alchonzo Series](#)

[Aliante Series](#)

[Alire Series](#)

[Altazano Series](#)

[Altega Series](#)

[Altezita Series](#)

[Andanada Series](#)

[Antonchico Series](#)

[Armenta Series](#)

[Arnor Series](#)

[Arojomil Series](#)

[Asparas Taxadjunct *](#)

[Atalaya Series](#)

[Bernal Series](#)

[Bosquecito Series](#)

[Buckhorse Series](#)

[Cabrerros Series](#)

[Camelrock Series](#)

[Canuela Series](#)

[Cerrillos Series](#)

[Cerropelon Series](#)

[Chacuaco Series](#)

[Charalito Series](#)

[Chilerojo Series](#)

[Chimayo Series](#)

[Chiminet Series](#)

[Chupadera Series](#)

[Chupe Series](#)

[Churipa Series](#)

[Cielito Series](#)

[Clovis Series](#)

[Cochiti Series](#)

[Condesa Series](#)

[Crucitas Series](#)

[Cueva Series](#)

[Cumacho Series](#)

[Cuyamungue Series](#)

[Davishat Series](#)

[Delvalle Series](#)

[Depolvo Series](#)

[Desario Series](#)

[Devargas Series](#)

[Dondiego Series](#)

[El Rancho Series](#)

[Encantado Series](#)

[Enmedio Series](#)

[Espanola Series](#)

[Espinosa Series](#)

[Esquila Series](#)

[Estrada Series](#)

[Fangio Series](#)

[Fiesta Series](#)

[Frajillo Series](#)

[Glorieta Series](#)

[Golondrina Series](#)

[Hagerman Series](#)

Soil Survey of Santa Fe County Area, New Mexico

Haozous Series	Nyjack Series
Harvey Series	Oelop Series
Herrada Series	Ohke Series
Horcado Series	Ojito Series
Horchata Series	Ortiz Series
Hyer Series	Palma Series
Ildefonso Series	Paraje Series
Innacutt Series	Parida Series
Jaconita Series	Pastorius Series
Junebee Series	Pastura Taxadjunct *
Kachina Series	Pedregal Series
Kech Series	Pegasus Series
Khapo Series	Penistaja Series
Kinsell Series	Piojillo Series
Koshare Series	Portillo Series
Kwahe Series	Predawn Series
Lamesilla Series	Puertecito Series
Latierra Series	Quapaw Series
Lazaro Series	Quarteles Series
Lazarus Series	Ranchos Series
Legate Series	Raydawn Series
Levante Series	Resolana Series
Lomapedro Series	Ribera Series
Los Alamos Series	Riovista Series
Manzano Series	Romberg Series
Margosa Series	Sabroso Series
Medrano Series	Sandoval Series
Metate Series	Santa Fe Series
Mirada Series	Scogg Series
Morenda Series	Sedillo Series
Moriartche Series	Sena Series
Musofare Series	Sipapu Series
Nala Series	Skyute Series
Navajita Series	Skyvillage Series
Nazario Series	Spyglass Series
Netoma Series	Stanley Series

Sueleros Series

Tamarindo Series

Tanbark Series

Tanoan Series

Tapia Series

Tetilla Series

Totavi Series

Travessilla Series

Triane Series

Truehill Series

Tsinat Series

Uva Series

Verano Series

Villario Series

Walkibout Series

Wandurn Series

Witt Series

Xenmack Series

Yohalem Series

Yuzarra Series

Zacaton Series

Zafarano Series

Zarmand Series

Zepol Series

Zia Series

Zozobra Series

Taxadjuncts

A taxadjunct is a soil (map unit component) that is correlated (named) as a recognized, existing soil series for the purpose of expediency. Taxadjuncts use a soil series name as a reference name but the soils have one or more differentiating characteristics that are outside the taxonomic class limits of the family or higher category for the named soil series. These properties in the aggregate, give responses to use and management similar to those of the named soil series

Asparas: This soil is a taxadjunct to the series because it has a fine particle-size class. The taxonomic class is Fine, mixed, superactive, mesic Calcic Argiustolls.

Pastura: This soil is a taxadjunct to the series because it has a loamy-skeletal particle-size class. The taxonomic class is Loamy-skeletal, carbonatic, mesic, shallow Calcic Petrocalcids.

Formation of the Soils

This section defines soil, describes the factors of soil formation, and relates them to the formation of the soils in the survey area.

Factors of Soil Formation

Soil is a dynamic medium forming a living shell of varying thickness over the rocky crust of the Earth. Soil, as used in this publication, is a natural body or a collection of natural bodies on the earth's surface, containing living matter and supporting or capable of supporting plant life. Its upper limit is air or shallow water. At its margins it grades to deep water or to barren areas of rock. Soil grades at its lower limit to bedrock or to earthy materials virtually devoid of roots, animals, or marks of other biologic activity. (18,20)

Soil is the result of the interaction of five soil forming factors. (3,13) These factors determine the unique properties and characteristics of a soil at any given location. The five soil forming factors are: (1) the type and mineralogical composition of the *parent material*; (2) the *living organisms* on and in the soil; (3) the *topography* or relief features of a landscape; (4) the different *climates* that the soil has been exposed to; and (5) the length of *time* these development forces have acted upon the soil. The interrelationship of these factors is very complex and it is difficult to isolate the effects of any one factor. The effect of the factors also varies from place to place, but the interaction of the factors ultimately determines the kind of soil that forms. The term "pedogenesis" (soil genesis) is often used to connote the process of soil formation.

Parent Material

Parent material is the unconsolidated organic and mineral matter in which soil forms. Parent materials influence or wholly determine the color, texture, mineralogy, structure, consistency, reaction, erodibility, and natural fertility of soil.

Most mineral matter is ultimately derived from some type of rock. The survey area has landscapes that in some areas are dominated by exposed bedrock. The vast majority of the bedrock types present in this survey area are igneous rocks and sedimentary rocks. There are some areas in the east central part of the survey area that have appreciable amounts of metamorphic rocks. These rock layers are grouped together into mapable units called formations. Physical and chemical weathering of rocks in these exposed geologic formations, accompanied by natural erosion, provides an abundant source of loose rock debris for the parent materials of soils.

Since the parent materials derived from particular geologic formations have specific characteristics, the soils that form in them tend to also have specific characteristics that are related to or derived from these materials. Certain properties such as mineralogy and soil color are strongly influenced by the initial nature of the parent materials. Such properties are especially evident in dry regions where the rate of chemical alteration of most minerals is slow because of the lack of abundant soil moisture.

The soils in the survey area are formed in several types of parent material. Some soils have formed in only one type of material, while many others have formed in a combination of several types. The parent materials present are alluvium, residuum, colluvium, lacustrine, and eolian material. Each of these materials are discussed in the following paragraphs.

Alluvium is sediment that has been moved by running water. It may have been moved many miles or only a few feet. If it has only moved a few feet, we will usually modify the term to *slope alluvium*. In this survey area, it commonly is derived from bedrock such as tuff, sandstone, shale, limestone, or basalt, but it may also be derived from existing soils which are undergoing accelerated erosion.

Common landforms in this survey area where alluvium is a dominant parent material are flood plains, alluvial fans, and stream terraces. The high stream terraces in the northwest part of the survey area are a distinctive feature denoting much older age. The same is true for many of the eroded fan remnants in the central part of the survey area. Some soils, especially in the northern part of the survey area are forming in young, relatively unaltered Holocene alluvium and therefore have minimally developed diagnostic subsurface horizons.

Alluvial deposits are typically stratified because of the fluctuating nature of the processes involving erosion, transportation, and deposition of sediments. This inherent stratification is clearly evident in very young alluvial deposits, but is less evident where pedogenesis has altered or obscured the deposits. Differences in particle or grain sizes because of stratification play an important role in the diagnostic horizons that may form in a soil. For example, calcic horizons in soils commonly form over or within layers having distinct differences in grain size. This effect is because of the change in the size of the pores from one strata or layer to the next, which affects water flow. These different layers slow the movement of soil water and allow compounds such as calcium carbonate held in suspension to be withdrawn into large soil pores where they accumulate over time.

Residuum is material formed in place by the physical and chemical weathering of bedrock. Common landform positions in this survey where residuum contributes to the soil material are summits of mesas, plateaus, and structural benches.

Colluvium is material that has been moved down steep slopes by mass wasting processes. It is composed of material that has rolled, slid, or fallen down slope because of the influence of gravity. The size fractions of particles in most colluvial deposits are large and the material is unsorted. The rock fragments in colluvium are usually angular, except where the fragments are derived from rock formations or unconsolidated deposits that have preexisting, rounded fragments. Most often, colluvium is an important soil parent material on backslopes.

Lacustrine is material that has formed in lake or playa water and exposed when the water level is lowered or the elevation of the land is raised. This occurs mostly in playas in the southeast part of the survey area.

Eolian material is sediment that has been transported by wind. Thick eolian deposits are commonly composed of sand and silt sized particles, but may also be composed of aggregated clay-size particles. Eolian materials are sorted through transport where finer materials such as silt and very fine sand may move many miles from the source but coarser materials such as fine or medium sand will be deposited much closer to the source. Calcium carbonate and other chemical compounds such as sodium sulfate are also moved and redeposited by wind in the form of dust. (9,22) Such atmospheric additions of dry clay and fine silt-size particles have a significant cumulative effect over a long period of time, especially on stable landform positions. Labile calcium released by calcareous dust into the soil water may combine with the sulfate anion present in saline soils to form accumulations of secondary gypsum.

Living Organisms

Plant, animal, and microbial life affect many soil processes such as the physical and chemical weathering of bedrock and parent material, the rates of organic matter decomposition and biochemical transformation, and plant nutrient cycling. Plant roots grow into bedrock and parent material, breaking it loose into individual particles and exert strong pressures to force open joints in rock and unconsolidated materials,

making them more porous. Organic matter is incorporated into the soil solum through root growth and death and also provides an organic mulch at the soil surface by plant litter. In ecosystems with poor soil nutrition or low available moisture, plants can cycle nutrients from great depths or pull water from relatively dry materials in the soil, making them available to other plants and animals.

Animals have an impact on soil formation. Creatures such as ants, earthworms, cicada larvae, mice, moles, prairie dogs, and badgers live and burrow in the soil. Their activities mix layers and concentrate soil particles, while also increasing porosity, permeability, and recycling plant matter and nutrients. Certain soil bacteria participate symbiotically with plants in the basic enzymatic transformations of nitrification, and nitrogen fixation and are responsible for reduction and oxidation processes that induce sulfur oxidation, iron mobilization, and many other biochemical and geochemical transformations in the soil. (5) Actinomycetes are bacteria-like fungi that are of great importance in the decomposition of soil organic matter and are also partly responsible for the aroma of fresh soil. Certain species of fungi may aid or speed the accumulation of calcium carbonate within desert soils. (13)

Field research by ecologists is revealing the importance that algae and spore producing plants play in the health and stability of fragile soils in dry regions. Cryptogamic soil crusts form on and directly under the soil surface when symbiotic communities of algae, fungi, mosses, and lichens flourish. These crusts are characteristically dark and lumpy and can become well developed on sandy, saline, or gypsiferous soils which lack gravel lags or desert pavements. Cryptogamic crusts are important because they provide surface aggregation that stabilizes and protects otherwise sparsely vegetated soils from the hazards of water erosion and soil blowing. (2,6) Other benefits which cryptogam crusts provide is adding organic matter, fixing atmospheric nitrogen, increasing water infiltration, and protecting moisture within the upper inch of soil. (7)

Humans alter the soil by building structures, manipulating rangeland plants for livestock, harvesting or chaining trees, and by leveling, tilling, planting, and irrigating for crop production. All of these activities can cause serious soil erosion and ecosystem degradation if land users are not careful and do not practice good soil conservation techniques.

Topography

Topography has an important influence on soil formation, due both to slope gradient and aspect. Slope gradient determines the rate of surface runoff and the hazard of soil erosion by water as well as the internal drainage of soils. The Quarteles soil has a high rate of surface runoff and a severe hazard of water erosion because of steep slopes, resulting in only minimal soil development. By contrast, the well-developed Panky soil has a slow rate of surface runoff and only a slight hazard of water erosion because these soils are on more gentle slopes.

The aspect, or geographic direction a slope faces, can also affect soil formation. In the northern hemisphere, steep north-facing slopes have cooler, more moderate temperatures and more effective soil moisture than steep south-facing slopes.

Topography affects the micro-climatic factors of soils in areas of deeply entrenched canyons. The phenomenon of nighttime cold air drainage into canyons effectively lengthens the frost-free period of soils on adjacent uplands, while shortening the period for the soils on the canyon floors.

Climate

Climate plays an important role in the formation of soils. Climate is a dynamic factor that fluctuates diurnally, monthly and yearly in the mid-latitudes in response to the seasons. It has also undergone significant global changes over the long span of

geologic time. A change in climate alters the balance of other soil forming factors, and soils often display morphologic features that formed under the influence of past climates. Many soils in dry regions which have argillic horizons overlying well developed calcic horizons probably display the effects of former climates. The early Holocene epoch was a time of continent-wide climatic change where increasingly arid conditions, especially in the western parts of the United States, caused additions of calcium carbonate to engulf the argillic horizons of many soils. (9)

A wide range of soil temperature and moisture regimes exist within this survey area. Soil temperature regimes in the survey area range from mesic at low and middle elevations to frigid on the highest elevations. Temperature affects the rate of biological activity, the rate of decomposition of organic matter, and the rate of certain chemical reactions. Within these temperature regimes, rates of many processes can effectively double for every 10 degree C. rise in temperature. (5)

Regional and local weather patterns determine when, what types, and in what amounts precipitation will fall. The survey area has a distinct bi-seasonal pattern of precipitation with significant amounts of moisture coming in winter and summer. Soils at the higher elevations receive much more winter precipitation than those at lower elevations. Moisture coming in the winter in the form of snow and gentle rain avoid high rates of evaporation and can penetrate deeply into soil profiles; consequently, higher elevation soils undergo greater degrees of leaching. Spring months are normally dry and windy with little rainfall. The strong spring winds intensify the dry climate and deplete soil moisture through high evaporation rates. Moisture coming in summer when evapotranspiration rates are high, penetrates to only very shallow depths. Summer moisture typically comes as heavy rainfall from high-intensity thunderstorms of short duration. These summer monsoon storms, occurring between July and September, are isolated in extent and undependable in occurrence. Much of the moisture that falls from such high intensity storms runs off the soil surfaces and is unavailable for plant growth.

Soil moisture affects the types of native vegetation present, the rate of biologic activity, the rate of leaching of chemical compounds, and the degree of illuviation of soil colloids. Within certain limits, increasing amounts of soil moisture will result in greater soil development by increasing the amounts and rates of processes acting upon the soil.

Time

The length of time that parent materials have been exposed to the effects of climate and living organisms is an important factor in soil development. Soil age is the measure of this length of time and is important in identifying soil properties and characteristics. In general, the longer duration of time that a soil has been forming, the stronger degree of expression its diagnostic horizons will have.

The development of carbonate (Bk) horizons of pedogenic origin is a common occurrence in the survey area and is closely related to soil age. (9,22) The formation of Bk horizons can be divided into several identifiable and differentiable stages of maturity of which qualitative and sometimes quantitative age distinctions can be made between soils. This is often a useful and important tool in identifying landform types and positions.

References

- (1) American Geological Institute. Glossary of Geology. 2005. 5th Ed. Alexandria, Va.
- (2) Anderson, D.C., Harper, K.T., and Holmgren, R.C. 1982. Factors Influencing Development of Cryptogamic Soil Crusts in Utah Deserts. *Journal of Range Management*, vol.35(2): p.180-185.
- (3) Birkeland, P. W. 1984. *Soils and geomorphology*. 2d ed. Oxford University Press, New York, NY., 372 pp., illus.
- (4) Bowen, Brent M. 1989. *Los Alamos Climatology*. Los Alamos National Laboratory.
- (5) Brady, N.C. 1974. *The Nature and Properties of Soils* (8th edition). MacMillan Publishing Co., Inc., New York, NY., 639 pp., illus.
- (6) Brotherson, J.D., Rushforth, S.R., and Johansen, J.R. 1983. Effects of Long-term Grazing on Cryptogam Crust Cover in Navajo National Monument, Ariz. *Journal of Range Management*, vol.36(5): p.579-581.
- (7) Dunne, J. 1989. Cryptogamic Soil Crusts in Arid Ecosystems. *Rangelands-Society for Range Management*, vol.11(4): p.180-182.
- (8) Folks, J.J. 1975. *Soil Survey of Santa Fe Area, New Mexico Santa Fe County and Part of Rio Arriba County*. United States Department of Agriculture, Soil Conservation Service.
- (9) Gile, L.H., Hawley, J.W., and Grossman, R.B. 1981. *Soils and Geomorphology in the Basin and Range area of Southern New Mexico-Guidebook to the Desert Project*. Memoir 39., N.M. Bureau of Mines and Mineral resources, Socorro, NM., 222 pp., illus.
- (10) Hawley, J. W. 1978. *Guidebook to Rio Grande Rift in New Mexico and Colorado*. University of New Mexico Printing Plant.
- (11) Hawley, J.W. 1986. *Physiographic Provinces and Landforms*. p.23-31. J.L. Williams (ed.), *New Mexico in Maps*, University of New Mexico Press, Albuquerque, NM.
- (12) Hoard, Dorothy. 1989. *A Guide to Soil Survey Update of Santa Fe County*. P 3-6. Los Alamos Historical Society, Los Alamos, NM.

Soil Survey of Santa Fe County Area, New Mexico

- (13) Jenny, H. 1941. Factors of soil formation. McGraw-Hill, New York, NY., 281 pp., illus.
- (14) Monger, H.C., Daugherty, L.A., and Gile, L.H. 1991. A Microscopic Examination of Pedogenic Calcite in an Aridisol of Southern New Mexico. p.37-60. –in W.D. Nettleton (ed.), Occurrence, Characteristics, and Genesis of Carbonate, Gypsum, and Silica Accumulations in Soils, Soil Science Society of America special publication no.26, Madison, WI.
- (15) New Mexico Geological Society. 1982. Geologic Highway Map of New Mexico. N.M. Bureau of Mines and Mineral resources, Socorro, NM.
- (16) Smith, R. L.; Bailey, R. A.; and Ross, C. S. 1970. Geologic Map of the Jemez Mountains, New Mexico. Washington, D.C.: U.S. Geological Survey.
- (17) Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. <http://soils.usda.gov/technical/>
- (18) Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
- (19) Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
- (20) Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- (21) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.
- (22) United States Department of Agriculture, Soil Conservation Service. 1979. The Desert Project Soil Monograph. 984 pp., illus.
- (23) United States Department of Agriculture, Soil Conservation Service. 1981. Land resource regions and major land resource areas of the United States. U.S. Dep. Agric. Handb. 296.

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" which is available on the internet at <http://soils.usda.gov/technical> or in local offices of the Natural Resources Conservation Service.

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low.....	0 to 3
Low.....	3 to 6
Moderate.....	6 to 9
High.....	9 to 12
Very high.....	more than 12

- Backslope.** The position that forms the steepest and generally linear, middle portion of a hill slope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
- Backswamp.** A flood plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Base slope (geomorphology).** A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).
- Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle-size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.
- Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.
- Bottom land.** An informal term loosely applied to various portions of a flood plain.
- Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.
- Breaks.** A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.
- Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.
- Butte.** An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.
- Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Caliche.** A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.
- California bearing ratio (CBR).** The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be

supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canyon. A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Clayey limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are compounds making up concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dactite. A fine-grained extrusive rock with the same general composition as andesite but having less calcic plagioclase and more quartz. (1)

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the "Soil Survey Manual."

- Drainage, surface.** Runoff, or surface flow of water, from an area.
- Drainageway.** A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.
- Draw.** A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.
- Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.
- Earthy fill.** See Mine spoil.
- Ecological site.** An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.
- Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.
- Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.
- Eolian deposit.** Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.
- Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.
- Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.
- Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
- Erosion (accelerated).* Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
- Erosion (geologic).* Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
- Erosion pavement.** A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.
- Erosion surface.** A land surface shaped by the action of erosion, especially by running water.
- Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.
- Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.
- Fanglomerate.** A sedimentary rock consisting of waterworn, fragments of various sizes, deposited in an alluvial fan, and later cemented into a firm rock. (1)

- Fan remnant.** A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.
- Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
- Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.
- Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.
- Fine textured soil.** Sandy clay, silty clay, or clay.
- Firebreak.** An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.
- First bottom.** An obsolete, informal term loosely applied to the lowest flood plain steps that are subject to regular flooding.
- Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.
- Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.
- Flood plain.** The nearly level plain that borders a stream and is subject to flooding unless protected artificially.
- Flood plain landforms.** A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.
- Flood plain step.** An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.
- Fluvial.** Of or pertaining to rivers or streams; produced by stream or river action.
- Foothills.** A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).
- Footslope.** The concave surface at the base of a hill slope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- Forb.** Any herbaceous plant not a grass or a sedge.
- Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Gilgai.** Commonly, a succession of microlows (microbasins) and microhighs (microknolls) in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.
- Gneiss.** A foliated rock formed by regional metamorphism, in which bands or lenticles of granular minerals alternate with bands or lenticles in which minerals having flaky or elongate prismatic habits predominate. (1)

- Granite.** A plutonic rock in which quartz constitutes 10 to 50 percent of the felsic components and in which the alkali feldspars/total feldspars ratio is generally restricted to the range of 65 to 90 percent. (1)
- Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.
- Gravel.** Rounded or angular fragments of rock as much as 3 inches (7.6 centimeters) in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.
- Ground water.** Water filling all the unblocked pores of the material below the water table.
- Gully.** A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hard to reclaim** (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.
- Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.
- Head slope (geomorphology).** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.
- High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.
- Hill.** A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.
- Hill slope.** A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.
- Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:
- A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
- E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
- B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2.....	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

- Invaders.** On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.
- Iron depletions.** See Redoximorphic features.
- Knoll.** A small, low, rounded hill rising above adjacent landforms.
- K-sat.** Saturated hydraulic conductivity. (See Permeability.)
- Lapilli.** Pyroclastic materials that may be either essential, accessory, or accidental in origin, of a size range that has been variously defined within the limits of 2 and 64 mm. The fragments may be either solidified or still viscous when they land; thus, there is no characteristic shape. (1)
- Landslide.** A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.
- Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.
- Latite.** A porphyritic extrusive rock having phenocrysts of plagioclase and potassium feldspar in nearly equal amounts. (1)
- Leaching.** The removal of soluble material from soil or other material by percolating water.
- Linear extensibility.** Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.
- Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.
- Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.
- Low strength.** The soil is not strong enough to support loads.
- Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.
- Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.
- Mass movement.** A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.
- Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. See Redoximorphic features.
- Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.
- Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.
- Mesa.** A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.
- Miscellaneous area.** A kind of map unit that has little or no natural soil and supports little or no vegetation.
- Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
- Monzonite.** A group of plutonic rocks intermediate in composition between syenite and diorite, containing approximately equal amounts of alkali feldspar and plagioclase, little or no quartz and commonly augite as the main mafic mineral. (1)
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common, and many*; size—*fine, medium, and coarse*; and contrast—*faint, distinct, and prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain.** A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Natric horizon.** A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. See Redoximorphic features.
- Nose slope (geomorphology).** A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).
- Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
- Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low.....	less than 0.5 percent
Low.....	0.5 to 1.0 percent
Moderately low.....	1.0 to 2.0 percent
Moderate.....	2.0 to 4.0 percent
High.....	4.0 to 8.0 percent
Very high.....	more than 8.0 percent

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three-dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 000.0015 inch
Very slow	000.0015 to 000.06 inch
Slow	000.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Pumice. Highly vesicular pyroclasts with very low bulk density and thin vesicle walls. (1)

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid.....	3.5 to 4.4
Very strongly acid.....	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid.....	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline.....	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - a. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; and
 - b. Masses, which are noncemented concentrations of substances within the soil matrix; and
 - c. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - a. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; and
 - b. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletons).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rhyolite. A group of igneous rocks, typically porphyritic and commonly exhibiting flow texture, with phenocrysts of quartz and alkali feldspar in a glassy to cryptocrystalline groundmass. (1)

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturated hydraulic conductivity (K-sat). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Schist. A strongly foliated crystalline rock, formed by dynamic metamorphism, that can be readily split into thin flakes or slabs because of the well-developed parallelism of more than 50 percent of the minerals present, particularly those of lamellar or elongate prismatic habit. (1)

Scoria. A bomb-size pyroclast that is irregular in formation and generally very vesicular. (1)

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hill slope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 1 percent
Very gently sloping	1 to 3 percent
Gently sloping	3 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished

pedes and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na⁺ to Ca⁺⁺ + Mg⁺⁺. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong.....	more than 30:1

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand.....	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons.

Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. An extensive remnant of a strath (a flat valley bottom) that belonged to a former erosion cycle before rejuvenation of the stream following uplift, change in base level, or climate change. (1)

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless soils are either single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Substratum. See Underlying material.

Subsurface layer. Any surface soil horizon (A, E, A2, A3, A4) below the surface layer.

Summit. The topographically highest position of a hill slope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hill slope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hill slope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toreva block. A slump block consisting essentially of a single large mass of unjustled material which, during descent, has undergone a backward rotation toward the parent cliff about a horizontal axis that roughly parallels it. (1)

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hill slope continuum.

Underlying material. The part of the soil below the solum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variiegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at <http://offices.sc.egov.usda.gov/locator/app>.

