UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R070XD153NM

Site Name: Loamy

Precipitation or Climate Zone: 13 to 18 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs on level to gently sloping plains and terraces at elevations ranging from 4,000 to 7,000 feet above sea level. Slopes vary from 0 to 9 percent but average less than 5 percent.

Land Form:

1. Plains
2. Terraces
3.

Aspect:

1. N/A
2.
3.

	Minimum	Maximum
Elevation (feet)	4,000	7,000
Slope (percent)	0	9
Water Table Depth (inches)	N/A	N/A

Flooding:	**Minimum**	**Maximum**
Frequency	N/A	N/A
Duration	N/A	N/A

Ponding:	**Minimum**	**Maximum**
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

Negligible to medium.

CLIMATIC FEATURES

Narrative:

The climate of this area is "semi-arid continental."

Annual average precipitation ranges from 13 to 18 inches. Variations of 5 inches, more or less, are not uncommon. Approximately 70 percent of the precipitation occurs from May through October. Most of the summer rain comes in the form of high-intensity, short-duration thunderstorms. Winter moisture is usually negligible.

Distinct seasonal changes and large annual and diurnal temperature changes characterize temperatures. The average annual temperature ranges from 55 degrees F to 60 degrees F, with extremes of 20 degrees F below zero in the winter to 110 degrees F in the summer not uncommon.

The average frost-free season is 180 to 200 days. The last killing frost is in early April and the first killing frost is in mid October.

Both temperature and precipitation favor warm-season perennial plant communities. At higher elevations, 40 percent of the precipitation is favorable for cool-season growth. Strong winds from the west and southwest blow from February through June. This accelerates the drying of the soil during a critical growth period for most cool-season plants.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

	Minimum	Maximum
Frost-free period (days):	160	191
Freeze-free period (days):	180	221
Mean annual precipitation (inches):	13	18

Monthly moisture (inches) and temperature (^{0}F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.47	.56	21.4	56.6
February	.50	.54	23.8	62.1
March	.49	.57	28.5	68.5
April	.54	.60	35.0	76.7
May	1.13	1.44	43.2	83.5
June	1.78	1.84	51.6	92.2
July	1.87	2.98	55.7	92.1
August	2.29	3.26	54.2	90.3
September	2.67	2.80	48.2	84.3
October	1.24	1.40	37.6	76.7
November	.53	.55	27.5	65.5
December	.60	.68	21.6	57.8

Climate Stations:

				Period		
Station ID	292865	Location	Elk 2E	From: 6/1/1895	To:	12/31/00
Station ID	294112	Location	Hope	From: 03/01/19	To:	12/31/00

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

The soils on this site are moderately deep to deep, well drained. The surface textures are loam, silt loams, silty clay loams and fine sandy loams. Permeability is slow to moderately rapid and available water-holding capacity is medium to high with surface runoff medium. The water and wind erosion hazard is high.

Parent Material Kind: Alluvium
Parent Material Origin: Mixed

Surface Texture:

1. Loam
2. Silt loam
3. Silty clay loam
4. Fine sandy loam

Surface Texture Modifier:

1. N/A
2.
3.

Subsurface Texture Group: Clayey
Surface Fragments <=3" (% Cover): N/A
Surface Fragments >3" (% Cover): N/A

Subsurface Fragments <=3" (%Volume): N/A
Subsurface Fragments >=3" (%Volume): N/A

	Minimum	Maximum
Drainage Class:	Well	Well
Permeability Class:	Slow	Moderately rapid
Depth (inches):	20	40
Electrical Conductivity (mmhos/cm):	0.00	2.00
Sodium Absorption Ratio:	N/A	N/A
Soil Reaction (1:1 Water):	7.4	8.4
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	6	12
Calcium Carbonate Equivalent (percent):	N/A	N/A

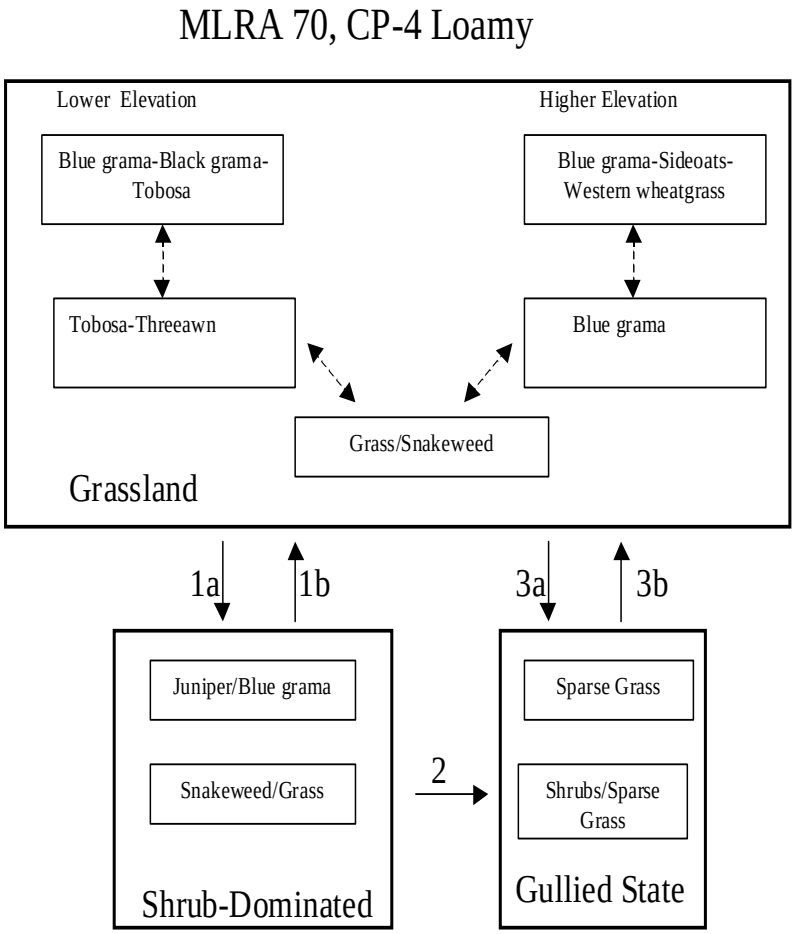
PLANT COMMUNITIES

Ecological Dynamics of the Site:

Overview

This site is associated with Limestone Hills and Shallow sites. Loamy sites in CP-4 typically occur as elongated units on valley terraces and fans below Limestone Hills, or adjacent to, but topographically lower than Shallow sites. The historic plant community of the Loamy site has the aspect of a grassland with a few shrubs and succulents scattered across the site. Composition and production vary with elevation. In the historic plant community, blue grama, black grama, and tobosa are the dominant grasses. This site is susceptible to encroachment by shrubs, especially juniper and broom snakeweed. Dispersal of shrub seeds, loss of grass cover and resulting competition for resources by shrubs, and a decrease in natural fire frequency may facilitate the transition to a state that is dominated by shrubs. Persistent loss of grass cover, increased overland water flow, and resulting erosion may cause the transition to a Gullied State.

Plant Communities and Transitional Pathways (diagram)



1a. Seed dispersal of shrubs, loss of grass cover, competition by shrubs, lack of fire. 1b. Brush control, prescribed grazing.

2. Continued loss of grass cover, erosion

3a. Persistent loss of grass cover, increased overland flow, erosion. 3b. Erosion control, prescribed grazing, (brush control if from transition 3).

MLRA 70; CP-4; Loamy

Grassland (Higher Elevation)

•Blue grama, sideoats, vine mesquite, western wheatgrass, Alligator juniper, Cholla
•Grass cover uniformly distributed
•Cale silt loam, 2-5% slopes
Fort Bliss Soil Survey,Otero Co. NM

Grassland (Lower Elevation)

•Blue grama, tobosa, with a few scattered yucca, cholla, and broom snakeweed
•Grass cover moderate to high, uniformly distributed
•Shanta variant, Otero Co. NM

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label**: HCPC

Plant Community Narrative: State Containing Historic Plant Community

Grassland: At lower elevations blue grama, black grama, and tobosa are the dominant grasses, with sideoats grama, vine mesquite, and plains lovegrass as sub-dominants. At higher elevations, blue grama, sideoats grama, and western wheatgrass dominate, with vine mesquite, plains lovegrass, black grama, and tobosa as sub-dominants. Continuous heavy grazing will cause a decrease in sideoats grama, western wheatgrass, black grama, vine mesquite, and fourwing saltbush. At higher elevations this may result in a community dominated by blue grama. At lower elevations, tobosa and threeawns may dominate. A community of perennial grasses with broom snakeweed as the sub-dominant component may occur in response to overgrazing, or as a result of late fall/early spring moisture following drought. [6] Shrubs and succulents common to the site include yucca, fourwing saltbush, sumac species, juniper, broom snakeweed, and cholla.

Diagnosis: Grass cover is uniform and evenly distributed. Litter cover is high, averaging 25 percent. Shrub/succulent cover is low averaging only 2 percent. Evidence of erosion such as large water flow patterns, rills and gullies are infrequent.

Canopy Cover:	
Trees and shrubs	2 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	37
Bare ground	32
Surface cobble and stone	1
Litter (percent)	25
Litter (average depth in cm.)	3

Plant Community Annual Production (by plant type):

Annual Production (lbs/ac)

Plant Type	Low	RV	High
Grass/Grasslike	624	897	1,170
Forb	64	92	120
Tree/Shrub/Vine	64	92	120
Lichen			
Moss			
Microbiotic Crusts			
Total	800	1,150	1,500

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	BOGR2	Blue Grama	58 – 403	58 – 403
2	BOCU	Sideoats Grama	58 – 173	58 – 173
3	BOER4	Black Grama	115 – 403	115 – 403
4	PLMU3	Tobosa	115 – 403	115 – 403
5	SPCR	Sand Dropseed	35 – 58	35 – 58
6	PAOB	Vine-mesquite	58 – 115	58 – 115
7	PASM	Western Wheatgrass	115 – 173	115 – 173
8	ARIST	Threeawn spp.	35 – 58	35 – 58
9	SCBR2	Burrograss	35 – 58	35 – 58
10	ERIN	Plains Lovegrass	58 – 115	58 – 115
11	2GRAM	Other Grasses	35 – 58	35 - 58

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	ACNA2	Desert Holly	12 – 35	12 – 35
13	SPHAE ERBL2 CROTO SENEC	Globemallow spp. Haplopappus spp. Croton spp. Groundsel spp.	35 – 58	35 – 58
14	2FORB	Other Forbs	12 – 35	12 - 35

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
15	YUCCA	Yucca spp.	35 – 58	35 – 58
16	ATCA2	Fourwing Saltbush	35 – 58	35 – 58
17	ACGR	Catclaw Acacia	23 – 58	23 – 58
18	RHUA	Sumac spp.	23 – 58	23 – 58
19	GUSA2	Broom Snakeweed	23 – 58	23 – 58
20	2SD	Other Shrubs	12 – 35	12 - 35

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Other grasses which would appear on this site include: bottlebrush squirreltail, galleta, alkali sacaton, hairy grama, mat muhly, ring muhly, green sprangletop, Hall's panicum, plains bristlegrass, little bluestem, silver bluestem, Indiangrass, fluffgrass, buffalograss, wolftail, tridens spp., and needle grass.
Other shrubs include: cholla, juniper, pinyon, creosotebush, oak spp., broom baccharis, pricklypear, Apacheplume, dalea spp., winterfat, and algerita.
Other forbs include: wooly loco, wooly Indianwheat, cudweed, thistles, annual sunflowers, mullin, wildbuckwheat spp., nightshade spp., milkweed spp., and bladderpod.

Plant Growth Curves

Growth Curve ID **4603NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed short/mid warm-season grassland with scattered shrubs and half-shrubs and a fluctuating forb component.**

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	5	10	10	25	30	12	5	0	0

Additional States:

Shrub Dominated: This state is characterized by the predominance of shrubs with perennial grasses as the subordinate component. Grass cover varies inversely with shrub density. Typically juniper and broom snakeweed are the dominant shrubs. Juniper tends to dominate at mid-to upper elevations with blue grama as the subordinate grass component. Broom snakeweed may come to dominate across most elevation ranges with either blue grama or tobosa as the subordinate grass species.

Diagnosis: Shrubs are found at increased densities relative to the Grassland State. Grass cover is variable ranging from fairly uniform to patchy with large connected bare areas present. Blue grama or tobosa are the dominant grasses, and threeawns, ring muhly, cholla and prickly pear typically increase in representation.

Transition to Shrub Dominated State (1a): Seed dispersal of shrubs, loss of grass cover, resource competition between shrubs and grasses, and lack of fire are all believed to facilitate the

encroachment of shrubs. Wildlife and livestock (especially birds and sheep) are instrumental in the dispersal of juniper seed. [3, 4] Broom snakeweed produces abundant light seed and the dispersal mechanism is mainly wind.[5] Sites that receive above-average late fall/early spring moisture following drought,[6] or that have been overgrazed [7]may be quickly invaded by broom snakeweed. Drought is detrimental to grasses and the establishment of juniper seedlings, but larger, established trees may gain a competitive edge facilitating juniper dominance. Competition is an important constraint on the establishment of shrub seedlings, because grass roots preempt resources, such as water.[2] However, during wet years shrub seedlings may establish in good stands of grass due to reduced moisture competition. Once shrub seedlings become established, and if their roots are capable of extending below this zone, competition for soil moisture declines.[2] Overgrazing may facilitate the establishment of shrub seedlings by providing competition free areas, but livestock exclusion alone would not prevent shrub expansion. Historically, periodic fire may have helped to suppress shrubs by completely killing some species, disrupting seed production cycles, and suppressing the establishment of shrub seedlings.[1]

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover.
- Increase in size and frequency of bare patches.
- Increase in amount of shrub seedlings.

Transition back to Grassland (1b) Brush control is necessary to initiate the transition back to the grassland state. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover. Once the transition back to the Grassland State is achieved, prescribed fire may help in maintaining grass dominance.

Gullied State: Loss of grass cover, accelerated erosion, and gully formation characterize this state. Blue grama or tobosa are typically the dominant grasses. Shrub densities reflect either those of the Grassland State or The Shrub-Dominated State, depending on the transition pathway.

Diagnosis: Grass cover is patchy with large bare areas present. Erosion is evident by the presence of water flow patterns, rills and gullies.

Transition to Gullied State (2,3a): Transitions to the Gullied State occur in response to the loss of grass cover, and subsequent erosion. As grass cover is reduced, organic matter, infiltration, and soil surface stability decrease.

Key indicators of approach to transition:

- Reduction in grass cover (on site, or on surrounding uplands).
- Increase in size and frequency of bare patches.
- Presence of litter dams, water flow patterns, rills and gullies.

Transition back to Grassland (3b) Erosion control structures or shaping and filling gullies may help regain natural flow patterns and allow natural revegetation to take place. Prescribed grazing

will help ensure proper forage utilization and reduce grass loss due to overgrazing. Brush control will be necessary if from transition (2).

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, sparrow hawk, badger, black-tailed jackrabbit, black-tailed prairie dog, Botta's pocket gopher, burrowing owl, roadrunner, cactus wren, coyote, bobcat, scaled quail, horned lark, great plains toad, and horned lizard. Mule deer use this site seasonally as do mourning dove.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations	
Soil Series	**Hydrologic Group**
Ancho	B
Cale	B
Cuevoland	B
Gabaldon	B
Jarita	C
Kerrick	B
La Fonda	B
Montecito	C
Pena	B
Reeves Variant	B
Ruidoso	C
Rumuda	C
Shanta	B
Shanta Variant	B

Recreational Uses:

Recreation potential is limited largely by the lack of water and firewood. It is fairly suited for camping, hiking, and picnicking. The wide-open spaces and many colorful wildflowers that bloom during years of good moisture enhance esthetic appeal. Antelope, quail, dove and varmint hunting is good. Trapping for fur-bearing animals is good.

Wood Products:

At higher elevations pinyon and juniper offers firewood and fencing materials. Century plant and cholla skeletons are used for ornamental purposes.

Other Products:

Grazing:

This site is suited for grazing by all kinds and classes of livestock during all seasons of the year. However, because of the large percentage of grass in the potential plant community, this site is best suited for some type of cattle operation. Continuous yearlong or growing season grazing will cause a decrease in sideoats grama, black grama, vine-mesquite, and fourwing saltbush. A corresponding increase in broom snakeweed, cholla, sand dropseed, threeawns, burrograss, and forbs will follow. This site will respond well to a planned grazing system that rotates the season of use. Under retrogression, an increase in woody plants at lower elevations and forbs will cause a decrease in total ground cover. This can cause severe wind and water erosion, both rill and gully. In severe cases of gully erosion, expensive structural measures will be required to restore this site.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	2.0 – 4.5
75 – 51	3.5 – 6.0
50 – 26	5.0 – 9.0
25 – 0	10.0+

Plant Part	Code	Species Preference	Code
Stems	**S**	**None Selected**	**NS**
Leaves	**L**	**Preferred**	**P**
Flowers	**F**	**Desirable**	**D**
Fruits/Seeds	**F/S**	**Undesirable**	**U**
Entire Plant	**EP**	**Not Consumed**	**NC**
Underground Parts	**UP**	**Emergency**	**E**
		Toxic	**T**

Plant Preference by Animal Kind:

Animal Kind: Livestock
Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Vine-mesquite	Panicum obtusum	EP	D	D	D	D	D	D	D	D	D	D	D	D
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	D	D	D	U
Winterfat	Krascheninnikovia lanata	L/S	D	D	P	P	P	P	P	P	D	D	D	D
Fourwing Saltbush	Atriplex canescens	L/S	P	P	P	P	P	D	D	D	D	D	D	P

Animal Kind: Livestock
Animal Type: Sheep

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P
Fourwing Saltbush	Atriplex canescens	L/S	P	P	P	P	P	D	D	D	D	D	D	P
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	D	D	D	D	D	D	U

Animal Kind: Wildlife
Animal Type: Antelope

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Globemallow	Sphaeralcea spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Fourwing Saltbush	Atriplex canescens	L/S	D	D	D	D	D	D	D	D	D	D	D	D
Annual Sunflower	Helianthus annuum	EP	U	U	U	U	U	D	D	D	U	U	U	U

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative

Similar sites:

Site Name	Site ID	Site Narrative

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

Data Source	# of Records	Sample Period	State	County

Type Locality:

State: **New Mexico**

County: **Chavez, Eddy, Lincoln, Otero**

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? **Yes** ☐ **No** ☐

General Legal Description: _____

Relationship to Other Established Classifications:

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Otero, Eddy, Chaves, Lincoln

References

1. Brooks, M.L. and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America.Pages 1–14 *in* K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.

2. Johnsen, T. N., Jr. 1962. One-seeded juniper invasion of northern Arizona grasslands. Ecological Monographs. 32:187-207.

3. Parker, K. W. 1945. Juniper comes to the grassland. American Cattle Producer. 27: 12-14.

4. Phillips, Frank J. 1910. The dissemination of junipers by birds. Forestry Quarterly. 8: 60-73. (From Expt. Sta. Rec. 22: 644.)

5. Martin, S. C. 1975. Ecology and management of Southwestern semidesert grass-shrub ranges: the status of our knowledge. Res. Pap. RM-156. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 39 p.

6. McDaniel, K. C., L. A. Torell, and J.W. Bain. 1993. Overstory-understory relationships for broom snakeweed-blue grama grasslands. Journal of Range Management. 46: 506-511.

7. U.S. Department of Agriculture, Forest Service. 1937. Range plant handbook. Washington, DC. 532 p.

Characteristic Soils Are:	
Ancho, Cale, Cuevoland, Gabaldon, Jarita	Kerrick, La Fonda, Montecito, Pena, Reeves
Ruidoso, Rumuda, Shanta, Shanta Variant	
Other Soils included are:	

Site Description Approval:

Author	**Date**	**Approval**	**Date**
Don Sylvester	02/02/82	Donald H. Fulton	03/03/82

Site Description Revision:

Author	**Date**	**Approval**	**Date**
Elizabeth Wright	07/10/02	George Chavez	10/29/03
David Trujillo	10/29/03		