CHAPTER 3. LANDSCAPE DISTURBANCES

Recreation and Exurban Development

This section evaluates the pattern of developed recreation and exurban development on the Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG) on the entire Forest as well as for each Geographic Area. The associated influences on the different cover types are also evaluated.

Developed recreation sites evaluated in this assessment include campgrounds, picnic/day use areas, boat launches, trailheads, administrative sites, interpretive sites, and observation points included in the INFRA database. The three developed ski areas on the GMUG are also included in this analysis.

An inventory for dispersed recreation sites is incomplete for the GMUG. Because dispersed recreation activities are accessed by or occur along existing roads and trails, the area influenced by dispersed recreation has been addressed in the road and trail analysis.

Exurban development features of utility corridors (oil and gas pipelines, major electric transmission lines) and parcels of land identified as having improvements (building) in county parcel data have also been included in this evaluation.

Forest-wide

Developed Recreation

The list of developed recreation sites included in the INFRA database is currently incomplete and in need of updating. Table 1 lists the existing data by type and number of sites on the GMUG. Figure 1 displays the location of these developed recreation sites on the GMUG.

Table 1. Developed Recreation Sites by Type on the GMUG.

Type of Recreational Development	Count on GMUG
Administrative Sites	2
Boat Launches	5
Campgrounds	68
Day Use / Picnic Sites	21
Interpretive Sites	5
Observation Sites	5
Trailheads	86
Total	192

Figure 1. Developed Recreation Sites on the Grand Mesa, Uncompahgre and Gunnison National Forests (included in INFRA database)

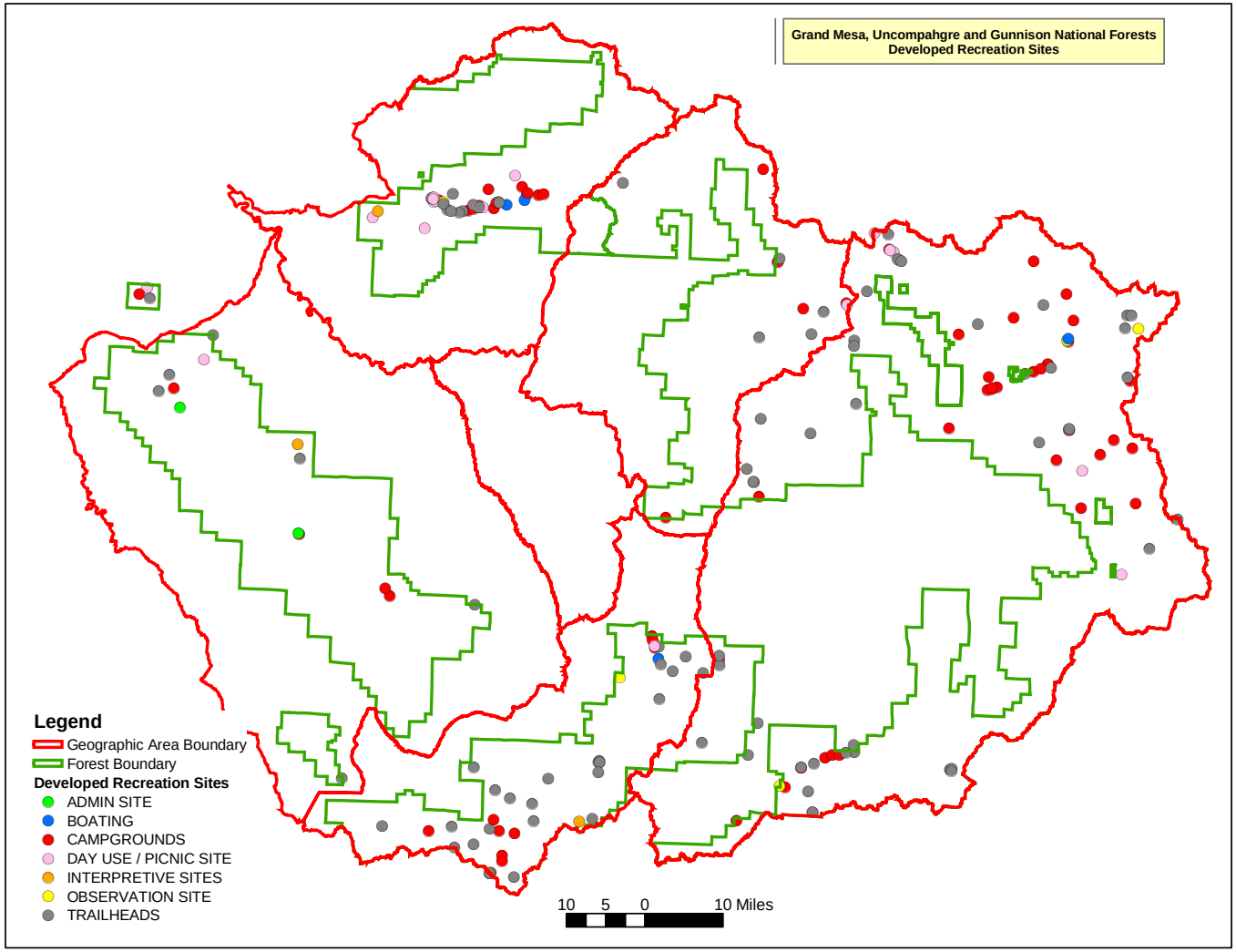


Table 2 lists the acres by cover type that are within ½ mile of the developed recreation sites. Approximately 75,750 acres are within ½ mile of a developed recreation site. This is approximately two percent of the total GMUG. Within the ½ mile buffer the cover types most affected by developed recreation are spruce/fir (28 percent), aspen (19 percent), grass/forb (16 percent) and lodgepole pine (12 percent). Developed recreation affects more areas near water (22 percent of the total cover type) than any other cover type on the GMUG.

Table 2. Acres by Cover Type within ½ mile of Developed Recreation Sites on GMUG.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	11,864	16	3
Sagebrush	1,978	3	2
Gambel Oak	2,546	3	1
Mixed Mountain Shrub	1,386	2	2
Snowberry	168	0	1
Willow	3,632	5	4
Cottonwood	59	0	2
Aspen	14,468	19	2
Pinyon/Juniper	1,063	1	1
Ponderosa Pine	860	1	1
Lodgepole Pine	8,816	12	3
Limber Pine	52	0	9
Douglas-fir	1,065	1	2
Blue Spruce	9	0	0
Spruce/Fir	20,929	28	3
Bristlecone Pine	55	0	1
Bare/Rock	3,571	5	2
Water	2,230	3	22
Total	74,751		2

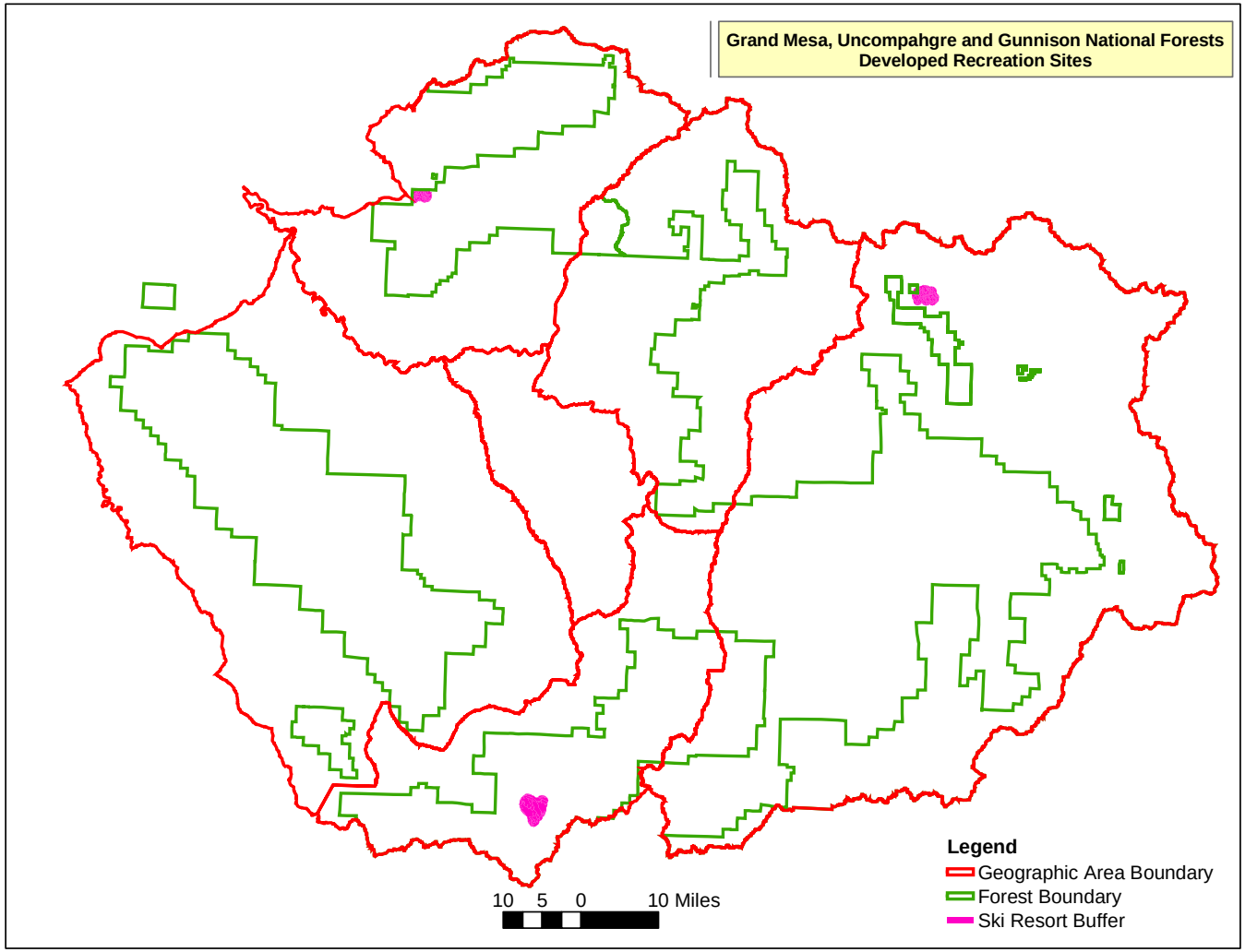
Three ski areas are located on the GMUG: Powderhorn Ski Resort, on the Grand Mesa Geographic Area, Telluride Ski Resort on the San Juans Geographic Area; and Crested Butte Mountain Resort located on the Gunnison Basin Geographic Area. Figure 2 displays the extent of areas affected by these three ski resorts. Table 3 displays the acres by cover type that are within the ski resorts, and within a ½ mile buffer surrounding these areas.

Table 3. Acres by Cover Type within ½ mile of Ski Resorts on GMUG.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	2,306	16	1
Sagebrush	59	0	0
Gambel Oak	64	0	0
Mixed Mountain Shrub	3	0	0
Snowberry	26	0	0
Willow	281	2	0
Cottonwood	0	0	0
Aspen	2,959	21	0
Pinyon/Juniper		0	0
Ponderosa Pine		0	0
Lodgepole Pine	319	2	0
Limber Pine		0	0
Douglas-fir	4	0	0
Blue Spruce		0	0
Spruce/Fir	6,520	45	1
Bristlecone Pine		0	0
Bare/Rock	1,854	13	1
Water	19	0	0
Total	14,414		0

As expected, ski resorts have impacted higher elevation cover types (45 percent spruce/fir, 21 percent aspen, 16 percent grass/forb, 13 percent bare/rock). However, less than one percent of the GMUG has been affected by ski resort areas, and less than one percent of most cover types that occur within ski resorts have been affected.

Figure 2. Ski Resorts on the Grand Mesa, Uncompahgre and Gunnison National Forests



Utility Corridors

Approximately 290 miles of transmission lines for electric power, oil, natural gas and water currently exist on the GMUG. Figure 3 displays these transmission lines by type. The major routes are currently designated as utility corridor management prescription areas. In many cases multiple utility transmission lines lie within the same corridor. Table 4 identifies the miles of each type of transmission line.

Table 4. Miles and Type of Transmission Lines within Utility Corridors on the GMUG

Type of Transmission Line	Miles
Hydro Electric Penstock - Underground	13
Power Transmission Line	150
Primary Local Power Line	62
Underground gas/oil pipeline	66

To evaluate the influence of future maintenance and construction within these utility corridors, the major routes have been buffered by ½ mile on either side. (Local electric transmission lines have not been buffered because the clearing width and level of activity along these lines is much less than along major corridors.) Table 5 displays the acres by cover type that lie within the buffer around utility corridors.

Figure 3. Utility Corridors and type of Transmission Lines on the Grand Mesa, Uncompahgre and Gunnison National Forests

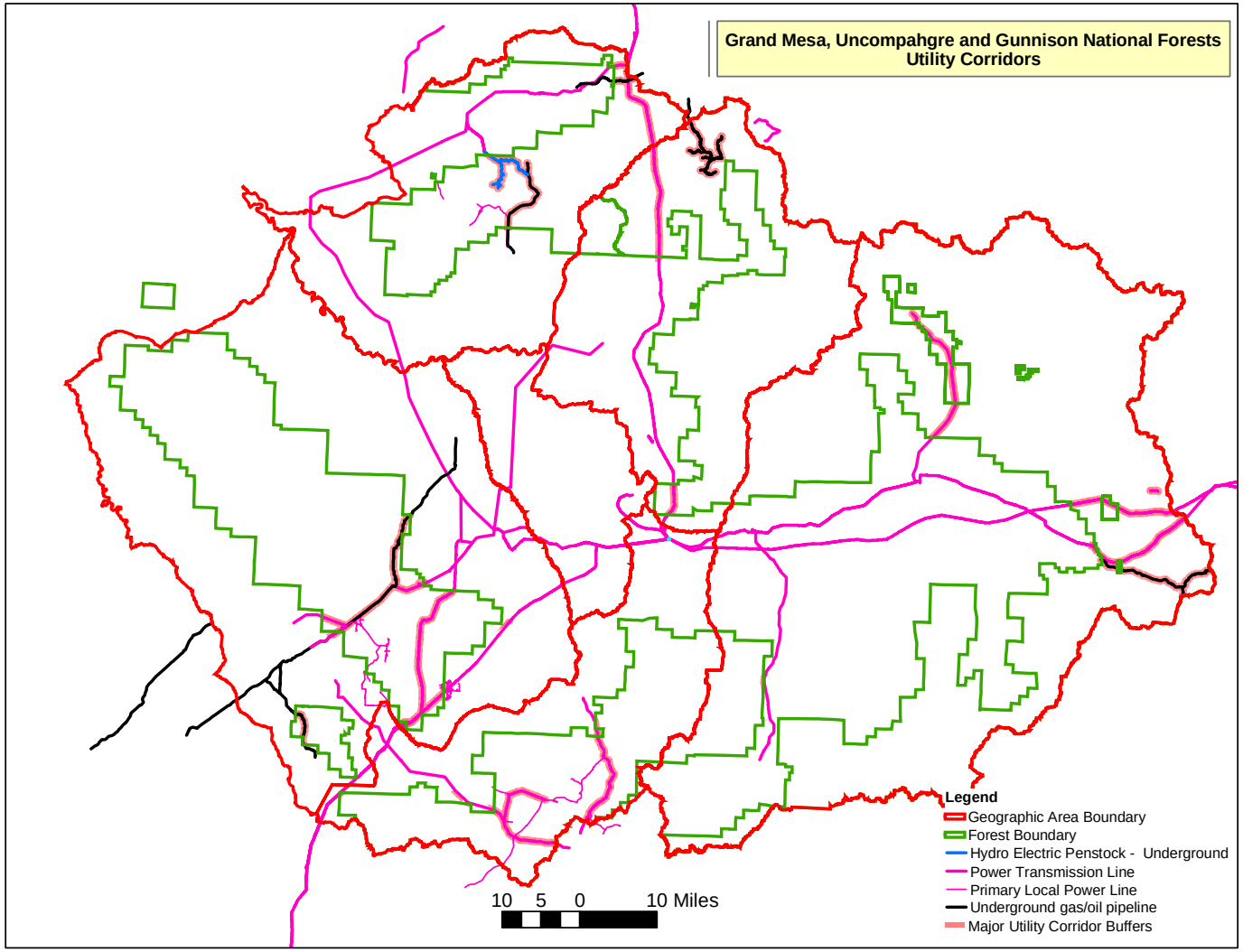


Table 5. Acres by Cover Type within ½ mile of Utility Corridors on GMUG.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	26,363	17	6
Sagebrush	12,343	8	13
Gambel Oak	18,000	12	7
Mixed Mountain Shrub	1,318	1	2
Snowberry	1,660	1	9
Willow	3,878	3	5
Cottonwood	612	0	17
Aspen	41,019	26	6
Pinyon/Juniper	5,565	4	5
Ponderosa Pine	6,509	4	6
Lodgepole Pine	10,849	7	4
Limber Pine	57	0	10
Douglas-fir	1,879	1	4
Blue Spruce	0	0	0
Spruce/Fir	19,852	13	3
Bristlecone Pine	0	0	0
Bare/Rock	4,294	3	2
Water	735	0	7
Total	154,933		5

Many utility corridors have a 500 feet clearing width. Larger lines have larger clearing limits. Many of these clearings are currently in grass/forb cover type, which is one reason such a high percent of the total buffer (17 percent) is shown in this cover type. Other cover types that have been most influenced by utility corridors include aspen (26 percent), spruce/fir (13 percent), and Gambel oak (12 percent). The buffer surround the major utility corridors has affected five percent of the GMUG. Many utility corridors parallel transportation corridors which also parallel river and stream courses. For this reason, the cottonwood cover type has been affected more than any other cover type, with 17 percent of the total cover type on the entire GMUG being within a utility corridor buffer.

Private Lands with Developments

Management of National Forest System lands is influenced by the presence of private land within and adjacent to the Forest. The influence is increased when private land is developed. Developments on private land must be protected from disturbances that originate on Federal land (i.e., wildfire). For this reason, private land is included in the wildland urban interface (see Fire and Fuels Management section). Human activity levels in and around private land also increase as development increases.

Figure 4 displays private land parcels within and adjacent to the GMUG that have improvements, based on available county assessors' parcel data for Delta, Gunnison, Hinsdale, Mesa, Montrose, Ouray, Saguache, and San Miguel counties. Approximately 3,599,300 acres of private land are displayed. Of this 94,600 acres lie within the proclaimed Forest boundary, and 3,505,700 acres are adjacent to the Forest.

Figure 5 displays the area included in a ½ mile buffer around these parcels. Table 6 lists a breakdown by cover type of the acres included within this buffer.

Figure 4. Private Land Parcels With Improvements Within And Adjacent To The GMUG.

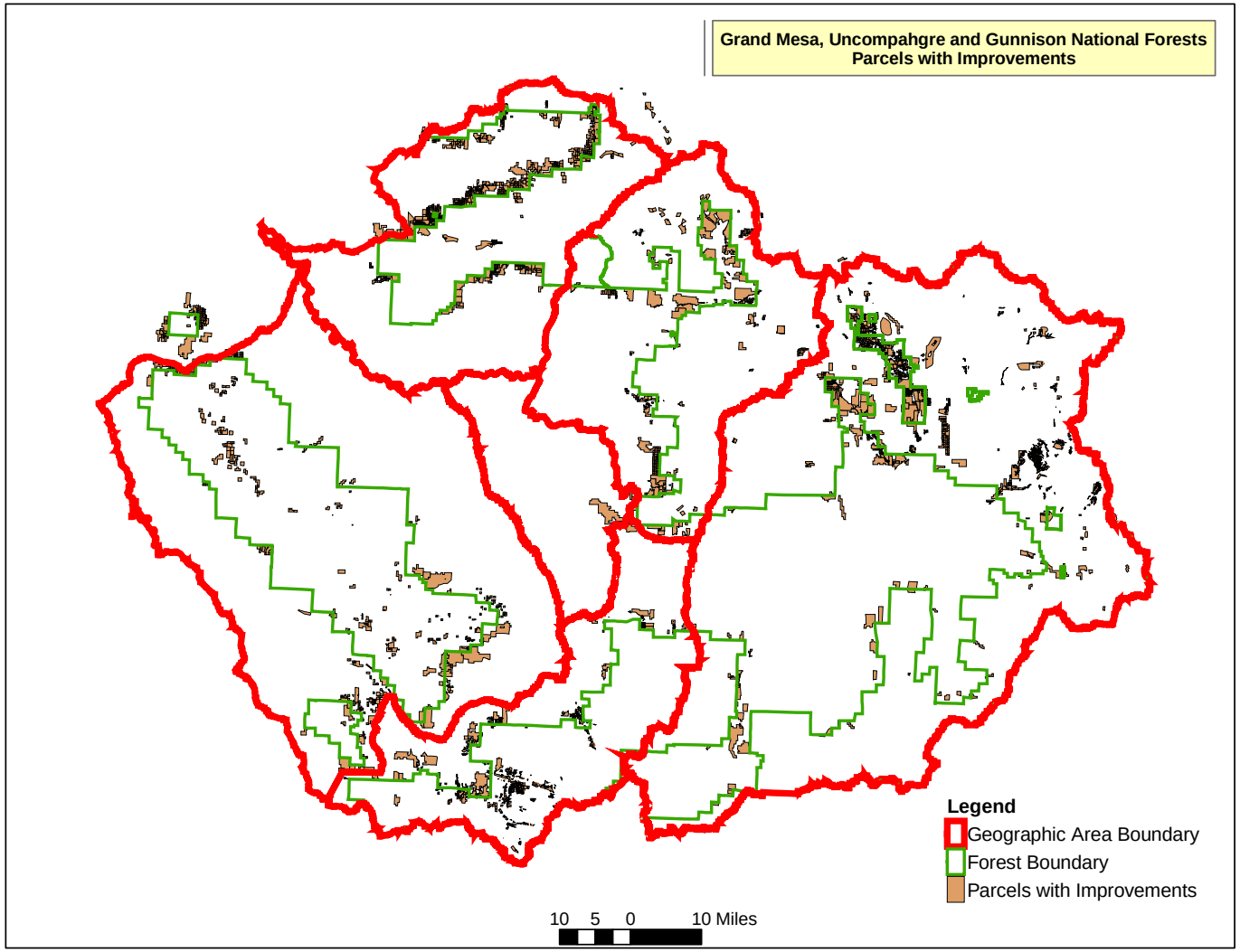


Figure 5. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The GMUG.

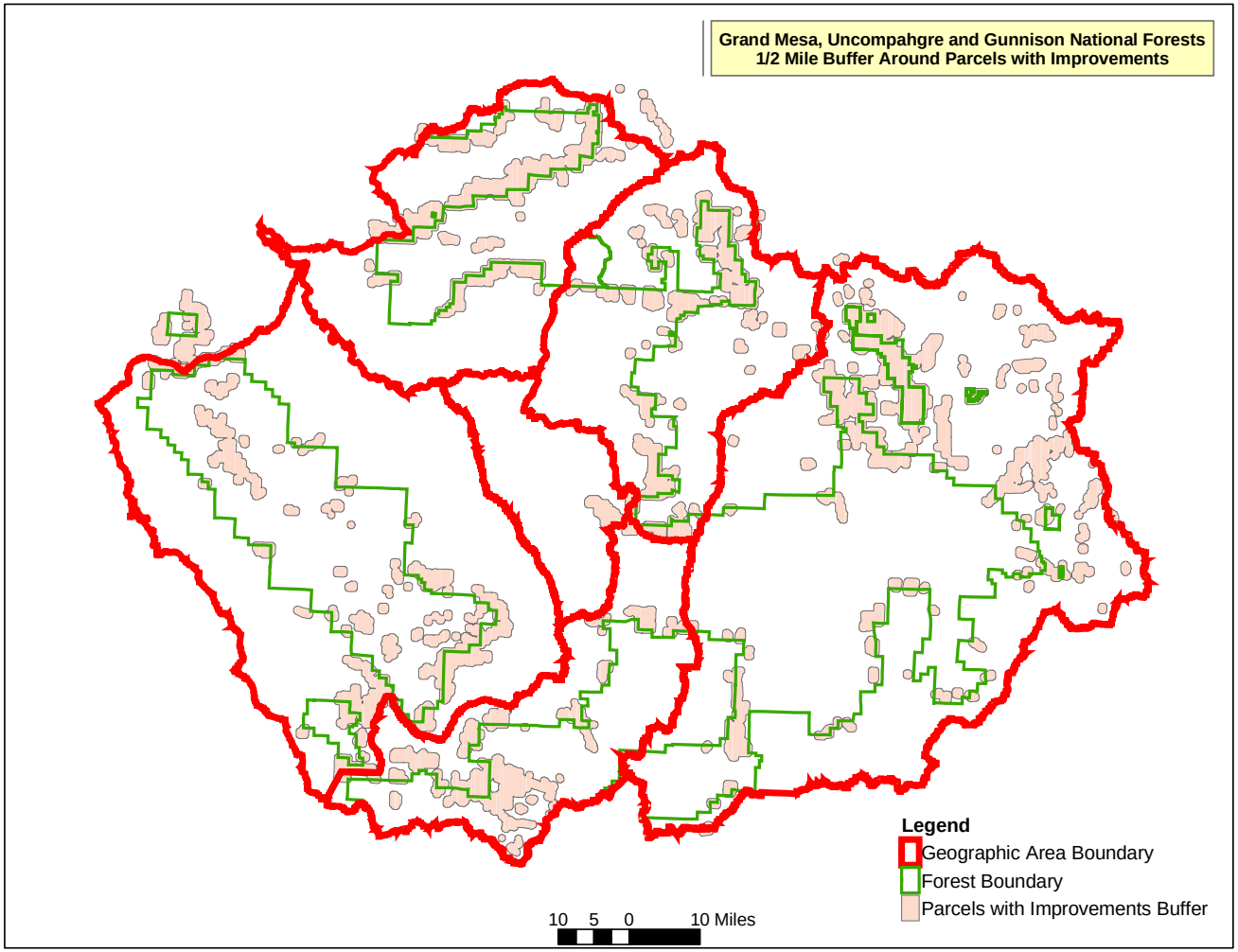


Table 6. Acres by Cover Type within ½ mile of Private Parcels with Improvements on GMUG.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	83,095	16	19
Sagebrush	32,735	6	36
Gambel Oak	54,698	10	22
Mixed Mountain Shrub	5,018	1	9
Snowberry	7,484	1	40
Willow	13,716	3	16
Cottonwood	1,302	0	37
Aspen	149,145	28	21
Pinyon/Juniper	10,843	2	10
Ponderosa Pine	19,696	4	18
Lodgepole Pine	50,592	10	18
Limber Pine	0	0	0
Douglas-fir	6,158	1	14
Blue Spruce	297	0	12
Spruce/Fir	76,064	14	10
Bristlecone Pine	501	0	7
Bare/Rock	12,279	2	6
Water	2,441	0	24
Total	526,064		17

Approximately 17 percent of the GMUG is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced by private parcel development are aspen (28 percent), grass/forb (16 percent), spruce/fir (14 percent), Gambel oak (10 percent) and lodgepole pine (10 percent). When comparing the percent of a total cover type, some are more influenced by private land development than others. Over one third of the snowberry, cottonwood and sagebrush cover types are within the parcel buffer.

Grand Mesa Geographic Area

Developed Recreation

Table 7 lists the existing data by type and number of sites on the Grand Mesa Geographic Area. Figure 6 displays the location of these developed recreation sites.

Table 7. Developed Recreation Sites by Type on the Grand Mesa Geographic Area.

Type of Recreational Development	Count on GM GA
Administrative Sites	0 (database incorrect)
Boat Launches	3
Campgrounds	14
Day Use / Picnic Sites	9
Interpretive Sites	2
Observation Sites	1
Trailheads	10
Total	39

Figure 6. Developed Recreation Sites on the Grand Mesa Geographic Area (included in INFRA database)

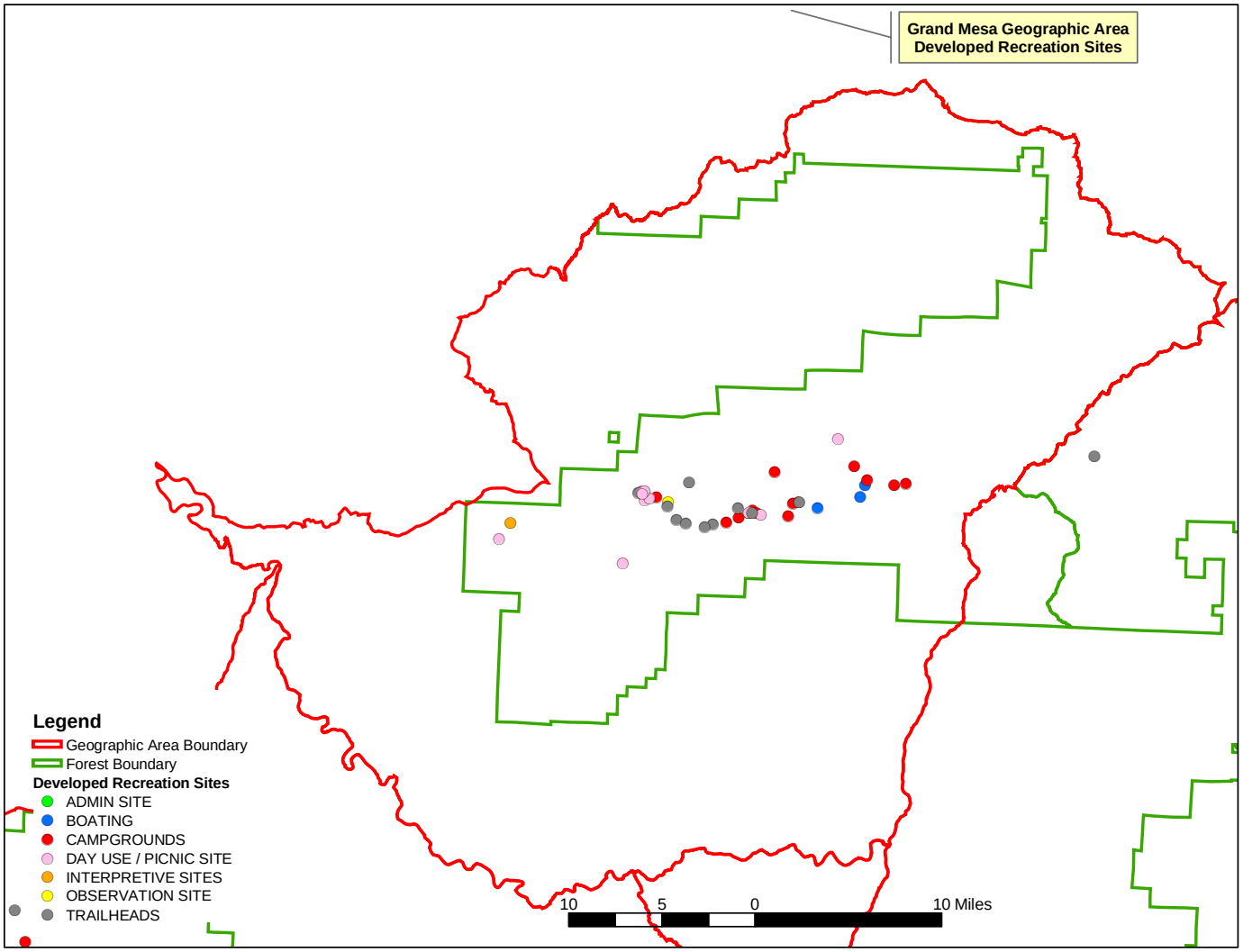


Table 8 lists the acres by cover type that are within ½ mile of the developed recreation sites on the Grand Mesa GA. Approximately 12,500 acres are within ½ mile of a developed recreation site. This is approximately four percent of the Geographic Area. Within the ½ mile buffer the cover type most affected by developed recreation is spruce/fir (53 percent). Developed recreation affects more areas near water (28 percent of the total cover type) than any other cover type on the Grand Mesa.

Table 8. Acres by Cover Type within ½ mile of Developed Recreation Sites on Grand Mesa Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	1,676	13	5
Gambel Oak	505	4	1
Mixed Mountain Shrub	760	6	5
Snowberry	63	1	1
Willow	138	1	4
Aspen	948	8	1
Pinyon/Juniper	41	0	0
Spruce/Fir	6,654	53	7
Bare/Rock	552	4	5
Water	1,205	10	28
Total	12,542		4

As mentioned above, the Powderhorn Ski Resort is located on the Grand Mesa Geographic Area (shown in Figure 2, above). Table 9 displays the acres by cover type that are within the ski resort and within a ½ mile buffer surrounding these areas.

Table 9. Acres by Cover Type within ½ mile of Powderhorn Ski Resort on Grand Mesa Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	270	10	1
Gambel Oak	64	2	0
Mixed Mountain Shrub	3	0	0
Snowberry	26	1	0
Willow	21	1	1
Aspen	1,081	39	1
Spruce/Fir	1,146	42	1
Bare/Rock	132	5	1
Water	2	0	0
Total	2,744		1

Higher elevation cover types are the areas most affected (42 percent spruce/fir, 39 percent aspen, 10 percent grass/forb). One percent of the Grand Mesa GA has been affected by the ski resort, and one percent or less of the cover types that occur within the ski area has been affected.

Utility Corridors

Approximately 50 miles of transmission lines for electric power, oil, natural gas and water currently exist on the Grand Mesa. Figure 7 displays these transmission lines by type. Table 10 identifies the miles of each type of transmission line. Table 11 displays the acres by cover type that lie within the buffer around utility corridors

Table 10. Miles and Type of Transmission Lines within Utility Corridors on the Grand Mesa Geographic Area

Type of Transmission Line	Miles
Hydro Electric Penstock - Underground	13
Power Transmission Line	10
Primary Local Power Line	13
Underground gas/oil pipeline	14

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Figure 7. Utility Corridors and Type of Transmission Lines on the Grand Mesa Geographic Area

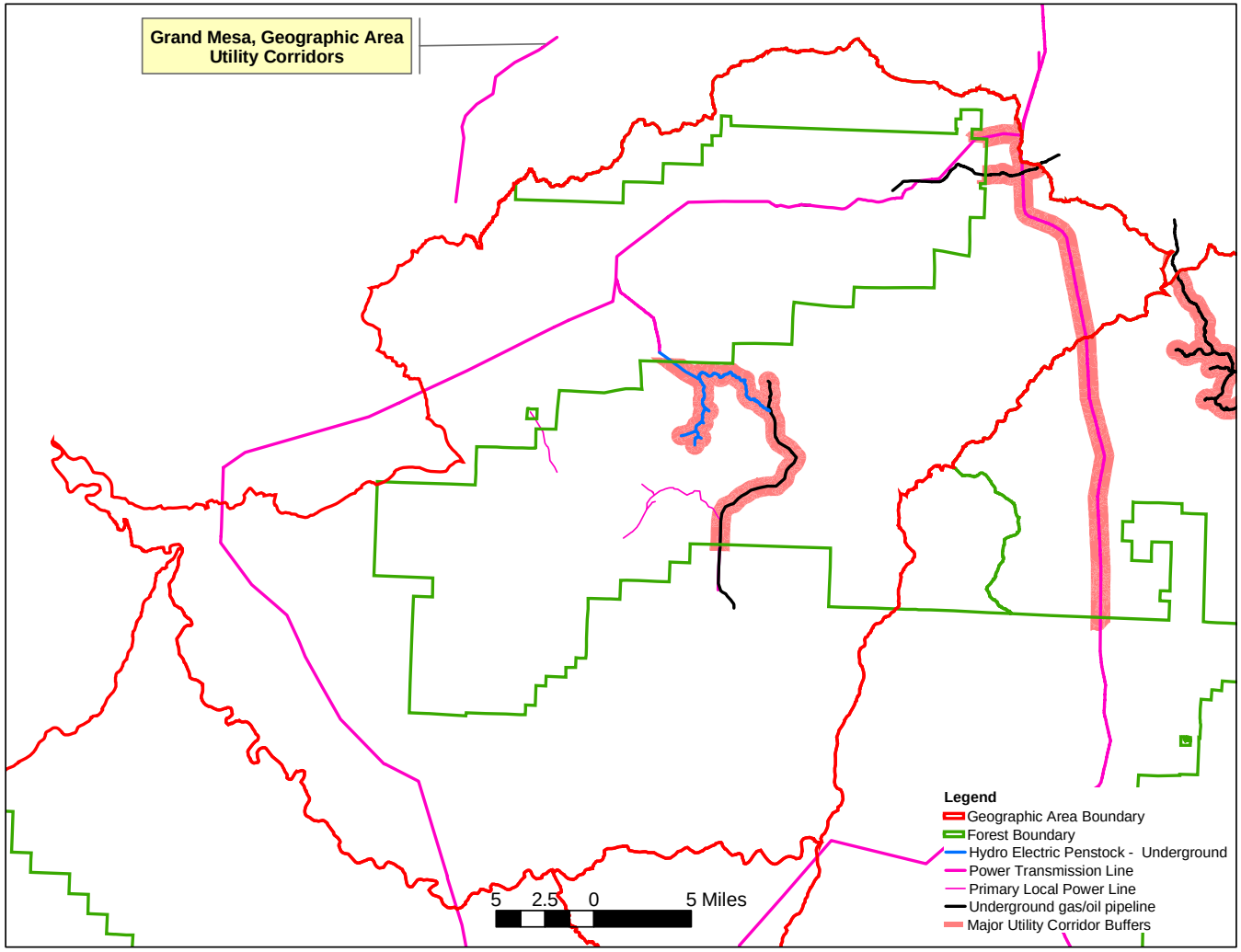

Table 11. Acres by Cover Type within ½ mile of Utility Corridors on Grand Mesa Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	3,611	15	10
Sagebrush	434	2	22
Gambel Oak	3,373	14	9
Mixed Mountain Shrub	29	0	0
Snowberry	1,194	5	13
Willow	361	1	10
Cottonwood	36	0	9
Aspen	8,237	33	9
Spruce/Fir	6,611	27	7
Bare/Rock	152	1	1
Water	629	3	15
Total	24,667		8

The cover types that have been most influenced by utility corridors include aspen (33 percent), spruce/fir (27 percent), grass/forb (15 percent) and Gambel oak (14 percent). The buffer surround the major utility corridors has affected eight percent of the Grand Mesa GA. Although relatively little of the sagebrush cover type is included in the utility corridor buffer, this is 22 percent of the total sagebrush type on the Grand Mesa.

Private Lands with Developments

Figure 8 displays private land parcels within and adjacent to the GMUG that have improvements, based on available county assessors' parcel data for Delta and Mesa counties. Approximately 704,500 acres of private land are displayed. Of this 6,900 acres lie within the proclaimed Forest boundary, and 697,600 acres are adjacent to the Forest.

Figure 9 displays the area included in a ½ mile buffer around these parcels. Table 12 lists a breakdown by cover type of the acres included within this buffer.

Figure 8. Private Land Parcels With Improvements Within And Adjacent To The Grand Mesa Geographic Area.

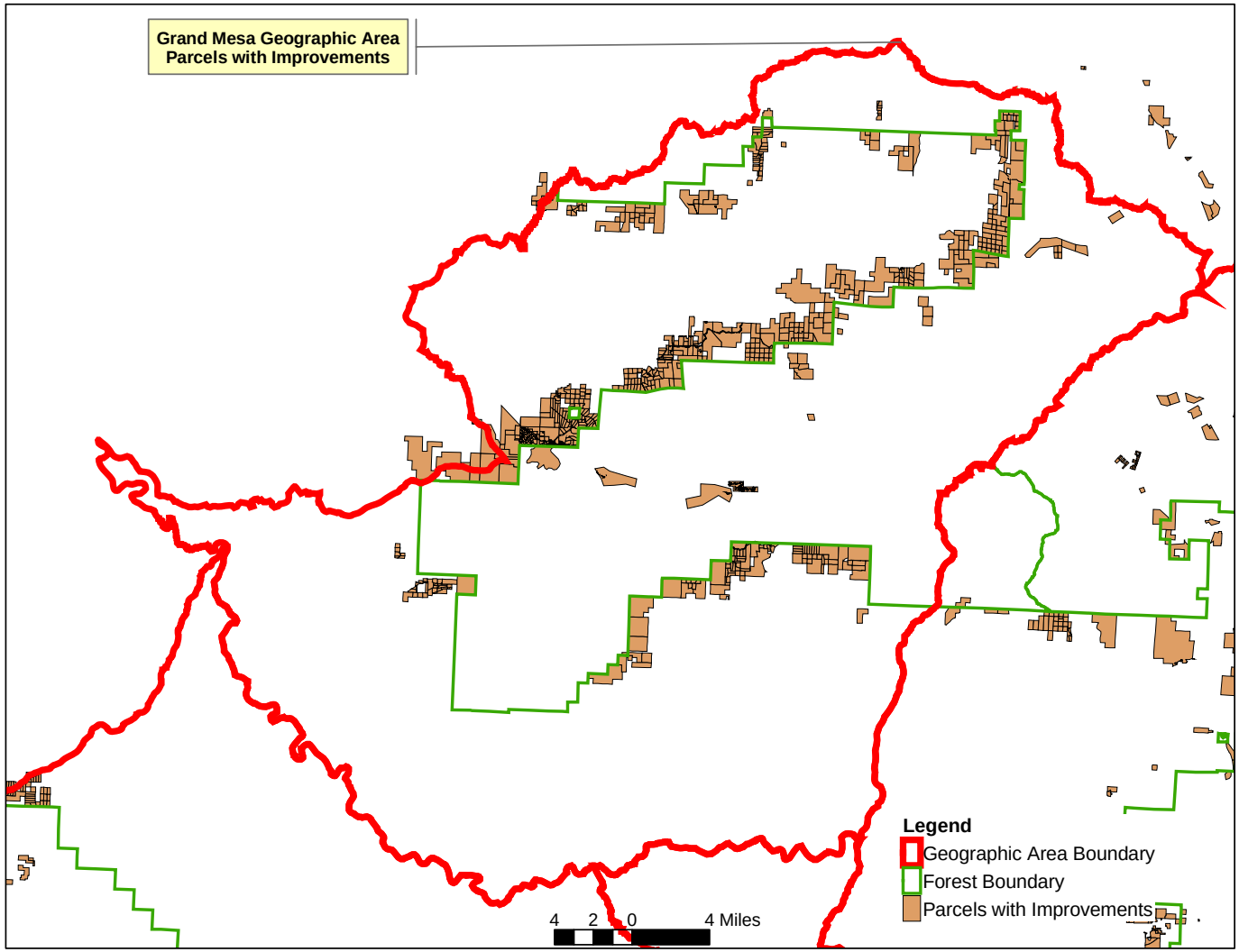

Figure 9. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The Grand Mesa GA.

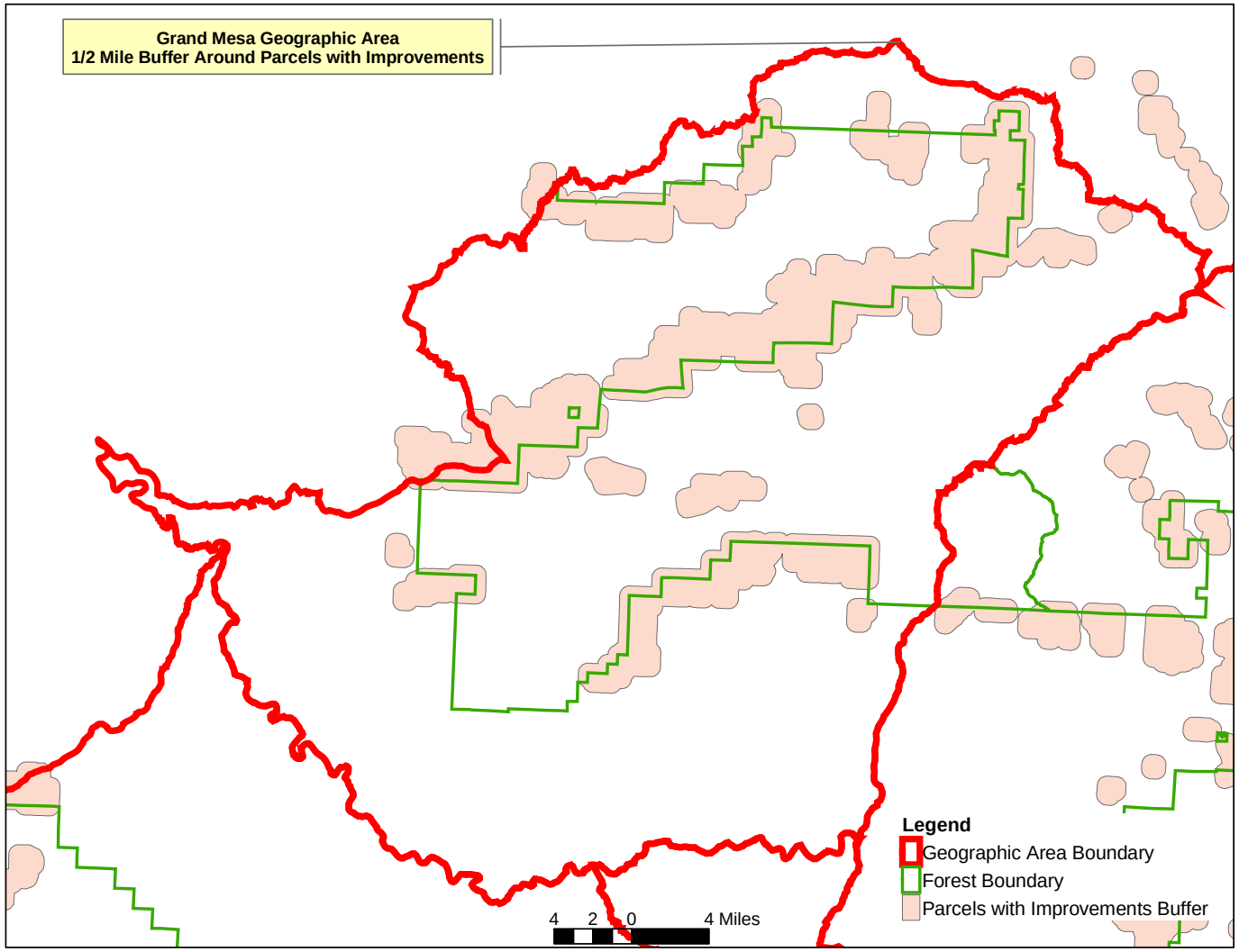

Table 12. Acres by Cover Type within ½ mile of Private Parcels with Improvements on Grand Mesa Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	3,661	7	10
Sagebrush	577	1	30
Gambel Oak	11,448	22	32
Mixed Mountain Shrub	842	2	6
Snowberry	2,663	5	30
Willow	673	1	19
Cottonwood	141	0	35
Aspen	18,114	34	20
Pinyon/Juniper	2,861	5	16
Douglas-fir	227	0	7
Blue Spruce	40	0	71
Spruce/Fir	9,415	18	10
Bare/Rock	1,175	2	10
Water	911	2	21
Total	52,748		16

Approximately 16 percent of the Grand Mesa GA is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced are aspen (34 percent), Gambel oak (22 percent), and spruce/fir (18 percent). Most of the buffer occurs along the slopes of the Grand Mesa, in the aspen and oak bands. While very little blue spruce cover type is affected, this is 71 percent of the cover type that occurs on the Grand Mesa GA.

Gunnison Basin Geographic Area

Developed Recreation

Table 13 lists the existing developed recreation data by type and number of sites on the Gunnison Basin GA. Figure 10 displays the location of these developed recreation sites.

Table 13. Developed Recreation Sites by Type on the Gunnison Basin GA.

Type of Recreational Development	Count
Administrative Sites	0 (database incorrect)
Boat Launches	1
Campgrounds	34
Day Use / Picnic Sites	6
Interpretive Sites	0
Observation Sites	3
Trailheads	40
Total	84

Figure 10. Developed Recreation Sites on the Grand Mesa, Uncompahgre and Gunnison National Forests (included in INFRA database)

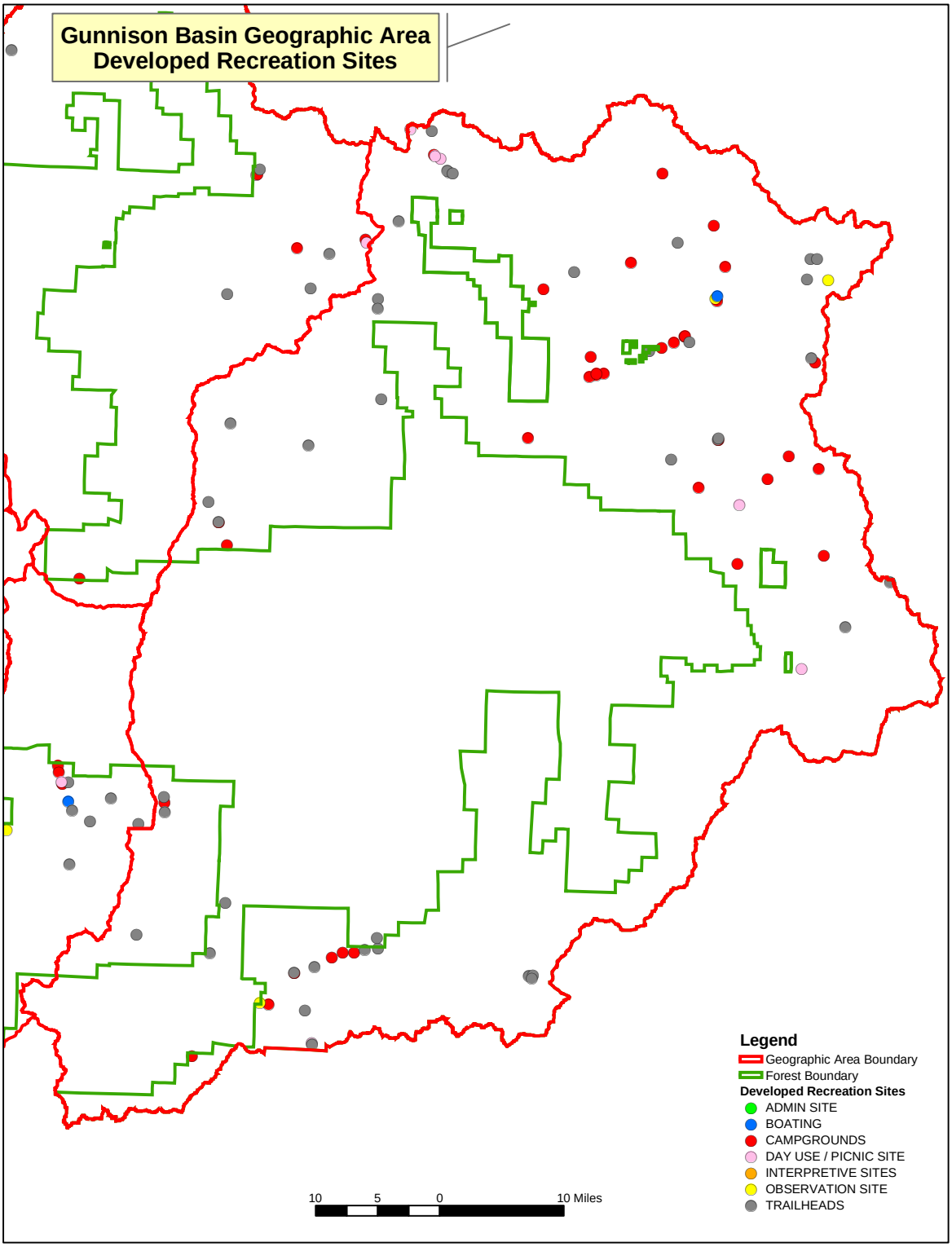

Table 14 lists the acres by cover type that are within ½ mile of the developed recreation sites. Approximately 32,260 acres are within ½ mile of a developed recreation site. This is approximately two percent of the total Gunnison Basin GA. Within the ½ mile buffer the cover types most affected by developed recreation are lodgepole pine (26 percent), spruce/fir (21 percent), grass/forb (16 percent), and aspen (15 percent). Developed recreation affects more areas near water (19 percent of the total cover type) than any other cover type on the Geographic Area.

Table 14. Acres by Cover Type within ½ mile of Developed Recreation Sites on Gunnison Basin Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	5,154	16	2
Sagebrush	1,746	5	3
Gambel Oak	283	1	16
Mixed Mountain Shrub	170	1	2
Willow	2,149	7	3
Cottonwood	52	0	7
Aspen	4,720	15	2
Ponderosa Pine	172	1	2
Lodgepole Pine	8,461	26	3
Limber Pine	52	0	9
Douglas-fir	876	3	3
Spruce/Fir	6,835	21	2
Bristlecone Pine	55	0	1
Bare/Rock	935	3	1
Water	596	2	19
Total	32,257		2

Crested Butte Mountain Resort is located on the Gunnison Basin Geographic Area. Figure 2 displays the extent of area affected by this ski resort. Table 15 displays the acres by cover type that are within the ski resort, and within a ½ mile buffer surrounding these areas.

Table 15. Acres by Cover Type within ½ mile of Ski Resort on Gunnison Basin GA.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	1,508	32	1
Sagebrush	59	1	0
Willow	164	3	0
Aspen	728	15	0
Lodgepole Pine	319	7	0
Douglas-fir	4	0	0
Spruce/Fir	941	20	0
Bare/Rock	1,023	22	1
Total	4,747		0

The cover types most influenced by CBMR are grass/forb (32 percent), bare/rock (22 percent), spruce/fir (20 percent) and aspen (15 percent). However, less than one percent of the Gunnison Basin GA has been affected.

Utility Corridors

Approximately 60 miles of transmission lines for electric power, oil, and natural gas currently exist on the Gunnison Basin GA. Figure 11 displays these transmission lines by type. The major routes are currently designated as utility corridor management prescription areas. In many cases multiple utility transmission lines lie within the same corridor. Table 16 identifies the miles of each type of transmission line. Table 17 displays the acres by cover type that lie within the buffer around utility corridors

Table 16. Miles and Type of Transmission Lines within Utility Corridors on the GMUG

Type of Transmission Line	Miles
Power Transmission Line	48
Underground gas/oil pipeline	12

Figure 11. Utility Corridors and Type of Transmission Lines on the Gunnison Basin GA

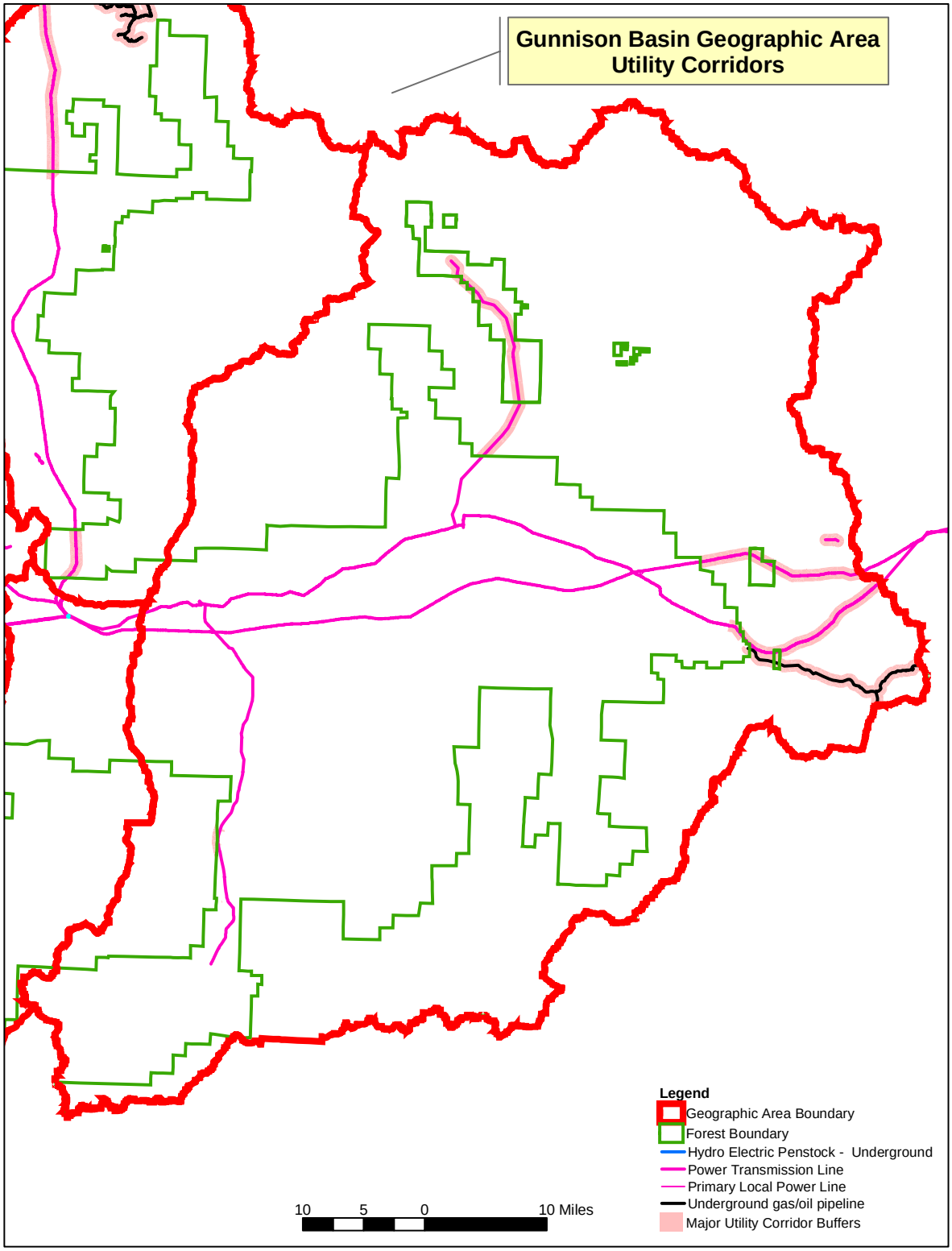

Table 17. Acres by Cover Type within ½ mile of Utility Corridors on Gunnison Basin GA.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	14,398	33	5
Sagebrush	7,970	18	12
Mixed Mountain Shrub	184	0	2
Willow	1,411	3	2
Cottonwood	245	1	34
Aspen	4,891	11	3
Ponderosa Pine	386	1	3
Lodgepole Pine	10,691	25	4
Limber Pine	57	0	10
Douglas-fir	1,097	3	3
Spruce/Fir	1,707	4	0
Bare/Rock	242	1	0
Water	33	0	1
Total	43,312		3

Many of these utility corridors are currently in grass/forb cover type (especially in the East River valley), which is one reason such a high percent of the total buffer (33 percent) is shown in this cover type. Other cover types that have been most influenced by utility corridors include lodgepole pine (25 percent), and sagebrush (18 percent). The buffer surround the major utility corridors has affected three percent of the Gunnison Basin GA. Many utility corridors parallel transportation corridors which also parallel river and stream courses. For this reason, the cottonwood cover type has been affected more than any other cover type, with 34 percent of the total cover type on the entire Geographic Area being within a utility corridor buffer.

Private Lands with Developments

Figure 12 displays private land parcels within and adjacent to the Gunnison Basin Geographic Area that have improvements, based on available county assessors' parcel data for Gunnison, Hinsdale, and Saguache counties. Approximately 1,124,400 acres of private land are displayed. Of this 45,600 acres lie within the proclaimed Forest boundary, and 1,078,700 acres are adjacent to the Forest.

Figure 13 displays the area included in a ½ mile buffer around these parcels. Table 18 lists a breakdown by cover type of the acres included within this buffer.

Figure 12. Private Land Parcels With Improvements Within And Adjacent To The Gunnison Basin Geographic Area.

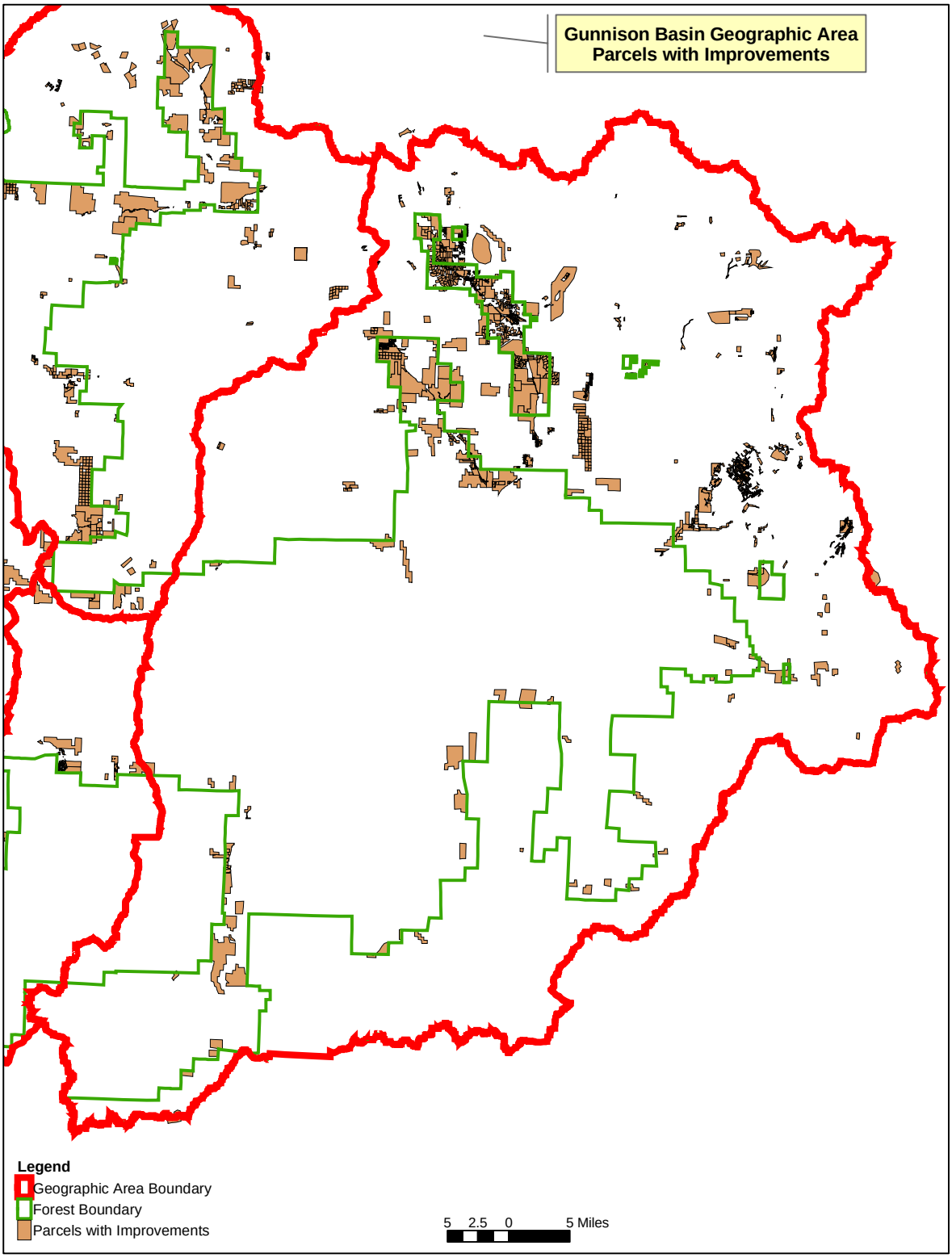

Figure 13. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The Gunnison Basin Geographic Area.

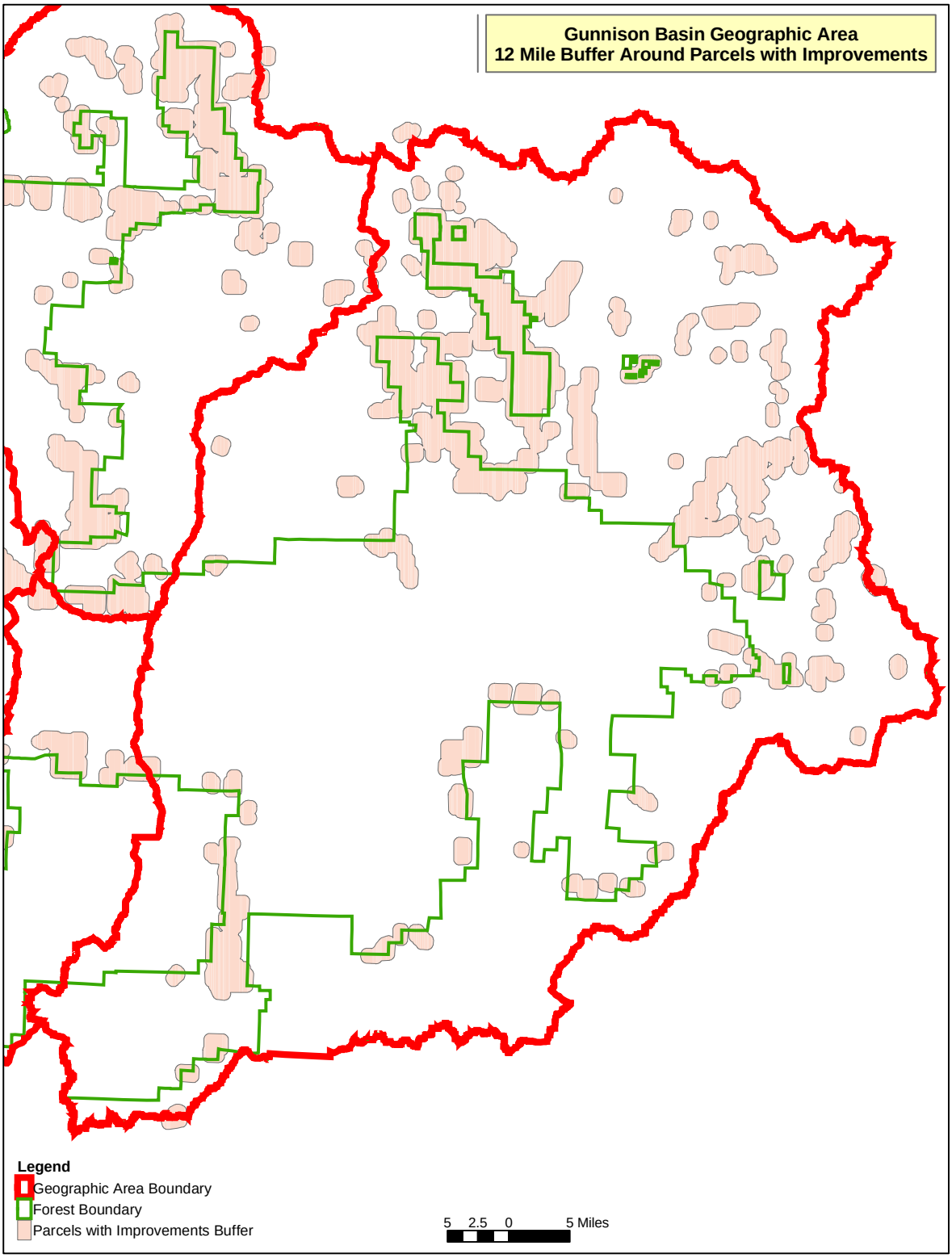

Table 18. Acres by Cover Type within ½ mile of Private Parcels with Improvements on Gunnison Basin Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	45541.04	21	17
Sagebrush	25051.1	12	39
Gambel Oak	141.341	0	8
Mixed Mountain Shrub	1081.654	1	10
Snowberry	105.6343	0	27
Willow	9173.479	4	15
Cottonwood	392.5653	0	54
Aspen	39218.49	18	20
Ponderosa Pine	1431.508	1	13
Lodgepole Pine	50591.58	23	18
Douglas-fir	4378.351	2	13
Blue Spruce	235.9327	0	10
Spruce/Fir	32135.18	15	9
Bristlecone Pine	500.7042	0	7
Bare/Rock	4848.53	2	5
Water	822.2139	0	27
Total	215,649		16

Approximately 16 percent of the Gunnison Basin GA is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced by private parcel development are lodgepole pine (23 percent), grass/forb (21 percent), aspen (18 percent), spruce/fir (15 percent), and sagebrush (12 percent). Approximately 54 percent of the cottonwood cover type and 39 percent of the sagebrush cover type on the GA are included in the area of influence around private development.

North Fork Valley Geographic Area

Developed Recreation

Table 19 lists the existing data by type and number of sites on the North Fork Valley Geographic Area. Figure 14 displays the location of these developed recreation sites.

Table 19. Developed Recreation Sites by Type on the North Fork Valley GA.

Type of Recreational Development	Count
Administrative Sites	0 (database incorrect)
Campgrounds	5
Day Use / Picnic Sites	2
Trailheads	5
Total	12

Figure 14. Developed Recreation Sites on the North Fork Valley Geographic Area (included in INFRA database)

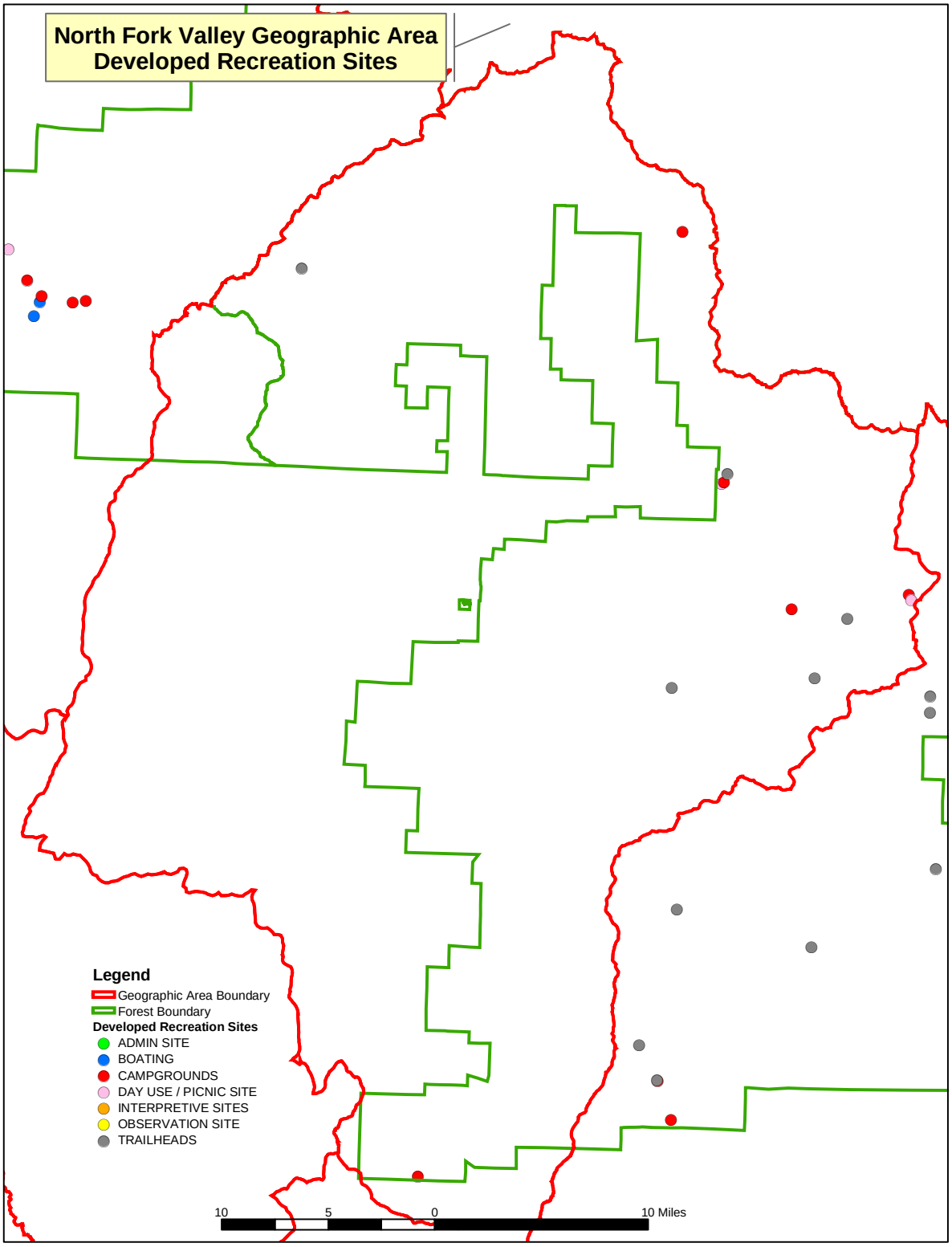

Table 20 lists the acres by cover type that are within ½ mile of the developed recreation sites. Approximately 4,700 acres are within ½ mile of a developed recreation site. This is approximately one percent of the total Geographic Area. Within the ½ mile buffer the cover types most affected by developed recreation are aspen (33 **percent**), spruce/fir (22 **percent**), and grass/forb (16 **percent**). Developed recreation affects more areas near water (16 **percent** of the total cover type) than any other cover type on the North Fork Valley GA.

Table 20. Acres by Cover Type within ½ mile of Developed Recreation Sites on North Fork Valley Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	730	16	2
Gambel Oak	507	11	1
Mixed Mountain Shrub	443	9	2
Willow	181	4	2
Aspen	1,547	33	1
Spruce/Fir	1,019	22	1
Bare/Rock	72	2	0
Water	196	4	16
Total	4,695		1

Utility Corridors

Approximately 34 miles of transmission lines for electric power, oil, and natural gas currently exist on the Geographic Area. Figure 15 displays these transmission lines by type. The major routes are currently designated as utility corridor management prescription areas. Table 21 identifies the miles of each type of transmission line. Table 22 displays the acres by cover type that lie within the buffer around utility corridors

Table 21. Miles and Type of Transmission Lines within Utility Corridors on the North Fork Valley Geographic Area

Type of Transmission Line	Miles
Power Transmission Line	19
Underground gas/oil pipeline	15

Figure 15. Utility Corridors and Type of Transmission Lines on the North Fork Valley Geographic Area

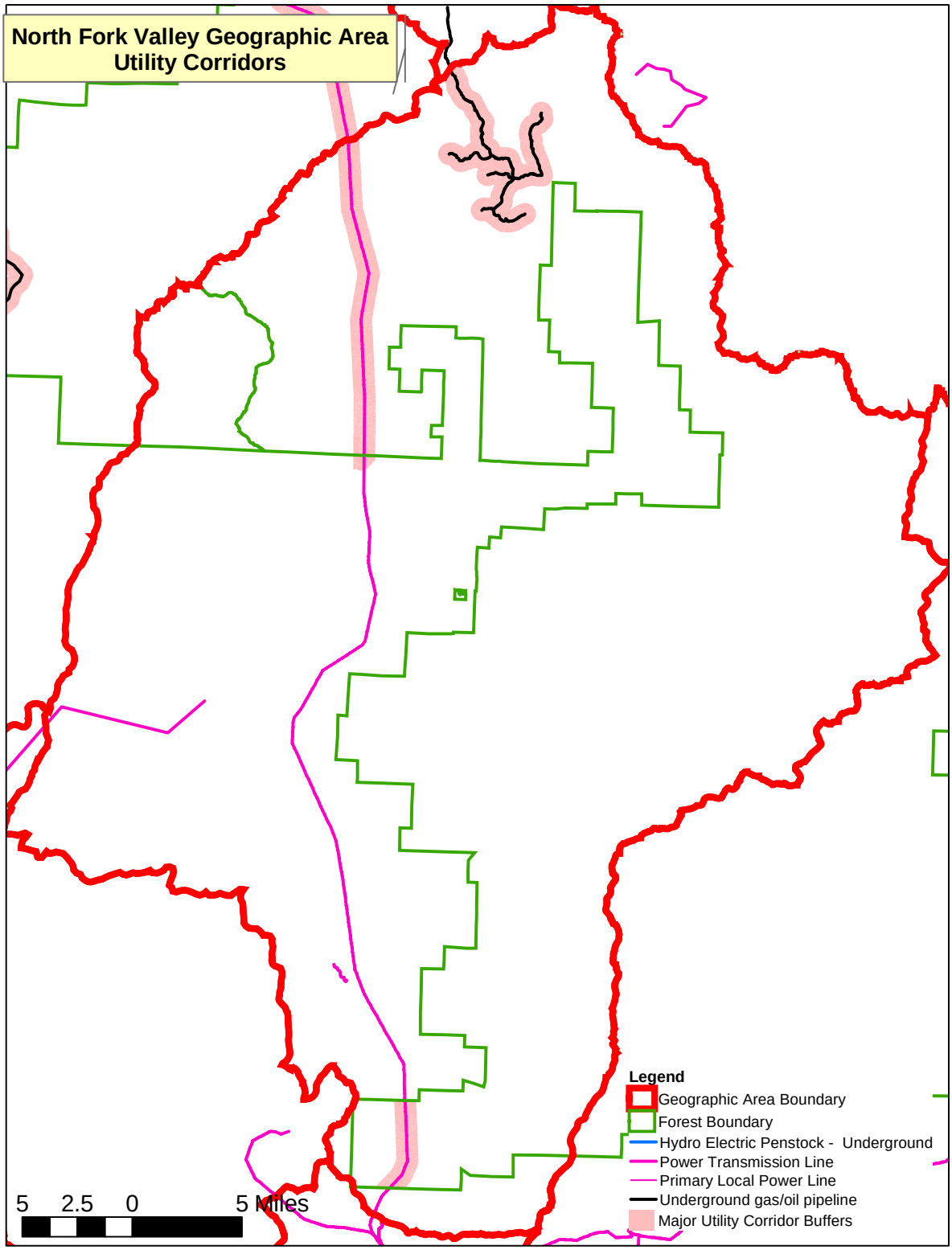

Table 22. Acres by Cover Type within ½ mile of Utility Corridors on North Fork Valley Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	1,250	5	3
Sagebrush	1,428	6	26
Gambel Oak	4,928	21	8
Mixed Mountain Shrub	733	3	3
Snowberry	401	2	32
Willow	560	2	6
Cottonwood	59	0	8
Aspen	12,135	51	6
Douglas-fir	53	0	4
Spruce/Fir	2,208	9	2
Bare/Rock	44	0	0
Water	6	0	0
Total	23,805		5

Cover types that have been most influenced by utility corridors include aspen (51 percent), and Gambel oak (21 percent). The buffer surround the major utility corridors has affected five percent of the Geographic Area. Two cover types have been proportionately more influenced on the North Fork Valley Geographic Area, than others: snowberry 32 percent, and sagebrush 26 percent

Private Lands with Developments

Figure 16 displays private land parcels within and adjacent to the North Fork Valley Geographic Area that have improvements, based on available county assessors' parcel data for Delta, Gunnison, and Montrose counties. Approximately 613,700 acres of private land are displayed. Of this 12,700 acres lie within the proclaimed Forest boundary, and 601,000 acres are adjacent to the Forest.

Figure 17 displays the area included in a ½ mile buffer around these parcels. Table 23 lists a breakdown by cover type of the acres included within this buffer.

Figure 16. Private Land Parcels With Improvements Within And Adjacent To The North Fork Valley Geographic Area.

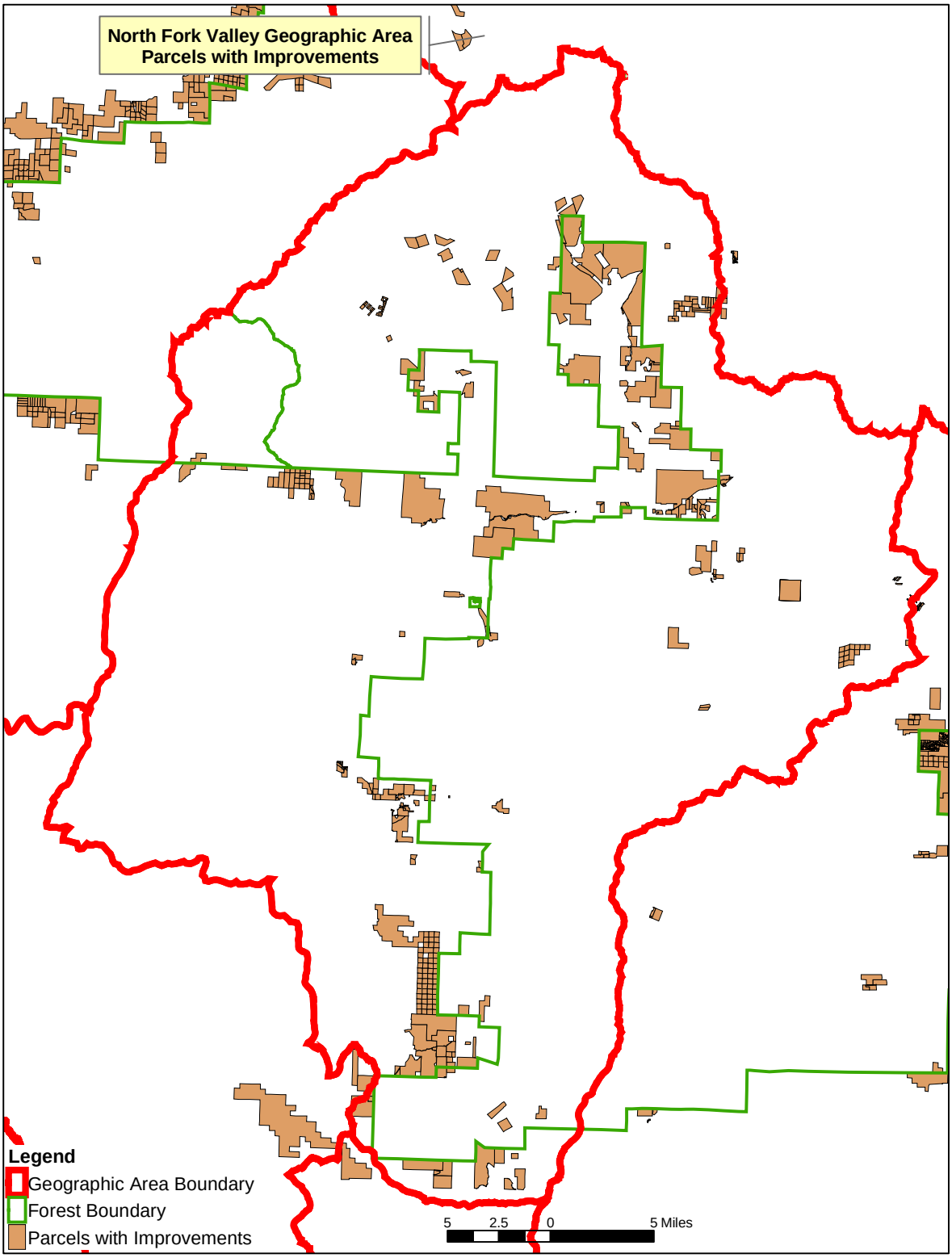

Figure 17. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The North Fork Valley Geographic Area.

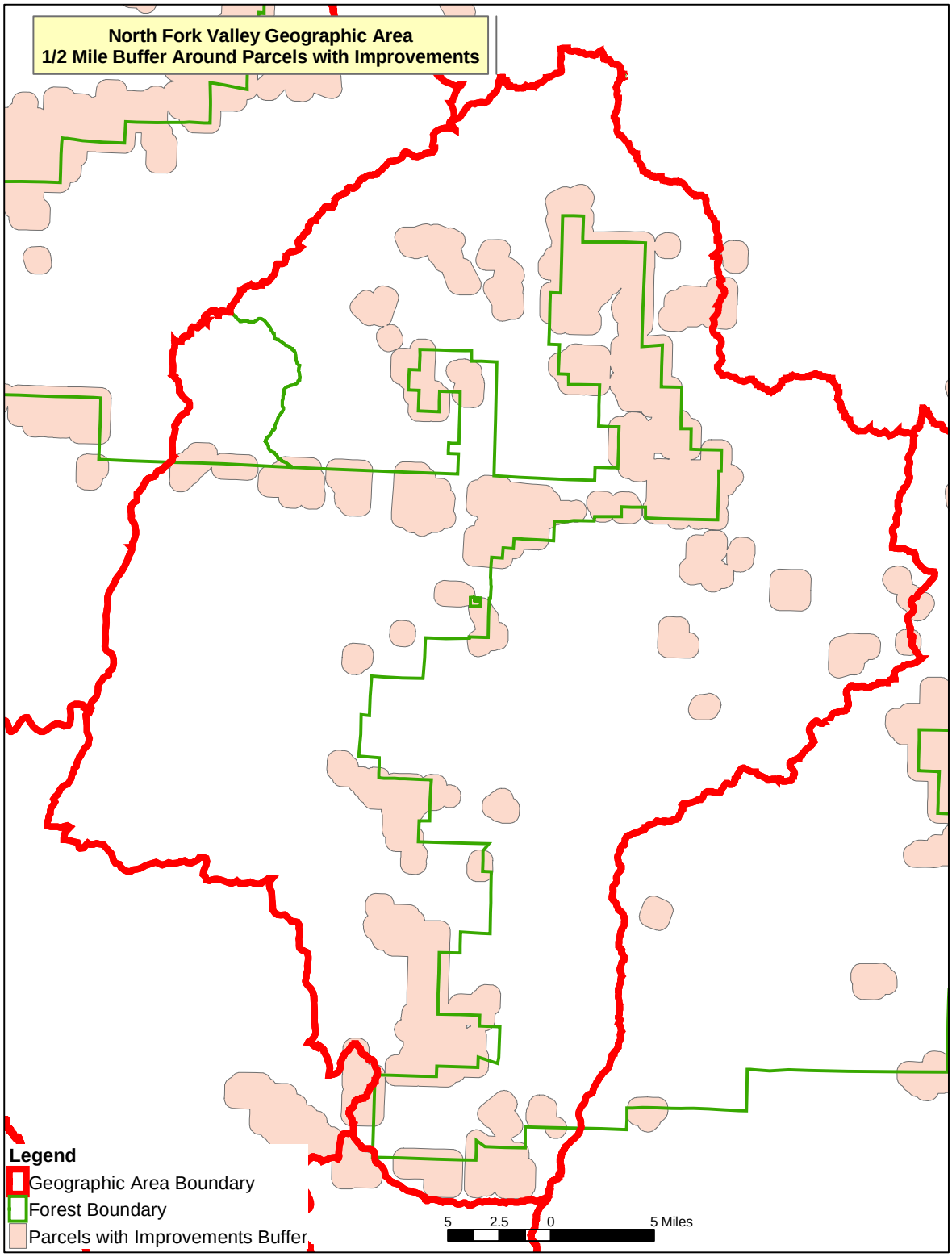

Table 23. Acres by Cover Type within ½ mile of Private Parcels with Improvements on North Fork Valley Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	6,138	9	16
Sagebrush	2,055	3	37
Gambel Oak	17,736	25	29
Mixed Mountain Shrub	2,284	3	10
Snowberry	211	0	17
Willow	1,475	2	15
Cottonwood	458	1	61
Aspen	28,613	40	14
Pinyon/Juniper	423	1	15
Douglas-fir	120	0	10
Spruce/Fir	10,034	14	8
Bare/Rock	914	1	3
Water	240	0	20
Total	70,703		14

Approximately 14 percent of the North Fork Valley GA is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced by private parcel development are aspen (40 percent), Gambel oak (25 percent) and spruce/fir (14 percent). When comparing the percent of a total cover type, some are more influenced by private land development than others. Over half of the cottonwood and over one third of the sagebrush cover types are within the parcel buffer.

San Juans Geographic Area

Developed Recreation

Table 24 lists the existing data by type and number of sites on the San Juans Geographic Area. Figure 18 displays the location of these developed recreation sites.

Table 24. Developed Recreation Sites by Type on the San Juans Geographic Area.

Type of Recreational Development	Count
Administrative Sites	0 (database incorrect)
Boat Launches	1
Campgrounds	10
Day Use / Picnic Sites	2
Interpretive Sites	2
Observation Sites	2
Trailheads	24
Total	41

Figure 18. Developed Recreation Sites on the San Juans Geographic Area (included in INFRA database)

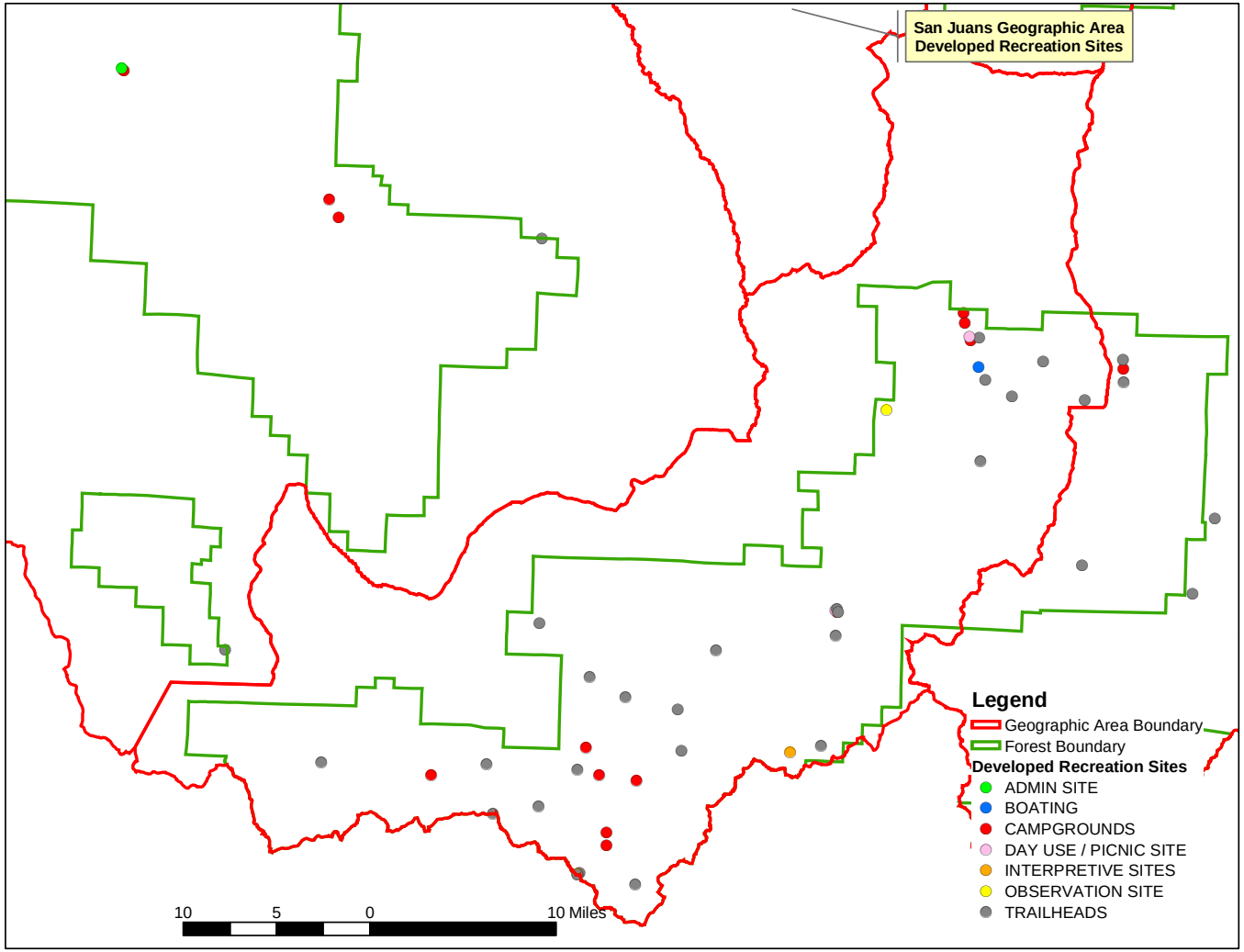

Table 25 lists the acres by cover type that are within ½ mile of the developed recreation sites. Approximately 16,600 acres are within ½ mile of a developed recreation site. This is approximately five percent of the total Geographic Area. Within the ½ mile buffer the cover types most affected by developed recreation are spruce/fir (34 percent), aspen (28 percent), and grass/forb (18 percent). Developed recreation disproportionately affects more areas in blue spruce (25 percent), ponderosa pine (23 percent) and near water (20 percent of the total cover type) than any other cover types.

Table 25. Acres by Cover Type within ½ mile of Developed Recreation Sites on San Juans Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	2,888	18	5
Gambel Oak	412	2	7
Mixed Mountain Shrub	12	0	2
Willow	1,032	6	15
Cottonwood	7	0	2
Aspen	4,485	28	6
Ponderosa Pine	104	1	23
Douglas-fir	189	1	9
Blue Spruce	9	0	25
Spruce/Fir	5,561	34	4
Bare/Rock	1,771	11	2
Water	168	1	20
Total	16,639		5

The Telluride Ski Resort is found on the San Juans Geographic Area. Figure 2 displays the extent of area affected by this resort. Table 26 displays the acres by cover type that are within the ski resort, and within a ½ mile buffer surrounding these areas.

Table 26. Acres by Cover Type within ½ mile of the Telluride Ski Resort on San Juan Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	528	8	1
Willow	96	1	1
Cottonwood	0	0	0
Aspen	1,150	17	2
Spruce/Fir	4,433	64	3
Bare/Rock	699	10	1
Water	17	0	2
Total	6,923		2

As expected, ski resorts have impacted higher elevation cover types (64 percent spruce/fir, 17 percent aspen. Two percent of the San Juan Geographic Area has been affected by the ski resort area, and no cover type has been disproportionately affected.

Utility Corridors

Approximately 50 miles of transmission lines for electric power currently exist on the San Juan Geographic Area. Figure 19 displays these transmission lines by type. The major routes are

currently designated as utility corridor management prescription areas. Table 27 identifies the miles of each type of transmission line.

Table 27. Miles and Type of Transmission Lines within Utility Corridors on the GMUG

Type of Transmission Line	Miles
Power Transmission Line	29
Primary Local Power Line	25

To evaluate the influence of future maintenance and construction within these utility corridors, the major routes have been buffered by ½ mile on either side. (Local electric transmission lines have not been buffered because the clearing width and level of activity along these lines is much less than along major corridors.) Table 28 displays the acres by cover type that lie within the buffer around utility corridors.

Figure 19. Utility Corridors and Type of Transmission Lines on the San Juans Geographic Area

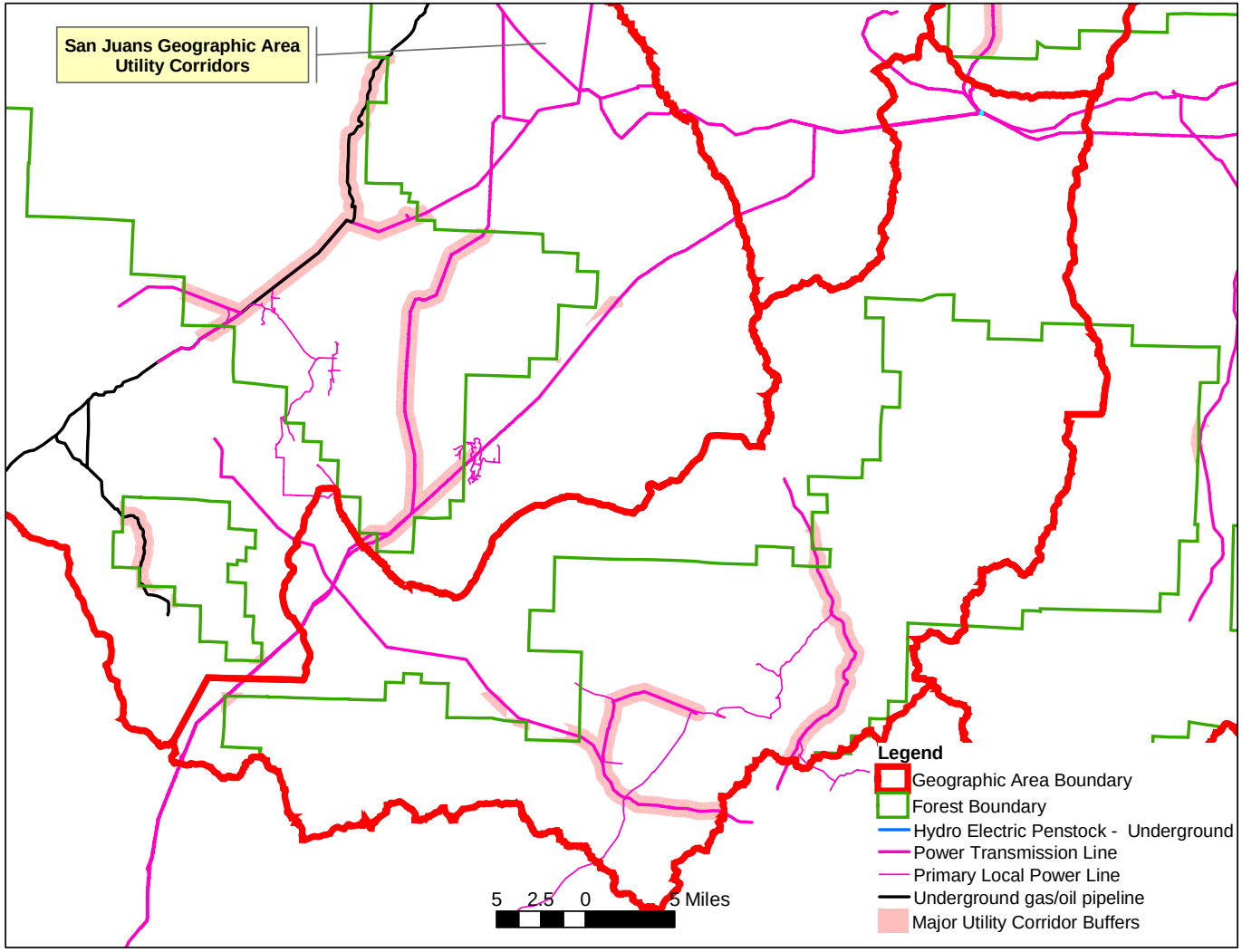

Table 28. Acres by Cover Type within ½ mile of Utility Corridors on San Juans Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	4,107	17	6
Gambel Oak	1,148	5	19
Mixed Mountain Shrub	49	0	7
Snowberry	28	0	14
Willow	1,421	6	21
Cottonwood	239	1	70
Aspen	6,850	29	10
Pinyon/Juniper	637	3	97
Ponderosa Pine	286	1	62
Douglas-fir	681	3	31
Spruce/Fir	5,785	25	4
Bare/Rock	2,215	9	3
Water	57	0	7
Total	23,501		7

The cover types that have been most influenced by utility corridors include aspen (29 percent), spruce/fir (25 percent), and grass/forb (17 percent). The buffer surround the major utility corridors has affected seven percent of the Geographic Area. Utility corridors on the San Juans GA have influenced cover types at lower elevations disproportionately more than higher elevation cover types.

Private Lands with Developments

Figure 20 displays private land parcels within and adjacent to the San Juans Geographic Area that have improvements, based on available county assessors' parcel data for Gunnison, Hinsdale, Montrose, Ouray, and San Miguel counties. Approximately 318,900 acres of private land are displayed. Of this 8,650 acres lie within the proclaimed Forest boundary, and 310,300 acres are adjacent to the Forest.

Figure 21 displays the area included in a ½ mile buffer around these parcels. Table 29 lists a breakdown by cover type of the acres included within this buffer.

Figure 20. Private Land Parcels With Improvements Within And Adjacent To The San Juans Geographic Area

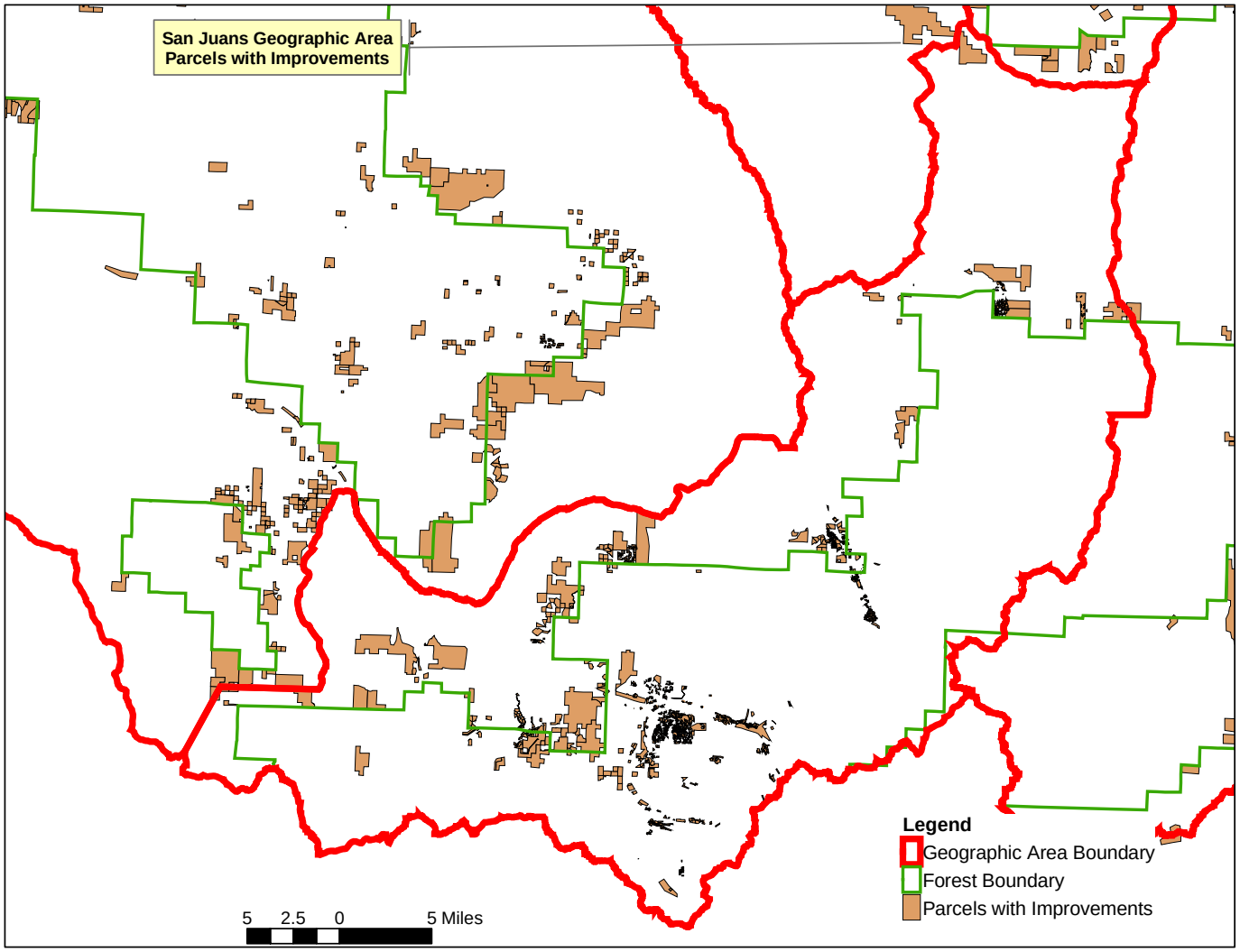

Figure 21. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The San Juans Geographic Area.

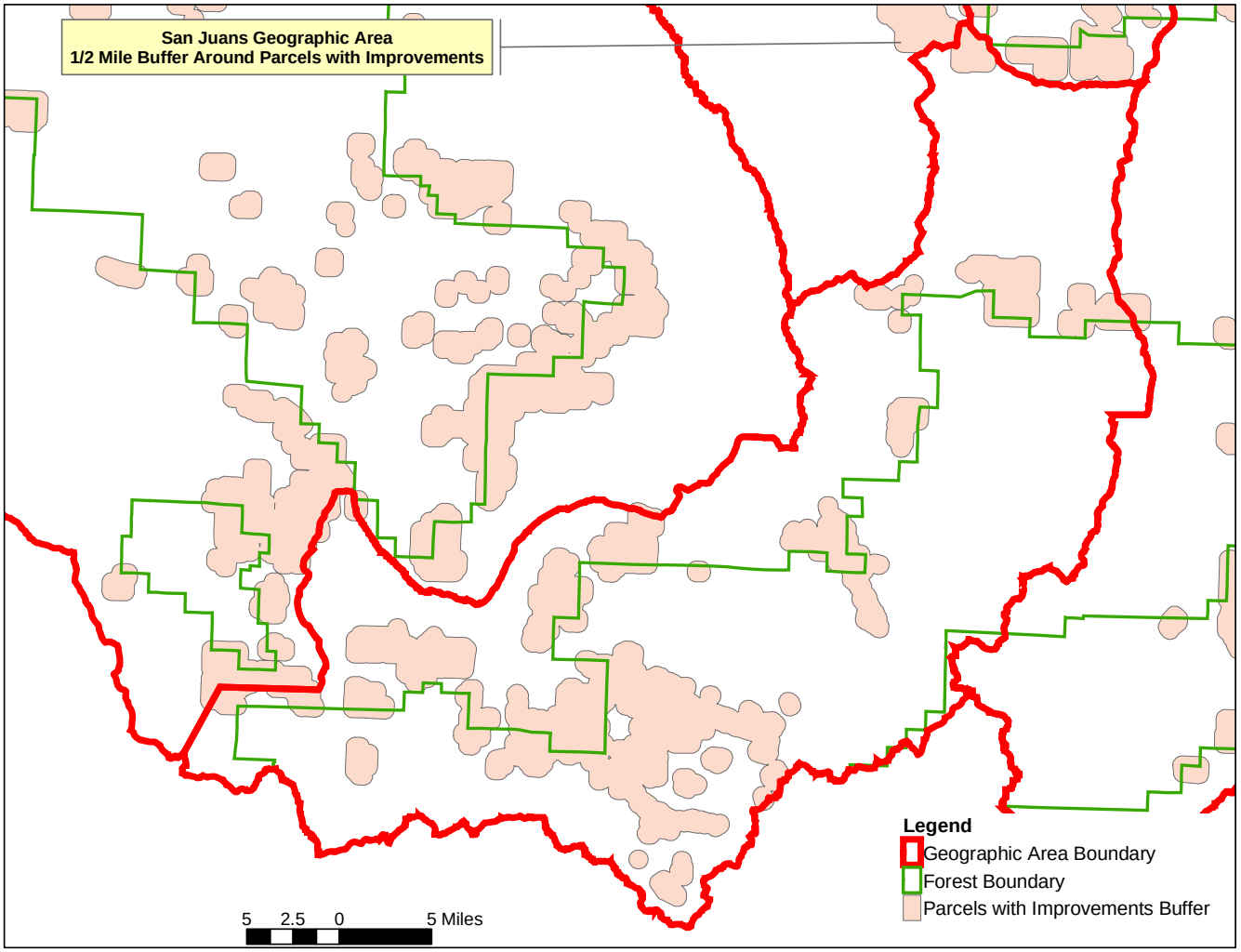

Table 29. Acres by Cover Type within ½ mile of Private Parcels with Improvements on San Juans Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	12,385	19	19
Sagebrush	68	0	19
Gambel Oak	2,151	3	35
Mixed Mountain Shrub	229	0	33
Snowberry	36	0	17
Willow	1,682	3	25
Cottonwood	213	0	62
Aspen	24,422	37	35
Pinyon/Juniper	565	1	86
Ponderosa Pine	398	1	87
Douglas-fir	1,286	2	59
Blue Spruce	4	0	12
Spruce/Fir	16,697	26	13
Bare/Rock	5,052	8	7
Water	249	0	29
Total	65,436		18

Approximately 18 percent of the San Juans is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced by private parcel development are aspen (37 percent), spruce/fir (26 percent), and grass/forb (19 percent). Because much of the private land is at lower elevations, the lower elevation cover types have been disproportionately affected by private land development.

Uncompahgre Plateau Geographic Area

Developed Recreation

Table 30 lists the existing data by type and number of sites on the Uncompahgre Plateau Geographic Area. Figure 22 displays the location of these developed recreation sites.

Table 30. Developed Recreation Sites by Type on the GMUG.

Type of Recreational Development	Count
Administrative Sites	2 (database incorrect)
Campgrounds	5
Day Use / Picnic Sites	2
Interpretive Sites	2
Trailheads	7
Total	18

Figure 22. Developed Recreation Sites on the Uncompahgre Plateau Geographic Area (included in INFRA database)

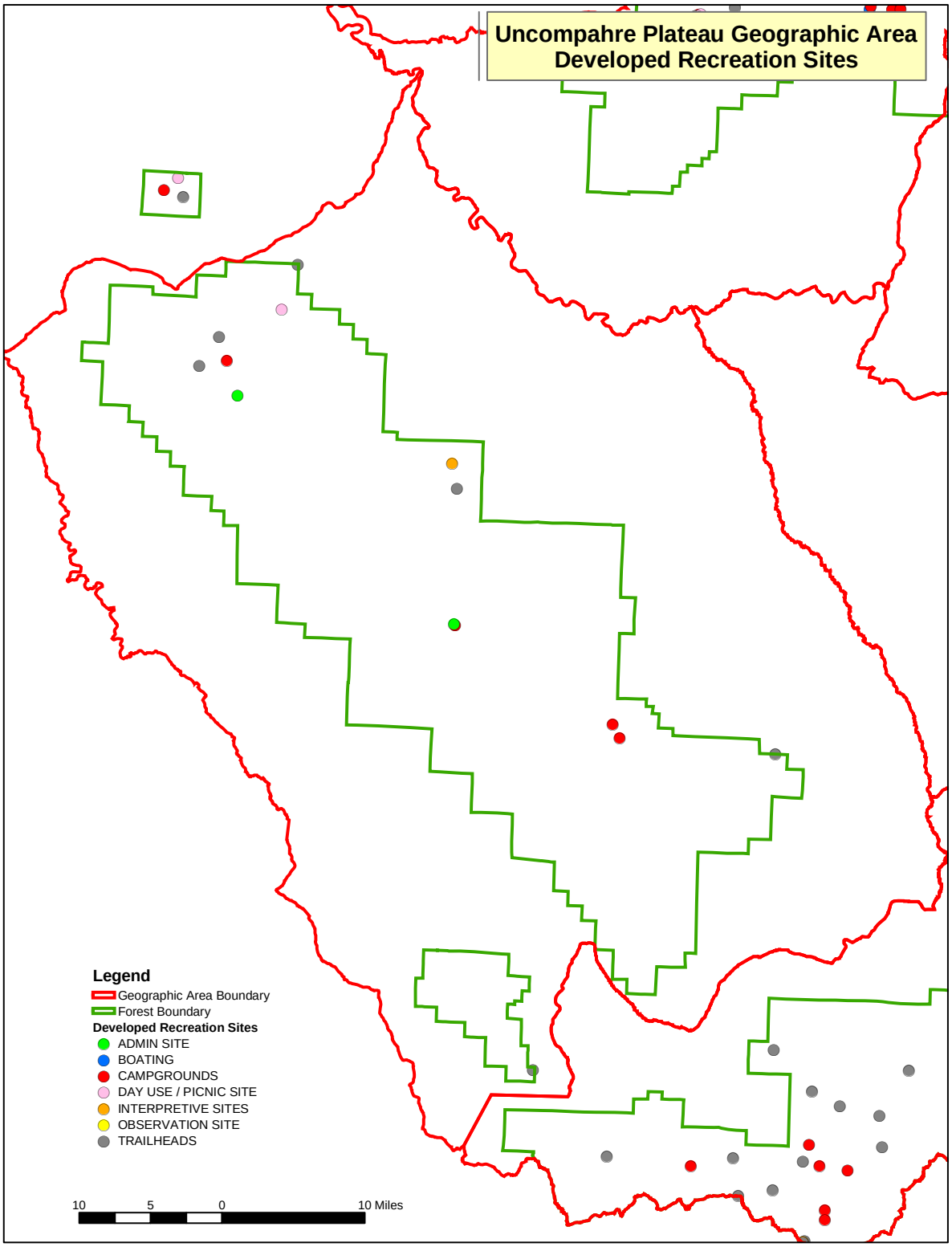

Table 31 lists the acres by cover type that are within ½ mile of the developed recreation sites. Approximately 7,000 acres are within ½ mile of a developed recreation site. This is approximately one percent of the total Uncompahgre Plateau GA. Within the ½ mile buffer the cover types most affected by developed recreation are aspen (39 **percent**), grass/forb (17 **percent**) and pinyon-juniper (15 **percent**).

Table 31. Acres by Cover Type within ½ mile of Developed Recreation Sites on Uncompahgre Plateau Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	1,209	17	3
Sagebrush	232	3	1
Gambel Oak	471	7	0
Snowberry	105	1	1
Willow	41	1	3
Aspen	2,722	39	2
Pinyon/Juniper	1,022	15	1
Ponderosa Pine	306	4	0
Spruce/Fir	728	10	2
Bare/Rock	98	1	2
Water	65	1	8
Total	6,998		1

Utility Corridors

Approximately 90 miles of transmission lines for electric power, oil, and natural gas currently exist on the Uncompahgre Plateau Geographic Area. Figure 23 displays these transmission lines by type. The major routes are currently designated as utility corridor management prescription areas. In many cases multiple utility transmission lines lie within the same corridor. Table 32 identifies the miles of each type of transmission line.

Figure 23. Utility Corridors and Type of Transmission Lines on the Uncompahgre Plateau Geographic Area

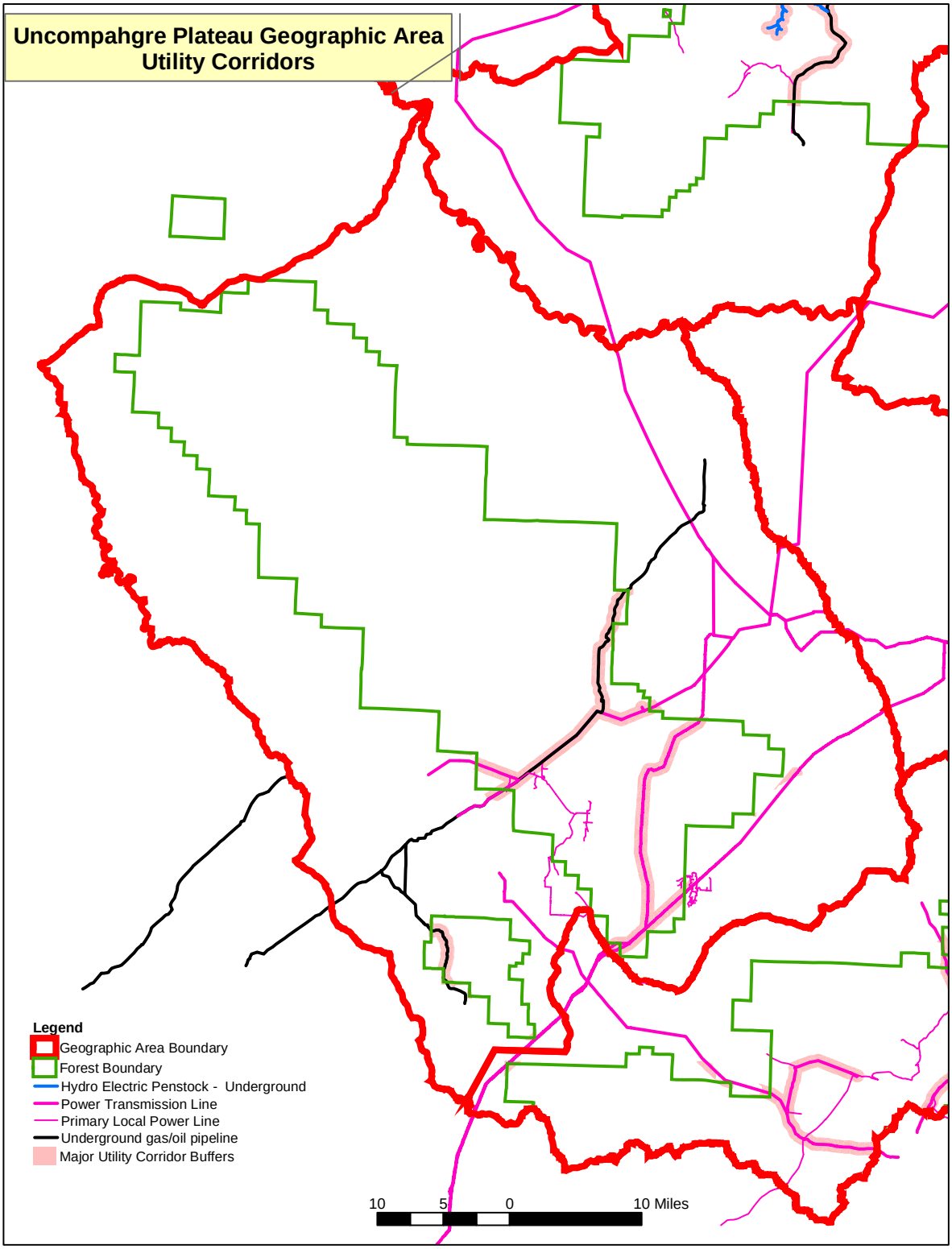

Table 32. Miles and Type of Transmission Lines within Utility Corridors on the Uncompahgre Plateau Geographic Area

Type of Transmission Line	Miles
Power Transmission Line	44
Primary Local Power Line	24
Underground gas/oil pipeline	25

To evaluate the influence of future maintenance and construction within these utility corridors, the major routes have been buffered by ½ mile on either side. (Local electric transmission lines have not been buffered because the clearing width and level of activity along these lines is much less than along major corridors.) Table 33 displays the acres by cover type that lie within the buffer around utility corridors.

Table 33. Acres by Cover Type within ½ mile of Utility Corridors on Uncompahgre Plateau Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	2,773	7	7
Sagebrush	2,510	7	13
Gambel Oak	7,900	21	5
Mixed Mountain Shrub	323	1	5
Snowberry	33	0	0
Willow	90	0	6
Cottonwood	34	0	3
Aspen	8,733	23	6
Pinyon/Juniper	4,928	13	6
Ponderosa Pine	5,830	15	6
Lodgepole Pine	158	0	89
Douglas-fir	46	0	2
Spruce/Fir	3,517	9	8
Bare/Rock	1,637	4	27
Water	9	0	1
Total	38,521		6

Cover types that have been most influenced by utility corridors include aspen (23 percent), Gambel oak (21 percent) and ponderosa pine (15 percent). The buffer surrounding the major utility corridors has affected six percent of the GMUG. Lodgepole pine is not native to the Uncompahgre Plateau. Several plantations do exist and they are mostly within the utility corridor buffer.

Private Lands with Developments

Figure 24 displays private land parcels within and adjacent to the Uncompahgre Plateau Geographic Area that have improvements, based on available county assessors' parcel data for Mesa, Montrose, Ouray, and San Miguel counties. Approximately 749,900 acres of private land are displayed. Of this 20,700 acres lie within the proclaimed Forest boundary, and 729,200 acres are adjacent to the Forest. Figure 25 displays the area included in a ½ mile buffer around these parcels. Table 34 lists a breakdown by cover type of the acres included within this buffer.

Figure 24. Private Land Parcels With Improvements Within And Adjacent To The Uncompahgre Plateau Geographic Area.

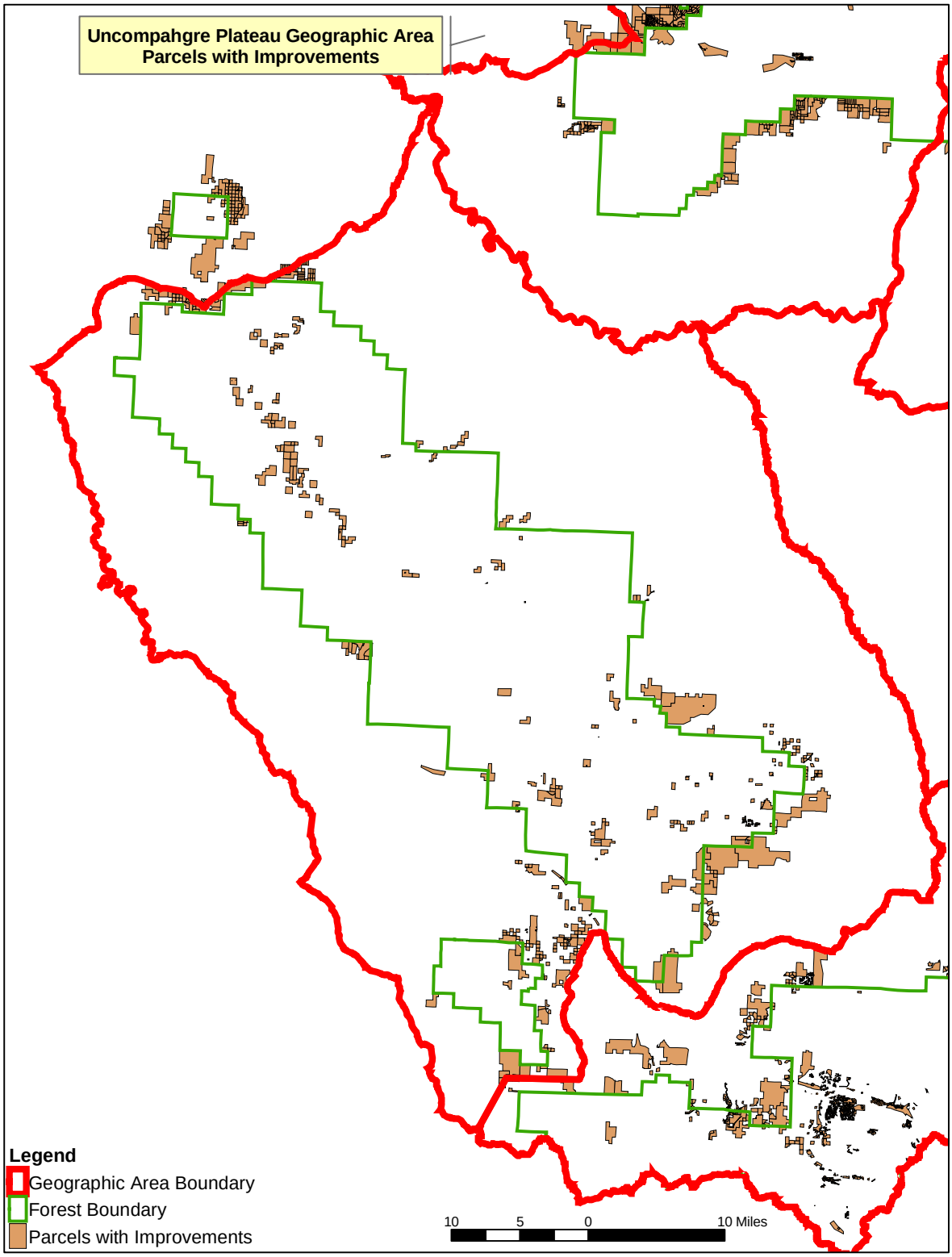

Figure 25. Private Land Parcels With Improvements Buffered By ½ Mile Within And Adjacent To The Uncompahgre Plateau Geographic Area.

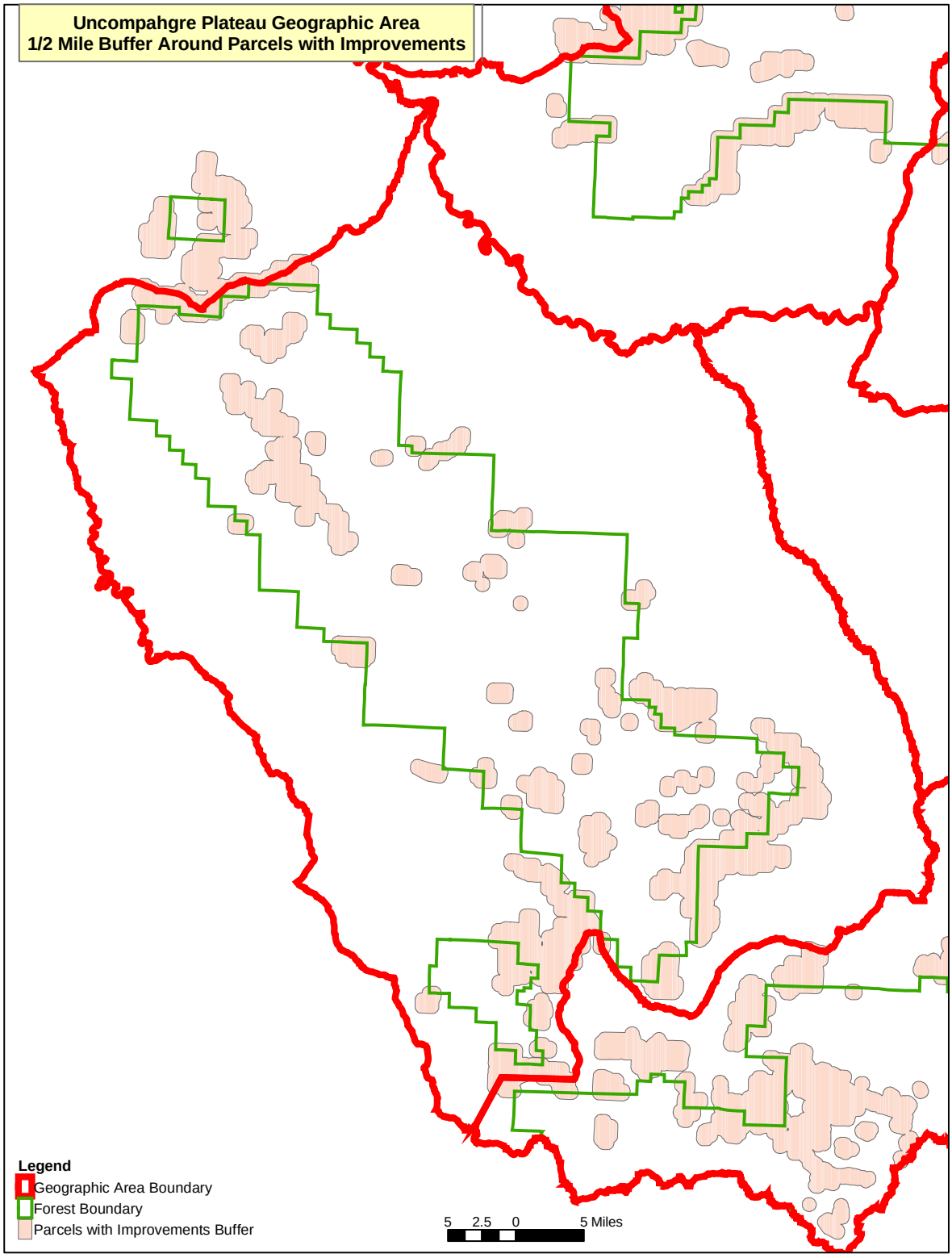

Table 34. Acres by Cover Type within ½ mile of Private Parcels with Improvements on Uncompahgre Plateau Geographic Area.

Cover Type	Acres within ½ Mile Buffer	% of Total Buffer	% of Total Cover Type
Grass/Forb	15,369	13	40
Sagebrush	4,983	4	26
Gambel Oak	23,222	19	16
Mixed Mountain Shrub	581	0	9
Snowberry	4,469	4	57
Willow	712	1	49
Cottonwood	97	0	7
Aspen	38,777	32	25
Pinyon/Juniper	6,950	6	8
Ponderosa Pine	17,867	15	18
Douglas-fir	145	0	6
Blue Spruce	18	0	10
Spruce/Fir	7,783	6	18
Bare/Rock	290	0	5
Water	219	0	27
Total	121,484		20

Approximately 20 percent of the Uncompahgre Plateau Geographic Area is within ½ mile of a private parcel with some kind of development. Within this buffer the cover types most influenced by private parcel development are aspen (32 percent), Gambel oak (19 percent) and ponderosa pine (15 percent). Private land ownership within the forest boundary was centered around water features on this water-limited landscape, which is why willow and water cover types have been so affected (cottonwood is not the current cover type in most riparian areas, which is one reason the amount of cottonwood is so low). The other cover types that are more influenced tend to be the lower elevation types, around the edge of the Forest.

Key Findings

- A complete inventory of dispersed recreation sites is currently not available. Most dispersed recreation areas are along and/or accessed by the existing transportation network evaluated in the Road and Trail Distribution sections.
- The developed recreation site data included in the INFRA database needs to be updated to include all sites. (Values represented in this write-up will change as the inventory data changes.)
- The amount of Forest land that is influenced by developed recreation sites (acres within ½ mile buffer of inventoried sites) is very small.

Area	% of Total Developed Recreation Sites	% of Area Influenced by Developed Recreation
GMUG	100	2
Grand Mesa	20	4
Gunnison Basin	44	2
North Fork Valley	6	1
San Juans	21	5
Uncompahgre Plateau	9	1

- Three ski resorts currently exist on the GMUG. Forest-wide, less than one percent of the total area has been influenced by these ski areas.
- Approximately 290 miles of transmission lines for electric power, oil, natural gas and water exist on the GMUG. Several major corridors include more than one transmission line. Several transmission lines provide conduits for energy resources of regional and national importance. The distribution of existing transmission lines is related to regional transportation routes as well as location of energy resources.

Area	% of Existing Utility Transmission Lines	% of Area Influenced by Utility Corridors
GMUG	100	5
Grand Mesa	17	8
Gunnison Basin	21	3
North Fork Valley	12	5
San Juans	18	7
Uncompahgre Plateau	32	6

- Management of National Forest System resources influences and is influenced by the presence of private land development within and adjacent to the GMUG. Significant amounts of area are currently affected by this development.

Area	Percent of Area Affected	Cover Types Most Affected
GMUG National Forest	17	Aspen (28%), grass/forb (16%)
Grand Mesa	16	Aspen (34%) Gambel oak (22%)
Gunnison Basin	16	Lodgepole pine (23%) grass/forb (21%)
North Fork Valley	14	Aspen (40%) Gambel oak (25%)
San Juans	18	Aspen (37%) Spruce/fir (26%)
Uncompahgre Plateau	20	Aspen (32%) Gambel oak (19%)

Trends

- As the developed recreation site inventory is updated, there will be an appearance of an increase; however, future budgets will not result in increased development of Forest Service owned facilities. The use and associated disturbance around existing facilities is anticipated to increase in the future as the population of Western Colorado increases and if marketing of Colorado as a tourist destination continues (see Human Dimensions Recreation discussions).
- Increases in dispersed recreation are also anticipated in the future. Motorized and mechanized recreation will be limited to the transportation network of roads and trails. Horse and foot travel will not be restricted to routes, and the area influenced by these types of uses will radiate out from the travel corridors.

- All three ski resorts have recently completed expansion and upgrading projects. An area on Snodgrass Mountain, northwest of Crested Butte Mountain Resort is identified as suitable for future ski area development in the 1991 Amended Forest Plan and the current plan revision proposal is to keep this area as suitable for future development. Actual project proposals have come and gone in the past. Any future proposals will be thoroughly evaluated in NEPA environmental analysis.
- There are current proposal to place additional transmission lines in existing utility corridors. There is also the potential that future oil and gas development in and around the GMUG may require additional oil and gas pipelines, for local collection as well as connection to the larger regional transmission lines (i.e., TransColorado Pipeline). As development on private parcels continues, the need for additional local power transmission lines also exists. Again, any future projects would need to undergo NEPA analysis prior to approval or construction. Designation of utility corridors will encourage new transmission lines be located in areas already disturbed, as much as possible.
- Development of private parcels is anticipated to increase in the future, both on areas with existing improvements as well as private parcels that currently do not have improvements. Currently 49 percent (94,600 acres) of the non-forest system land within the forest boundary has some type of improvement. Conversely, 51 percent (95,200 acres) of the non-forest system land within the forest boundary does not currently have any improvements, but has the potential to be developed in the future. Much of this land is located in the San Juans Geographic Area.

Management Implications

- Human disturbance associated with increasing recreational use (both developed and dispersed) will make areas within the influence zone (1/2 mile buffers) less and less effective habitat for wildlife species. As a result, those areas outside of the influence zone will become more and more important. Also as a result of increasing recreation and less effective habitats, habitats will become more fragmented, potentially resulting in reduced populations and reduced opportunities for different populations of the same species to interact.
- Future development on private land inholdings has similar potential for increased human disturbance as described above for recreation. In addition, there is the potential that private landowners and other public road agencies will require improved access to private land. This could result in widening, plowing and/or paving major access routes onto and through the GMUG.
- All the developments described in this section are currently and will continue to be included in the defined wildland urban interface (WUI). Management emphasis in these areas will be to provide protection for wildfire. As the value of improvements increases, the efforts to protect those improvements will also increase. WUI areas will be the focus of much future activities and future budgets.