CHAPTER 3. LANDSCAPE DISTURBANCES

Road and Trail Distribution – San Juans

This section evaluates the pattern of road and trail distribution on the San Juans Geographic Area and the associated influences of this transportation network on vegetation and habitat. Both direct and indirect effects of roads and trails are discussed.

Existing Roads and Trails

Travel management planning efforts have been ongoing on the San Juans Geographic Area over the past fifteen years. As a result, inventories of existing roads and trails are relatively complete. For the Uncompahgre (Uncompahgre Plateau and San Juans Geographic Areas) National Forest, route by route determinations were made in 2002 identifying which roads and trails will be maintained as part of the transportation system, what types of use will be allowed on those routes, and which routes will be eliminated, or decommissioned.

All existing roads and trails known to occur on the San Juans Geographic Area were considered in this evaluation. For roads, this includes both classified or system roads (National Forest System Roads, county roads, state highways, federal highways, privately owned roads, Forest Service authorized roads) and unclassified roads (roads not currently identified as part of any of the above referenced systems). Roads are further categorized by maintenance level which relates to the type of road surface and type of vehicle: Level 1 – closed more than one year or administrative use only, level 2 – rough, high clearance vehicles, level 3 – native to gravel surface, passenger vehicles, level 4 – smooth gravel surface, passenger vehicles, level 5 – dust-free-possibly paved, passenger vehicles. The majority of roads on the San Juans Geographic Area are Level 2 roads.

Trails are also divided between classified (or system) and unclassified trails. Trail use can be separated by motorized (ATV and motorcycle) and non-motorized (mountain bike, pack animal, hiker) uses.

On the Uncompahgre National Forests, unclassified roads and trails will be or have recently been decommissioned as the Travel Management Plan decisions are implemented. Because these routes are mostly still visible on the ground and habitat is or has recently been affected, all unclassified roads and trails are considered in this evaluation.

To evaluate the direct influence roads and trails have on vegetation, the existing transportation inventory was compared to the existing vegetation cover. The following map (Figure 1) displays the road and trail transportation network. The following tables list the miles of roads (Tables 1 and 2) and trails (Table 3) that occur in the different cover types on the San Juans Geographic Area.

Figure 1. Map of Existing Roads and Trails, San Juans Geographic Area

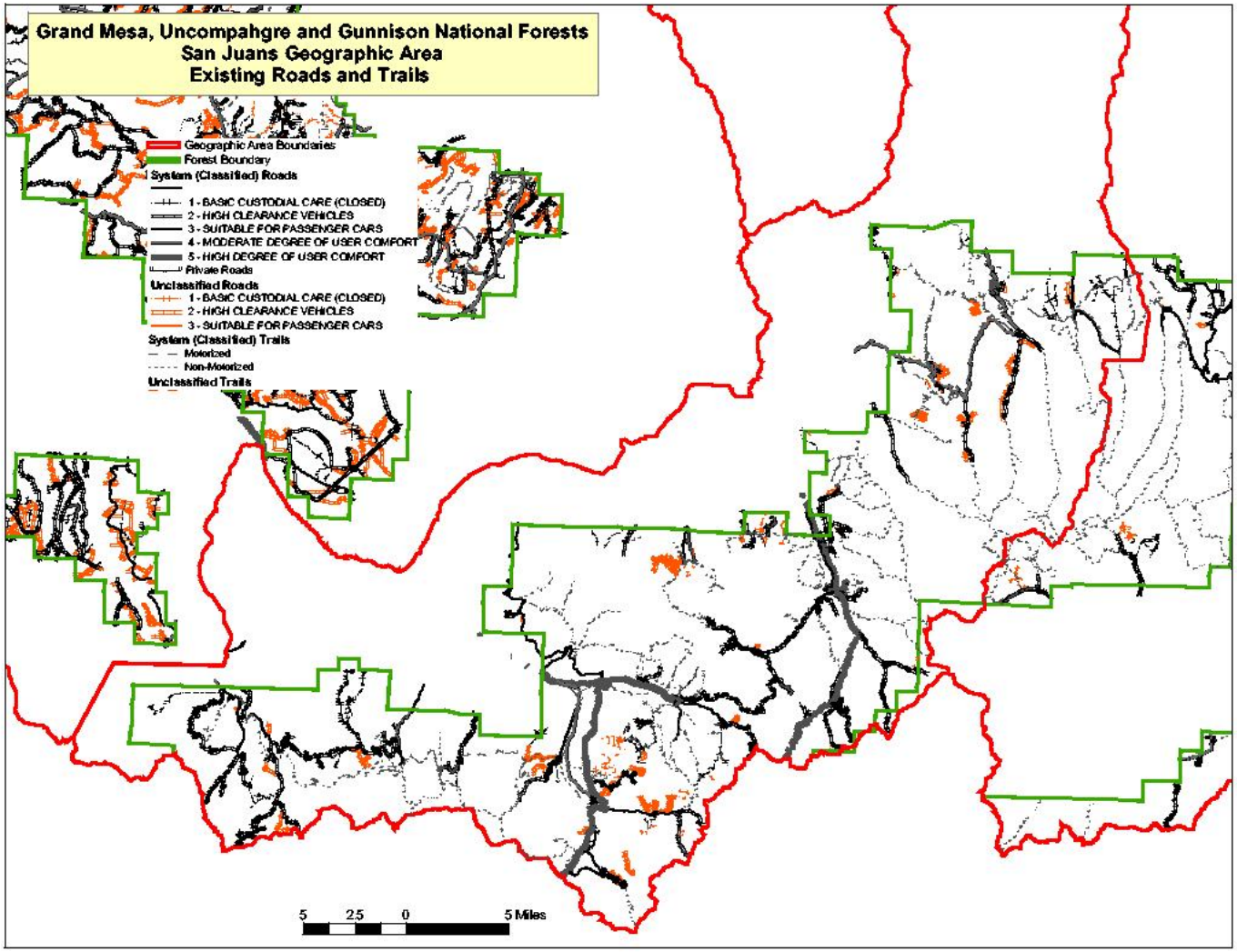

Table 1. Miles of Existing Roads within Different Cover Types, San Juans Geographic Area (System miles in unshaded rows, unclassified miles in shaded rows)

Cover Type	1 - BASIC CUSTODIAL CARE (CLOSED)	2 - HIGH CLEARANCE VEHICLES	3 - SUITABLE FOR PASSENGER CARS	4 - MODERATE DEGREE OF USER COMFORT	5 - HIGH DEGREE OF USER COMFORT	SubTotals*	Grand Total
Grass/Forb	15	43	21	7	11	97	**106**
	1	8	---	---	---	9	
Sagebrush	---	---	---	---	---	---	**---**
	---	---	---	---	---	---	
Gambel Oak	1	6	4	2	2	15	**16**
	---	1	---	---	---	1	
Mixed Mountain Shrub	<1	2	---	<1	<1	2	**2**
	---	---	---	---	---	---	
Snowberry	<1			<1	<1	<1	**<1**
		<1				<1	
Willow	2	5	2	2	5	16	**16**
		<1				<1	
Cottonwood		<1	2	1	1	5	**5**
	---	---	---	---	---	---	
Aspen	17	46	16	10	10	99	**113**
	---	14	---	---	---	14	
Pinyon/Juniper	<1	2	<1	<1	---	3	**3**
	---	<1	---	---	---	<1	
Ponderosa Pine	---	<1	<1	<1	<1	1	**1**
	---	---	---	---	---	---	
Lodgepole Pine	---	<1	---	---	---	<1	**4**
	---	3	---	---	---	3	
Limber Pine	---	---	---	---	---	---	**---**
	---	---	---	---	---	---	
Douglas-fir	---	1	2	1	2	5	**6**
	---	<1	---	---	---	<1	
Blue Spruce	---	<1	<1	---	---	<1	**<1**
	---	---	---	---	---	---	
Spruce/Fir	36	57	13	8	4	118	**148**
	<1	29	---	---	---	29	

Cover Type	1 - BASIC CUSTODIAL CARE (CLOSED)	2 - HIGH CLEARANCE VEHICLES	3 - SUITABLE FOR PASSENGER CARS	4 - MODERATE DEGREE OF USER COMFORT	5 - HIGH DEGREE OF USER COMFORT	SubTotals*	Grand Total
Bristlecone Pine	---	---	---	---	---	---	---
	---	---	---	---	---	---	
Bare/Rock	3	8	4	<1	6	22	**23**
	<1	1	---	---	---	1	
Water	<1	<1	---	---	---	<1	**<1**
	---	---	---	---	---	---	
Subtotal	74	171	66	33	41	384	**442**
	1	58	---	---	---	59	
Grand Total	**75**	**229**	**66**	**33**	**41**	**443**	**442**

Table 2. Miles of Existing Roads within Different Cover Types, San Juans Geographic Area

Cover Type	System Roads		Unclassified Roads		Total Road	
	Miles	**%**	**Miles**	**%**	**Miles**	**%**
Grass/Forb	97	25	9	16	106	24
Sagebrush	---	---	---	---	---	---
Gambel Oak	15	4	1	1	16	4
Mixed Mountain Shrub	2	1	---	---	2	<1
Snowberry	<1	<1	<1	<1	<1	<1
Willow	16	4	<1	1	16	4
Cottonwood	5	1	---	---	5	1
Aspen	99	26	14	24	113	26
Pinyon/Juniper	3	1	<1	<1	3	1
Ponderosa Pine	1	<1	---	---	1	<1
Lodgepole Pine	<1	<1	3	6	4	1
Limber Pine	---	---	---	---	---	---
Douglas-fir	5	1	<1	<1	6	1
Blue Spruce	<1	<1	---	---	<1	<1
Spruce/Fir	118	31	29	50	148	33
Bristlecone Pine	---	---	---	---	---	---
Bare/Rock	22	6	1	2	23	5
Water	<1	<1	---	---	<1	<1
Total	384		59		442	

More miles of roads occur in spruce/fir (33 percent) than in any other cover type on the San Juans Geographic Area, followed by aspen (26 percent), then grass/forb (24 percent) cover types. For system roads, the breakdown is similar to that for total roads. For unclassified roads, most are found in spruce/fir (50 percent), then aspen (24 percent), and grass/forb (16 percent). On the San Juan Geographic Area, most of the unclassified roads are old timber sale roads than have been identified as no longer serving a purpose, and they will be decommissioned as part of the Travel Plan decision.

Table 3. Miles of Existing Trails within Different Cover Types, San Juans Geographic Area

	System Trails				Unclassified Trails		Total Trail	
Cover Type	**Motorized**	**Non-Motorized**	**Miles**	**%**	**Miles**	**%**	**Miles**	**%**
Grass/Forb	6	68	74	21	4	14	78	20
Sagebrush	0	0	0	0	0	0	0	0
Gambel Oak	3	5	8	2	1	4	10	3
Mixed Mountain Shrub	0	0	1	0	0	0	1	0
Snowberry			0	0		0	0	0
Willow	0	9	9	3	1	2	9	2
Cottonwood			0	0		0	0	0
Aspen	20	72	93	26	8	27	100	26
Pinyon/Juniper		1	1	0		0	1	0
Ponderosa Pine			0	0		0	0	0
Lodgepole Pine		0	0	0	0	1	1	0
Limber Pine			0	0		0	0	0
Douglas-fir		1	1	0		0	1	0
Blue Spruce			0	0		0	0	0
Spruce/Fir	22	124	146	41	13	46	159	41
Bristlecone Pine			0	0		0	0	0
Bare/Rock	1	23	24	7	2	6	26	7
Water		1	1	0		0	1	0
Total	52	305	358		28		386	

More miles of trails occur in spruce/fir (41 percent) than in any other cover type, followed by aspen (26 percent), then grass/forb (20 percent) cover types. This distribution is similar for both system trails and unclassified trails.

Currently 93 percent of the existing trails are classified as system trails because of the recent travel management, and most of the system trails (85 percent) of the system trails are non-motorized, because they are within designated Wilderness areas. The unclassified trails have been or will be decommissioned as implementation of the Travel Plan continues.

Table 4 displays a comparison of the percentages of total road miles and total trail miles by cover type, to the percentages that each cover type occurs on the San Juan Geographic Area.

Table 4. Comparison of Distribution of Roads and Trails to Distribution of Cover Types, San Juans Geographic Area

Cover Type	% of Roads within Cover Type	% of Trails within Cover Type	Cover Type % of GMUG
Grass/Forb	24	20	18
Sagebrush	---	0	<1
Gambel Oak	4	3	2
Mixed Mountain Shrub	<1	0	<1
Snowberry	<1	0	<1
Willow	4	2	2
Cottonwood	1	0	<1
Aspen	26	26	20
Pinyon/Juniper	1	0	<1
Ponderosa Pine	<1	0	<1
Lodgepole Pine	1	0	<1
Limber Pine	---	0	
Douglas-fir	1	0	1
Blue Spruce	<1	0	<1
Spruce/Fir	33	41	37
Bristlecone Pine	---	0	
Bare/Rock	5	7	20
Water	<1	0	<1

There are proportionately more roads in grass/forb, Gambel oak, willow, and aspen than would be expected if roads were equally distributed across all cover types. In contrast, there are proportionately less roads in spruce/fir and bare/rock cover types. Lower elevations and lower elevation cover types have more roads. A large percent of the higher elevations are included in designated Wilderness areas, where roads do not occur.

For trails, there are proportionately more trails in spruce/fir, aspen and grass/forb cover types and less trails in bare/rock cover types than would be expected is trails were equally distributed across the Geographic Area. As mentioned before, most trails are within Wilderness areas (alpine meadows, aspen and spruce/fir), however trails tend to avoid most steep areas (bare/rock).

Areas Influenced by Existing Roads and Trails

Direct and indirect effects from transportation networks and the use of those networks have been shown to influence areas up to ½ mile away from a given road or trail. To evaluate the amount of area potentially affected by existing roads and trails on the San Juans Geographic Area, the existing transportation network was buffered by ½ mile on either side. Figure 2 shows the extent of area within ½ mile of an existing road, Figure 3 shows the extent of area within ½ mile of an existing trail, and Figure 4 shows the combined area of the San Juans Geographic Area that is within ½ mile of either an existing road or trail.

Table 5 lists the acres by cover type that are within ½ mile of an existing road or trail on the San Juans Geographic Area. This table also shows the percentage of the total buffer area that is comprised by each given cover type, the percentage of the total cover type

that occurs within ½ mile of an existing route, as well as the acres and percentage of the total cover type that is not within ½ mile of an existing route.

Seventy-one percent of the San Juans Geographic Area is within ½ mile of an existing road or trail. This is less than the forest-wide amount of 80 percent. It is also the smallest percentage of all the five geographic areas. Spruce/fir, aspen and grass/forb cover types make up the bulk of the acres within the buffer around existing transportation routes (40, 23, and 18 percent, respectively). However, the majority of all cover types, except bare/rock on the San Juans Geographic Area lie within ½ mile of an existing road or trail.

Bare/rock, spruce/fir, and grass/forb cover types make up the bulk of the acreage that is outside the ½ mile buffer around existing roads and trails (35, 32 and 17 percent, respectively). Converse to the above situation, the minority of all cover types, except bare/rock, on the San Juans Geographic Area are outside the area of influence from roads and trails. Most of the bare/rock cover type is above timberline, in Wilderness areas.

Figure 2. Area Within ½ Mile Of An Existing Road, San Juans Geographic Area

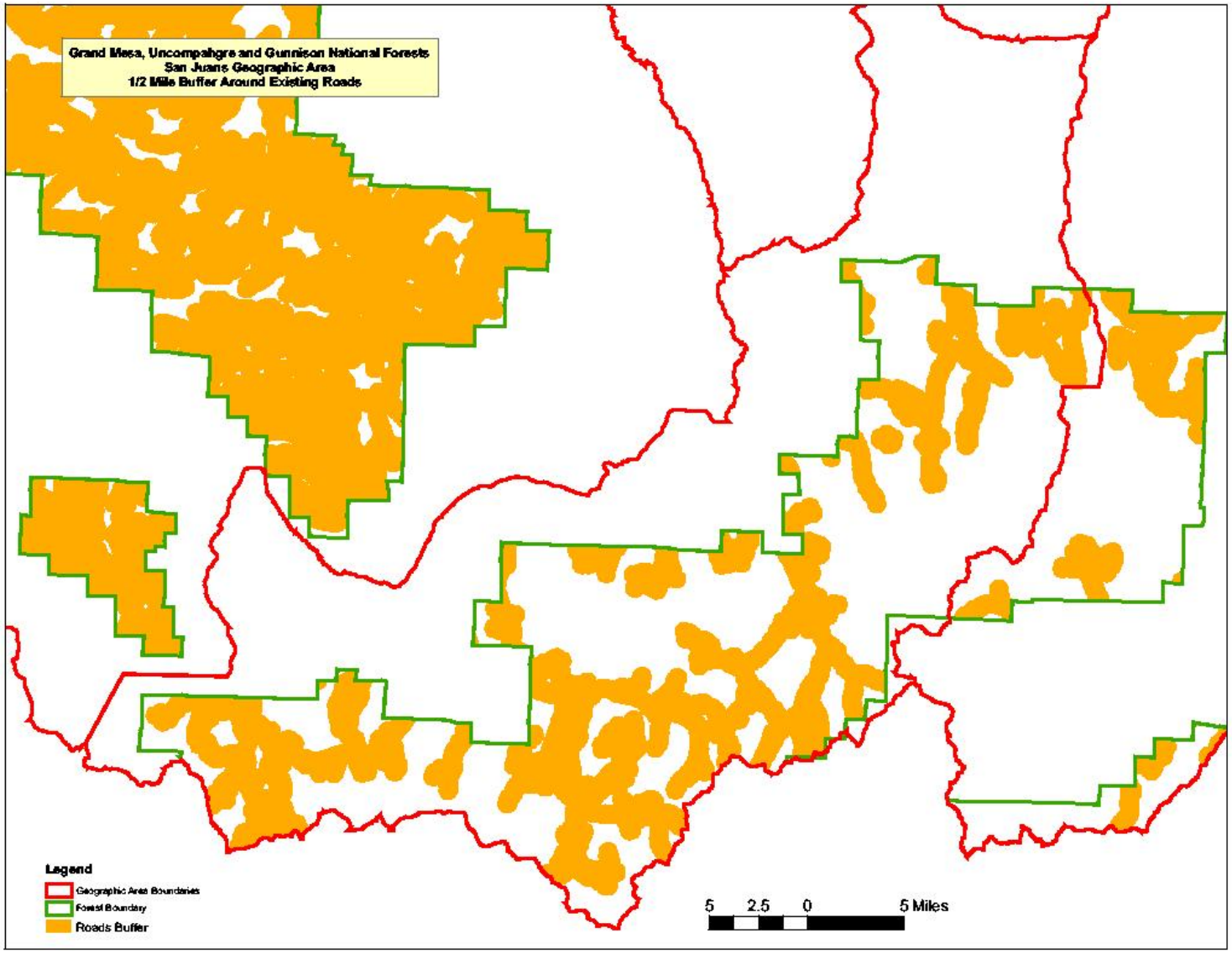

Figure 3. Area Within ½ Mile Of An Existing Trail, San Juans Geographic Area

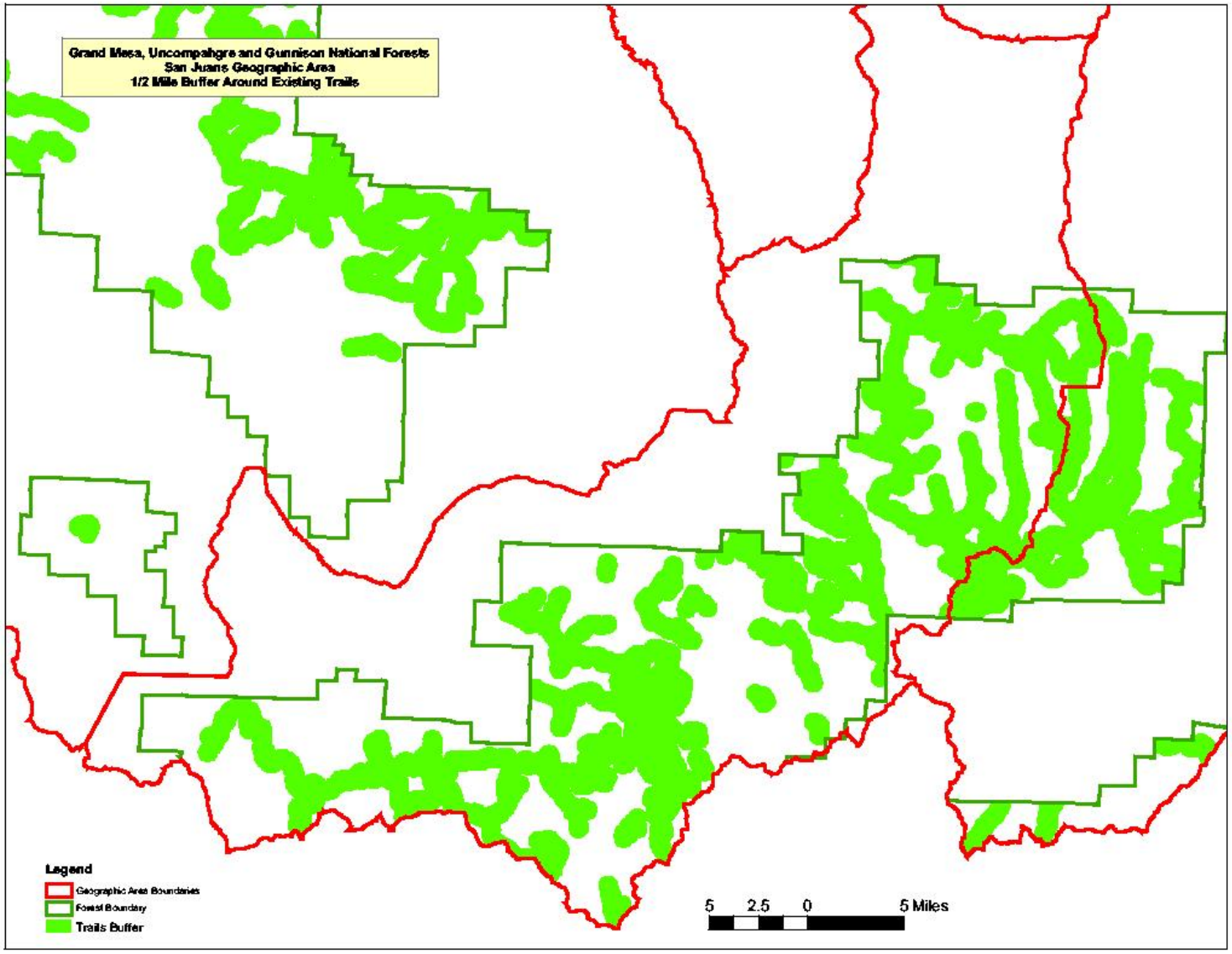

Figure 4. Area Within ½ Mile Of An Existing Road or Trail, San Juans Geographic Area

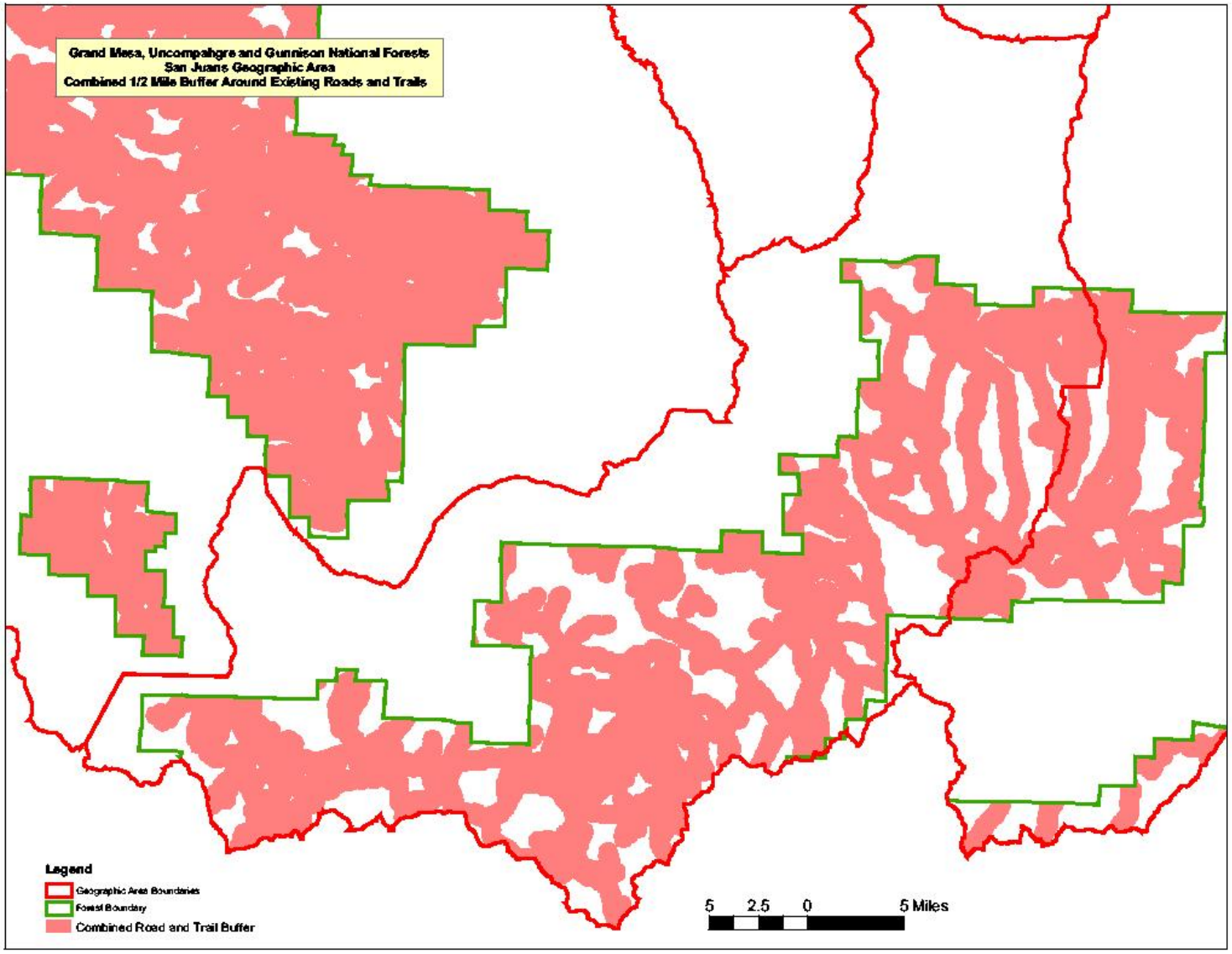

Table 5. Relative Amounts Of Acres In Cover Type, Inside And Outside Of ½ Mile Buffer Around Existing Routes, San Juans Geographic Area

Cover Type	Total Acres (GMUG)	Acres in Buffer	% of Buffer	% of Total Cover Type in Buffer	Acres Outside 1/2 mile Buffer	% of Area Outside of Buffer	% of Total Cover Type Outside Buffer
Grass/Forb	63,929	45,891	18	72	18,038	17	28
Sagebrush	351	184	0	52	167	0	48
Gambel Oak	6,079	4,625	2	76	1,454	1	24
Mixed Mountain Shrub	701	611	0	87	90	0	13
Snowberry	205	171	0	84	33	0	16
Willow	6,837	5,269	2	77	1,567	2	23
Cottonwood	343	296	0	86	47	0	14
Aspen	70,076	57,684	23	82	12,392	12	18
Pinyon/Juniper	657	571	0	87	86	0	13
Ponderosa Pine	458	406	0	89	52	0	11
Lodgepole Pine	203	203	0	100		0	0
Limber Pine							
Douglas-fir	2,179	1,657	1	76	523	1	24
Blue Spruce	34	32	0	94	2	0	6
Spruce/Fir	133,570	100,874	40	76	32,696	32	24
Bristlecone Pine							
Bare/Rock	71,060	34,956	14	49	36,104	35	51
Water	853	810	0	95	43	0	5
Grand Total	357,535	254,241		71	103,294		29

Key Findings

- Miles of existing (known) road network on the San Juans Geographic Area

System	Unclassified	Total
384	59	442

- Roads occur mostly in spruce/fir (33 percent), aspen (26 percent), and grass/forb (24 percent) cover types.

- Miles of existing (known) trail network on the San Juans Geographic Area

SystemTrails			Unclassified Trails	Total Trail Miles
Motorized	Non-motorized	System Subtotal		
52	**305**	**358**	**28**	**386**

- Trails occur mostly in spruce/fir (41 percent), aspen (26 percent), and then grass/forb (20 percent) cover types.

- Seventy-one percent of the San Juans Geographic Area is within ½ mile of an existing road or trail. This is the smallest percentage of all the Geographic Areas.

- Seventy-two percent or more of most cover types on the San Juans Geographic Area occur within the ½ mile buffer.

Trends

- Because the existing road network is so extensive, the potential for future road development is low. Any new road construction that does occur will be associated with either oil and gas development or timber management, and these new roads will only be open to administrative traffic and/or temporary in nature.

Management Implications

- Implementation of the Uncompahgre National Forest travel management decisions will eliminate unclassified routes. This will reduce the impact of existing roads and trails by a relatively small amount in the San Juan Geographic Area because few unclassified routes occur on this area.

- Because route-by-route decisions have been made which considered both resource management needs and recreation opportunities, opportunities for new roads and/or trails may be restricted by route density limitations.