

## ***Methods - Description of Treatment Areas***

The following descriptions briefly describe the number of acres treated, month and year of the treatment, the type of treatment utilized, purpose and/or need for the treatment, and the agency responsible for the treatment. Generally, each area was given a name that was derived from a map location, but not always.

The site identifications (site IDs) used in this study are noted in parentheses, and were the sites sampled during July, August, September and October of 2000. Site IDs were given to quickly give the location of the site, which unit was sampled, whether the unit was fenced and with what type/height of fence, whether the sample was taken inside or outside of the fence and a hyphenated letter, which was assigned alphabetically (A-Z, then AA-AG) in the field at the time of sampling as a quick way of keeping the tally sheets organized. Once back in the office, GPS locations gathered in the field were mapped and associated with a particular harvest unit or treatment area.

For example, BH1win-F is shorthand for Briggs Hollow Unit 1 inside the wildlife enclosure (9-foot fence) and the F means that it was the sixth site sampled during the season. Other abbreviations used include "wout" for outside the wildlife enclosure), "cin" for inside the cattle enclosure (4-foot fence), "cout" for outside the cattle enclosure, and "ufd" for unfenced. In the case of the Oldroyd Fire, the lower case letters indicate where within the fire perimeter the sample was generally located, such as "ece" stands for east center and east of the trail, "rw" means a ridge top west of the trail, "nw" is northwest and "sc" means small creek.

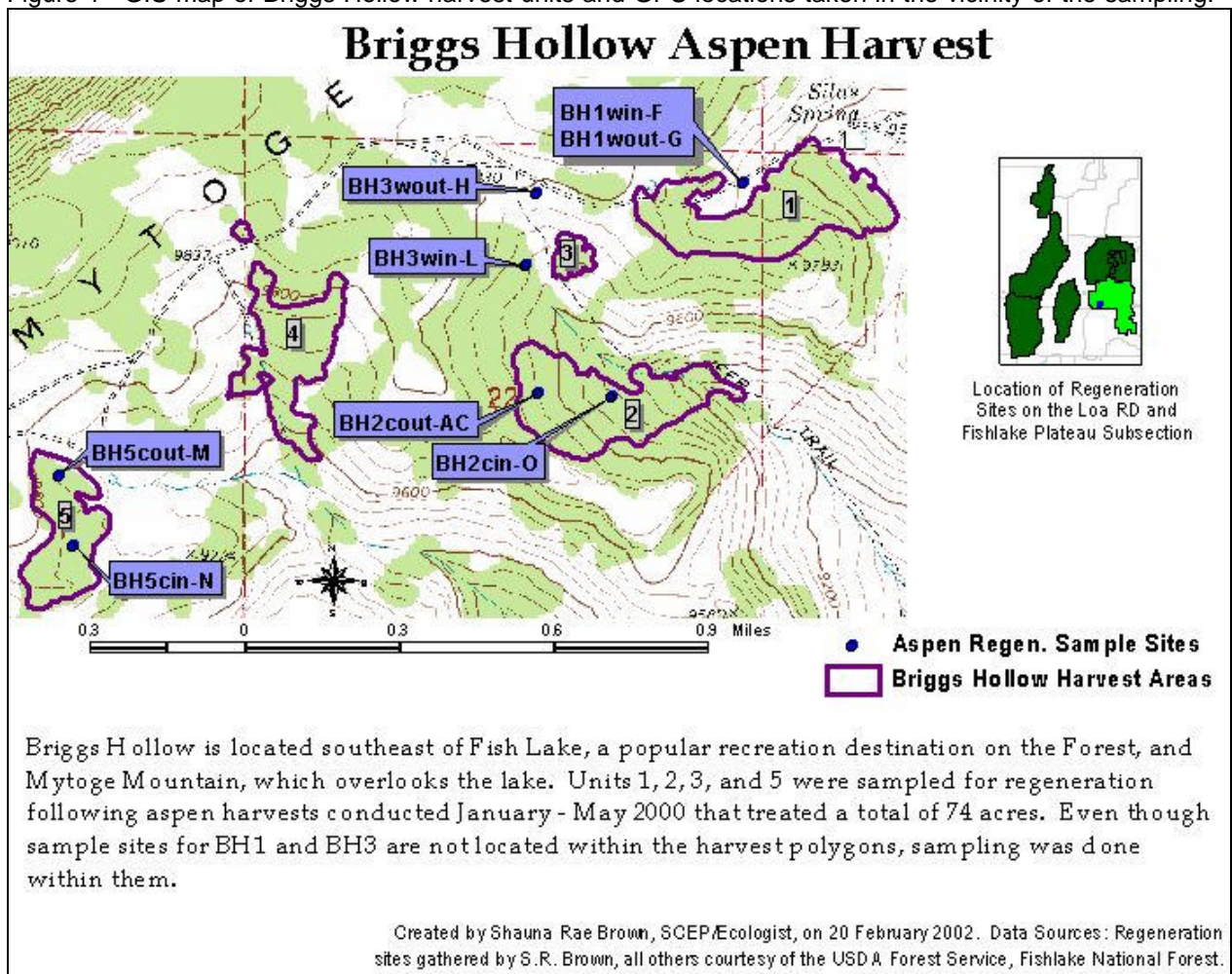
The sites sampled were located on three ecological subsections (Fishlake Plateau, Monroe Mountain, Tushar Mountains) and three forest ranger districts (Beaver, Loa, Richfield). All sites sampled were above 9,000 feet above sea level, and ranged from 9,111 to 10,039 feet.

The GPS locations noted were gathered only at the sites sampled. They are all in UTM projection, Zone 12, NAD27 datum (Wanda Bennett, personal communication).

## Fishlake Plateau Subsection

### *Briggs Hollow*

Figure 4 - GIS map of Briggs Hollow harvest units and GPS locations taken in the vicinity of the sampling.



The Briggs Hollow treatment area involved five units in which the sites were clearcut.

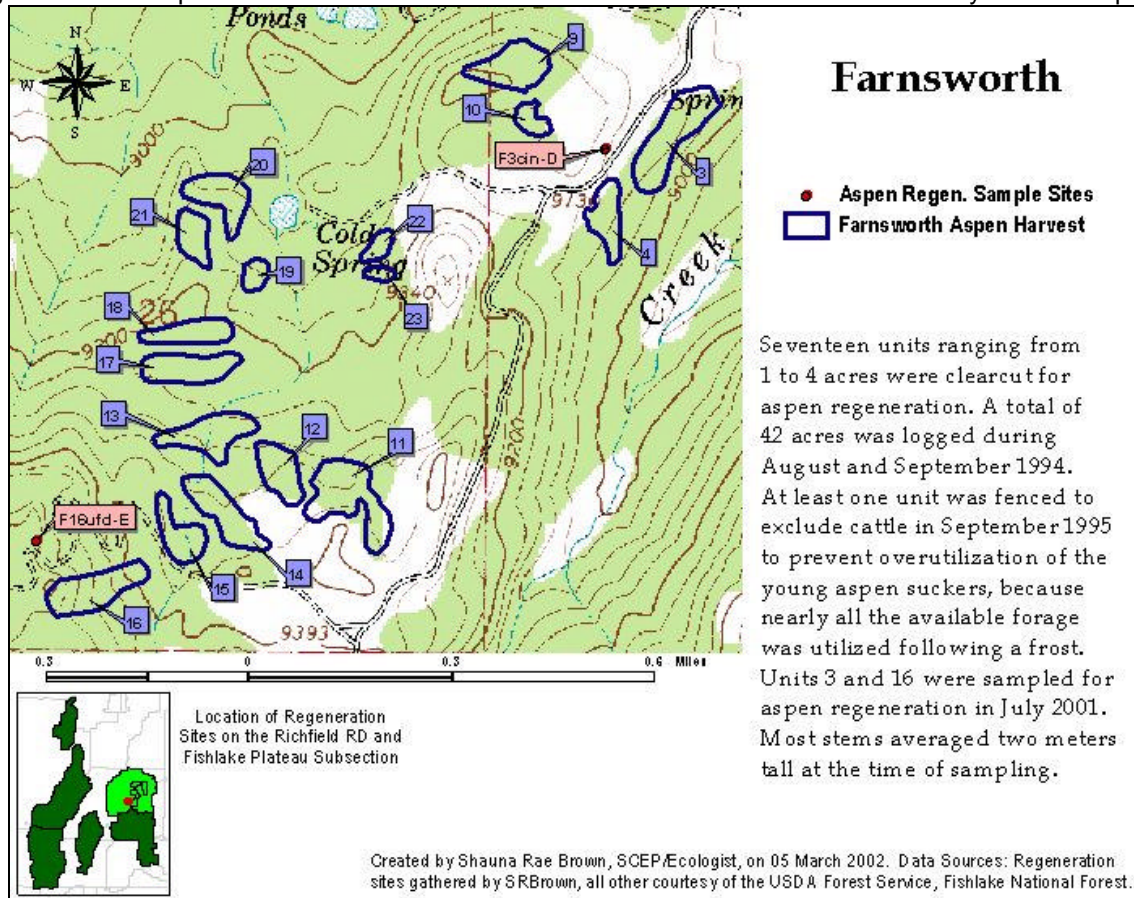
The five units treated 74 acres. The units were cut January - May 2000 and then fenced shortly

thereafter, prior to cattle being released on the allotment. Briggs Hollow lies within the Seven-Mile grazing allotment. The allotment was grazed June 1 through October 16 in 2000 and 2001, by 1,199 cattle in 2000 and 1,129 cattle in 2001. The fences installed around units 1 (BH1win-F, BH1wout-G) and 3 (BH3win-L, BH3wout-H) were 9-foot wildlife exclosures, which effectively keep all large grazing mammals out, as a strategy to give relief from grazing pressure during the time when young ramets are most at risk to herbivory. Unit 2 (BH2cin-O, BH2cout-AC), 4 and 5 (BH5cin-N, BH5cout-M) were fenced with cattle exclosures, which are 4-foot fences. Units 1, 2, 3 and 5 were sampled for aspen regeneration inside and outside of the exclosures.

Table 4 - Briggs Hollow Treatment Area Summary						
Unit	GPS Location	Elevation	Acres	Treated	Fenced	Fence Type
BH1	441585.97 E 4265814.79 N	9682 ft.	19	January 2000	Before mid-June 2000	Wildlife exclosure
BH2	440943.55 E 4265155.87 N	9708 ft.	26	Feb. - April 2000	Before mid-June 2000	Cattle exclosure
BH3	440909.38 E 4265557.87 N	9660 ft.	3	May 2000	Before mid-June 2000	Wildlife exclosure
BH4	not sampled	unknown	16	May 2000	Before mid-June 2000	Cattle exclosure
BH5	439451.76 E 4264902.94 N	9760 ft.	10	May 2000	Before mid-June 2000	Cattle exclosure

**Farnsworth** (F3cin-D, F16ufd-E): Seventeen units ranging from 1 to 4 acres were clearcut for aspen regeneration. A total of 42 acres was logged during August and September 1994. At least one unit was fenced with a cattle exclosure in September 1995 to prevent over-utilization of the young aspen suckers, because nearly all the newly sprouted suckers were utilized following a frost. The two sites sampled were above 9,000 feet above sea level (F3cin-D = 9,143 ft., and F16ufd-E = 9,420 ft.).

Figure 5 - GIS map of Farnsworth harvest units and GPS locations taken in the vicinity of the sampling.

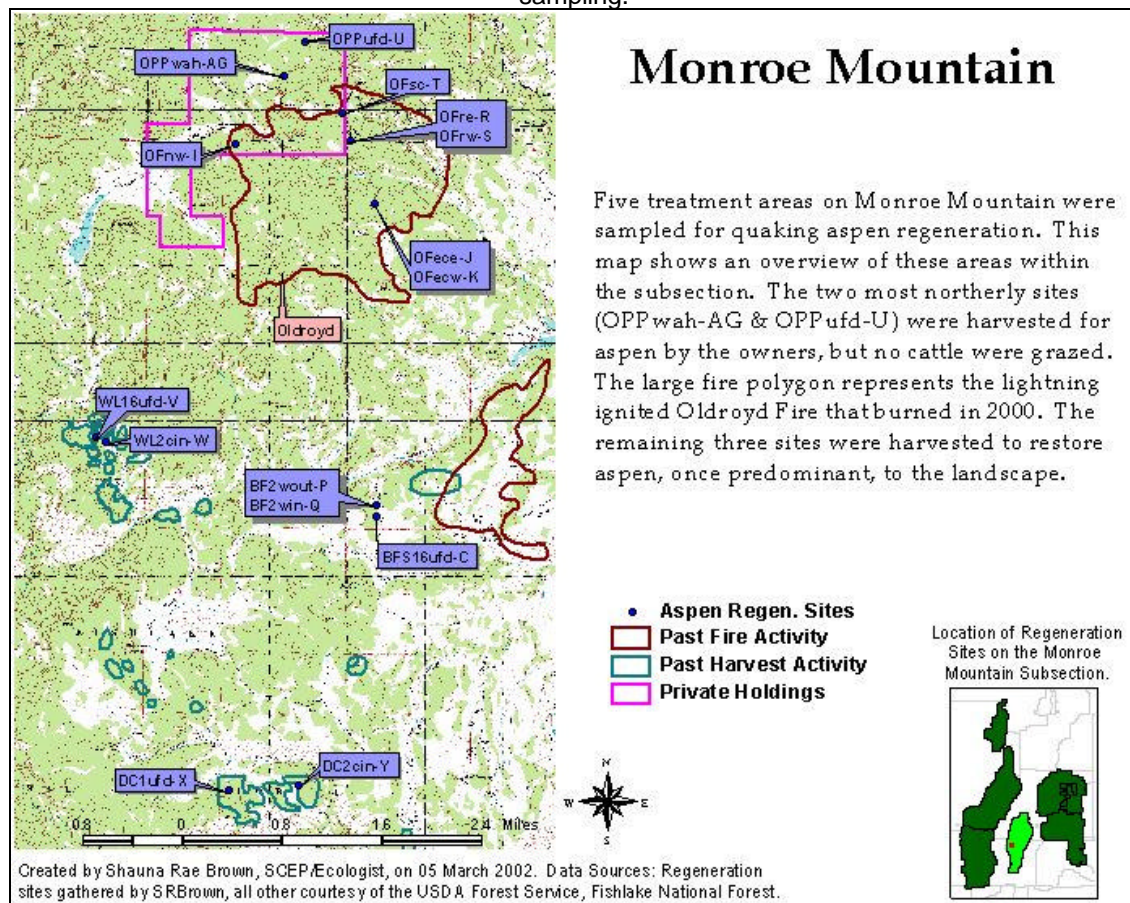


Unit	GPS Location	Acres	Fenced	Fence Type	Unit	GPS Location	Acres	Fenced
F3	444439.94 E 4292720.08 N	3	Sept. 1995	Cattle enclosure	F16	443086.88 E 4291786.40 N	2	no
F4	not sampled	1	no	~	F17	not sampled	3	no
F9	not sampled	4	no	~	F18	not sampled	3	no
F10	not sampled	2	no	~	F19	not sampled	1	no
F11	not sampled	5	no	~	F20	not sampled	3	no
F12	not sampled	2	no	~	F21	not sampled	1	no
F13	not sampled	4	no	~	F22	not sampled	2	no
F14	not sampled	3	no	~	F23	not sampled	1	no
F15	not sampled	2	no	~				

## **Monroe Mountain Subsection**

According to Chappell (1997), the Monroe Mountain Subsection ranges in elevation from 5120 feet on the Sevier Valley floor to 11,227 feet on Monroe Peak. Approximately 175,000 acres of the subsection is managed by the Fishlake National Forest. Utah Division of Wildlife Resources (Utah DWR) holds an annual "limited entry bull elk hunt", and manages the herd for trophy bull elk. According to the 2001 Utah Big Game Proclamation (p. 59), there are approximately 1,800 elk and 7,500 mule deer that live within their wildlife management unit, whose boundaries generally follow the subsection's outline. The elk population has been steadily increasing since at least 1993 from around 600-800 animals. I was not able to find similar population estimates for mule deer, except as referenced in the Monroe Mountain Common Ground Initiative Charter for 1993-1998 (Appendix D), which estimated "over 5000 deer" in 1993. In 2001, Utah DWR (2001 Utah Big Game Proclamation) set the management objective to 7,500. The number of cattle grazed on the mountain have been steadily reduced since the 1930s.

Figure 6 - GIS map of the Monroe Mountain treatment areas & GPS locations taken in the vicinity of the sampling.



**Burnt Flat** (BF2win-Q, BF2wout-P, BFS16ufd-C): The State of Utah School and Institutional Trust Lands Administration originally managed the three sites sampled and they were responsible for the aspen timber harvest. The areas were treated by clearcutting in June and July 1997. Neither area was fenced other than a small (less than ¼ acre) temporary wildlife exclosure, which was installed just after the harvest was finished as a control for monitoring aspen regeneration and to test the fencing material’s use for wildlife exclosures. Following the harvest, this section was exchanged with the Fishlake National Forest. Burnt Flat lies within the Koosharem grazing allotment. Cattle are annually released onto the allotment on June 1, and must be removed by October 15. In 1996, 665 cattle grazed the allotment. The number of cattle

permitted to graze was increased to 710 in 1997 & 1998, to 810 in 1999, then down to 670 in 2000, and back up again to 735 in 2001.

Figure 7 - GIS map of the Burnt Flat area harvested by the State of Utah School and Institutional Trust Lands Administration and GPS locations taken in the vicinity of the sampling.

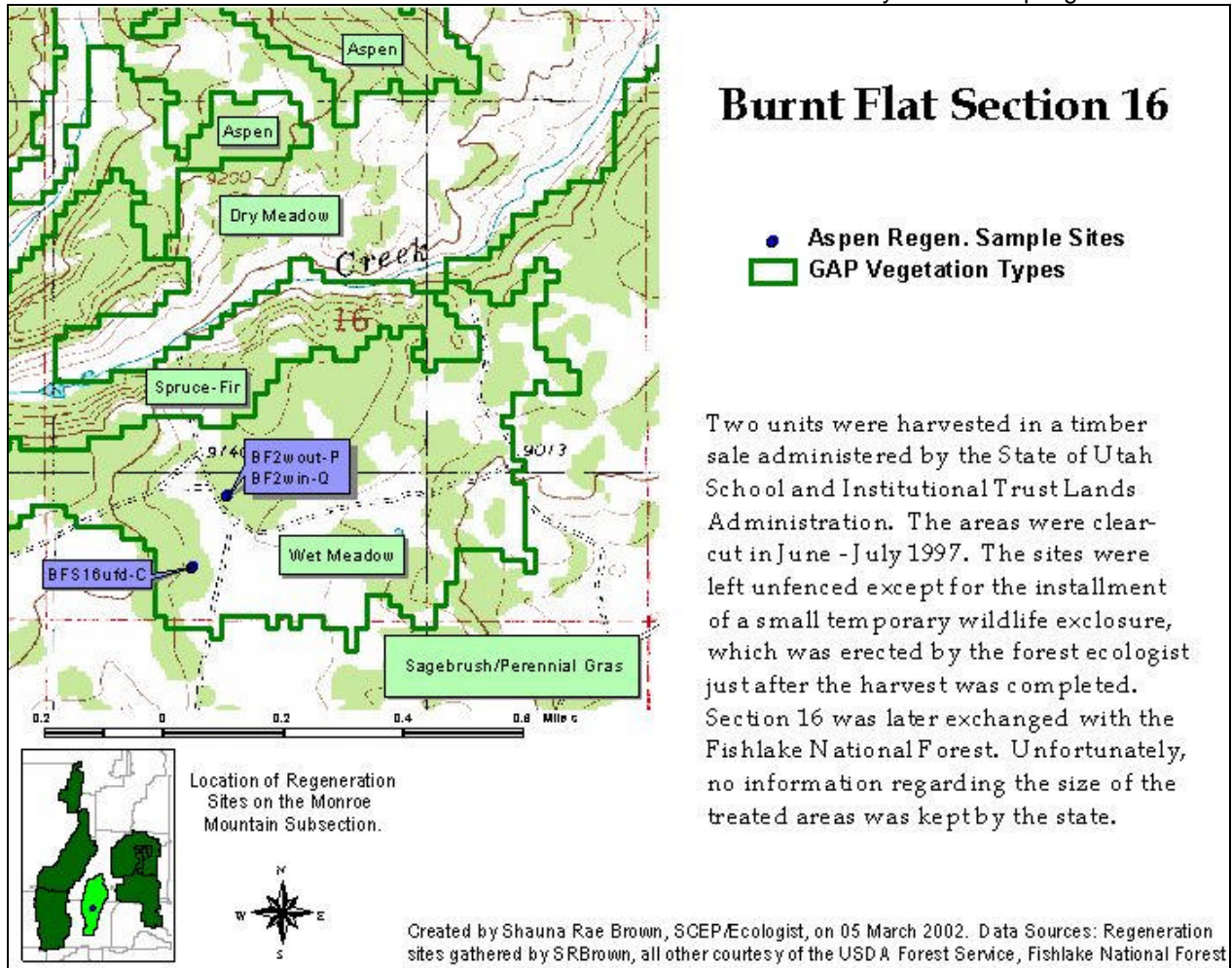


Table 6 - Burnt Flat Treatment Area Summary

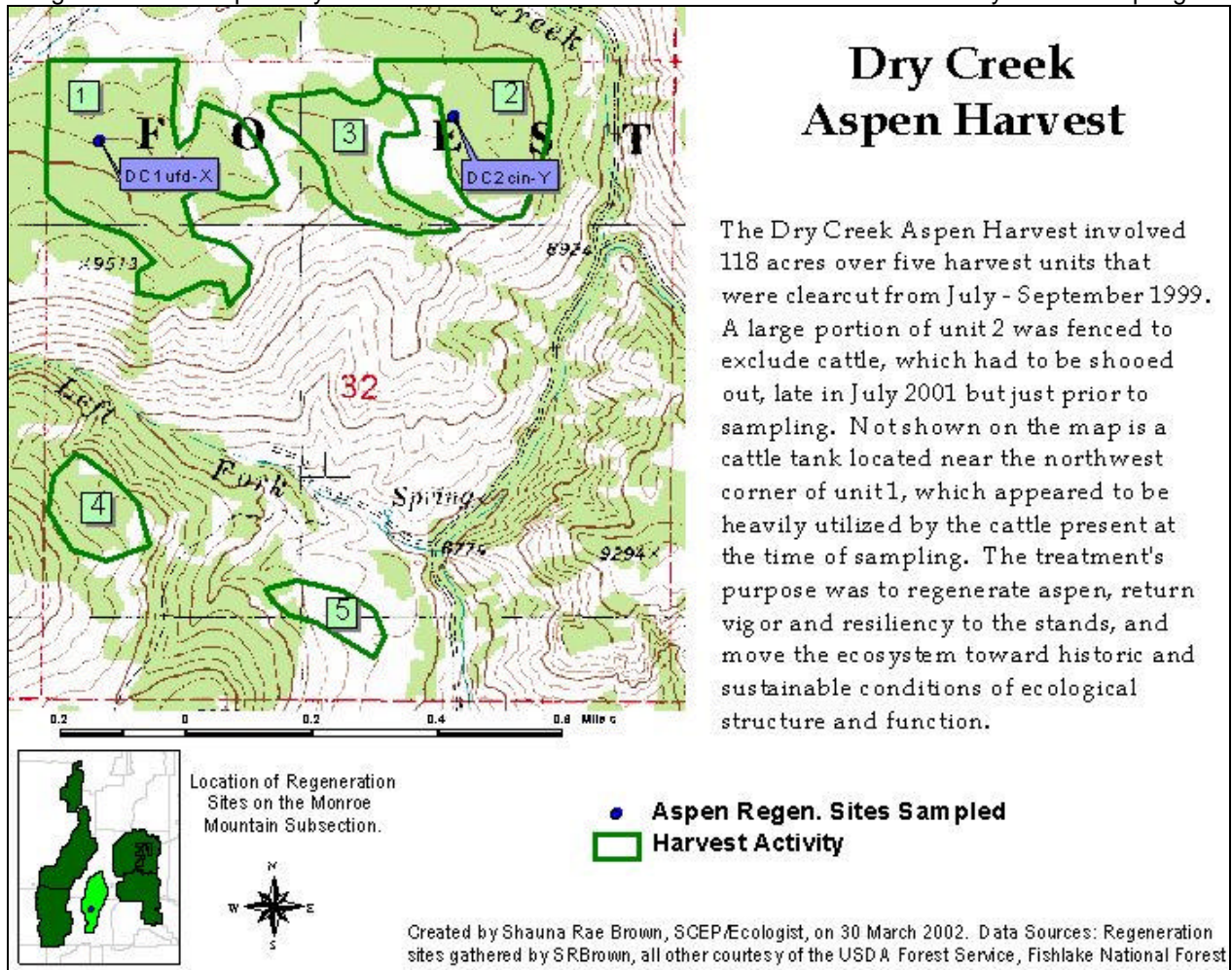
Unit	GPS Location	Elevation	Acres	Treated	Fenced	Fence Type
BFS16	410375.84 E 4256741.04 N	9111 ft.	?	1996-1997	no	~
BF2	410392.03 E 4256888.82 N	9171 ft.	?	June - July 1997	July 1997	temporary wildlife enclosure (control plot)

**Dry Creek** (DC2cin-Y, DC1ufd-X): The Dry Creek treatment area is located on Monroe Mountain. The purpose of the clearcut treatment was to regenerate the aspen, return vigor and resiliency to the stands, and move the ecosystem toward historic and sustainable conditions of ecological structure and function. Five units were logged from July through September 1999 totaling 118 acres. Following the harvest, the slash was left in place to allow regenerating aspen some cover from herbivory. Additionally, a cattle enclosure was put up around unit 2 late in July 2001. Units 1 & 2 were sampled for aspen regeneration in early August 2001. The Dry Creek units are located within the Rock Springs cattle allotment. In 1999 and 2000, 94 cattle grazed the allotment, and in 2001 that number increased to 155. It is also important to note that at the bottom of the hill towards the northwest corner of unit 1 (DC1ufd-X), a truck had gotten stuck in a low spot that later became a natural watering hole.

Table 7 - Dry Creek Treatment Area Summary						
Unit	GPS Location	Elevation	Acres	Treated	Fenced	Fence Type
DC1	408488.53 E 4253211.05 N	9345 ft.	54	Jan., Jul.-Sep. 1999	no	~
DC2	409391.40 E 4253274.81 N	9259 ft.	27	Jan., Jul.-Sep. 1999	July 2001	Cattle enclosure
DC3	not sampled	unknown	19	Jan., Jul.-Sep. 1999	no	~
DC4	not sampled	unknown	11	May - Sept. 2000	no	~
DC5	not sampled	unknown	7	May - Sept. 2000	no	~

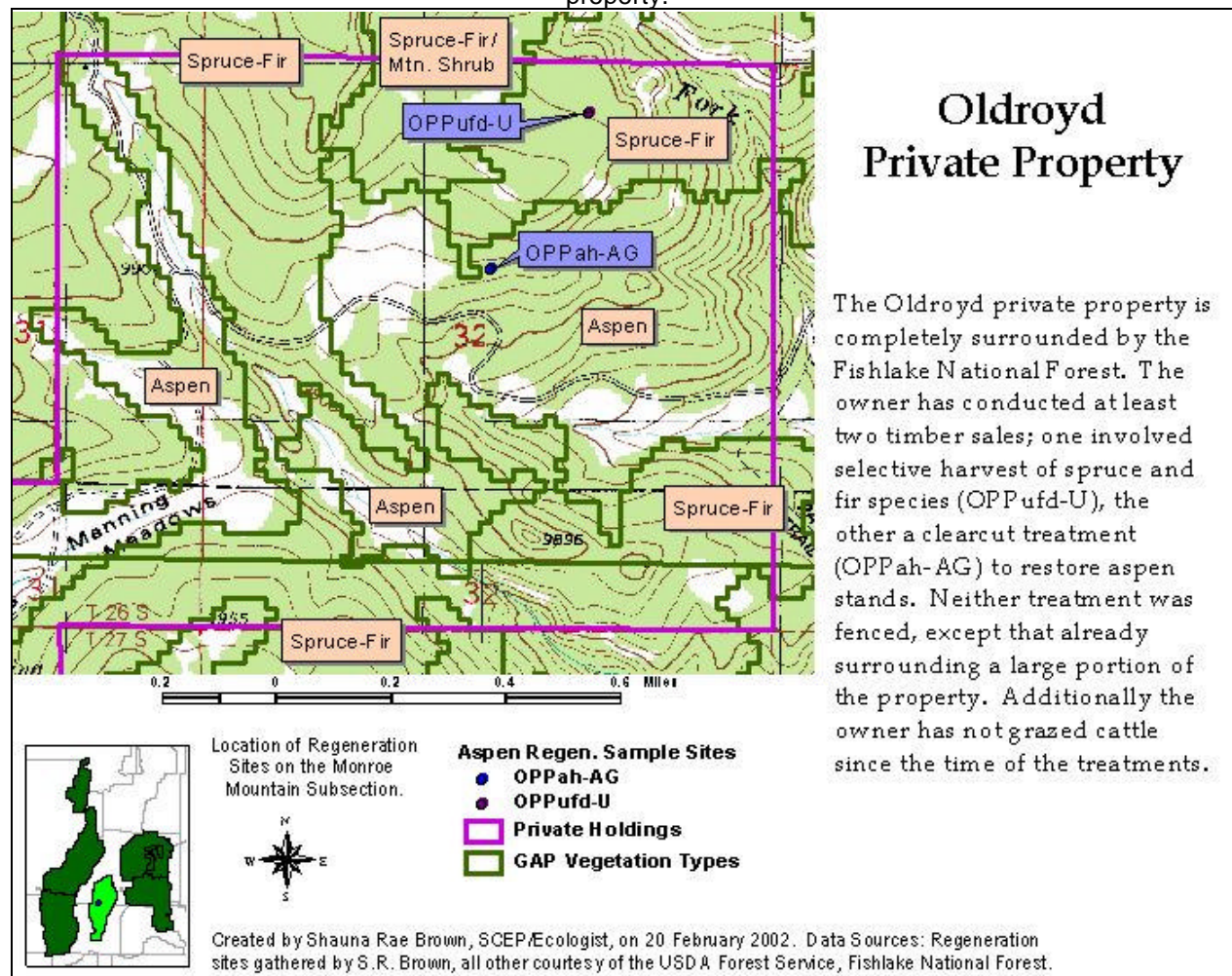


Figure 8 - GIS map of Dry Creek harvest units and GPS locations taken in the vicinity of the sampling.



**Oldroyd Private Property (OPPufd-U, OPPah-AG):** These sites were sampled for aspen regeneration in August and October 2001 respectively. The property, which is completely surrounded by the Fishlake National Forest, is privately owned and the owner conducted the timber sales. Additionally, the owner has not grazed cattle on the property since the harvests in 1996. OPPufd-U was a selective conifer harvest. OPPah-AG was an aspen/spruce/fir clearcut harvest, but it was also expected to promote aspen regeneration. Both harvests were completed during the summer of 1996.

Figure 9 - GIS map of GPS locations taken in the vicinity of the sampled locations on the Oldroyd private property.



Site ID	GPS Location	Elevation	Harvest Type	Harvested
OPPufd-U	409470.39 E 4262861.03 N	10029 ft.	Selective Conifer	Summer 1996
OPPah-AG	409346.95 E 4262393.29 N	9930 ft.	Aspen/Spruce/Fir Clearcut	Summer 1996

**White Ledge (WL2cin-W, WL16ufd-V):** The White Ledge treatment area is located on Monroe Mountain. The purpose of the clearcut treatments were to regenerate the aspen, return vigor and resiliency to the stands, and move the ecosystem toward historic and sustainable conditions of ecological structure and function. Fourteen units ranging in size from 1 to 28 acres were clearcut

with 111 total acres treated. The harvest or clearcut portion of the treatment began in 1996 and was completed in August 1999. The treatment area, except unit 12, was burned following the harvest in October 1999 to remove the remaining conifer saplings and logging residuals, and promote aspen regeneration. Only one of the units, Unit 2, was fenced with a cattle enclosure to reduce herbivory on the regenerating suckers, but it still allows wildlife access. It was also believed that by treating such a large area that the animals would be distributed over the treatment area thus moderating utilization. Units 2 and 16 were sampled 02 August 2001, are located adjacent to each other and are 9481 & 9538 ft. above sea level respectively. The White Ledge treatments are located within the Manning Creek allotment, and 142 cattle were grazed annually from June 15 through September 30 in 1996 through 2001.

Figure 10 - GIS map of White Ledge harvest units and GPS locations taken in the vicinity of the sampling.

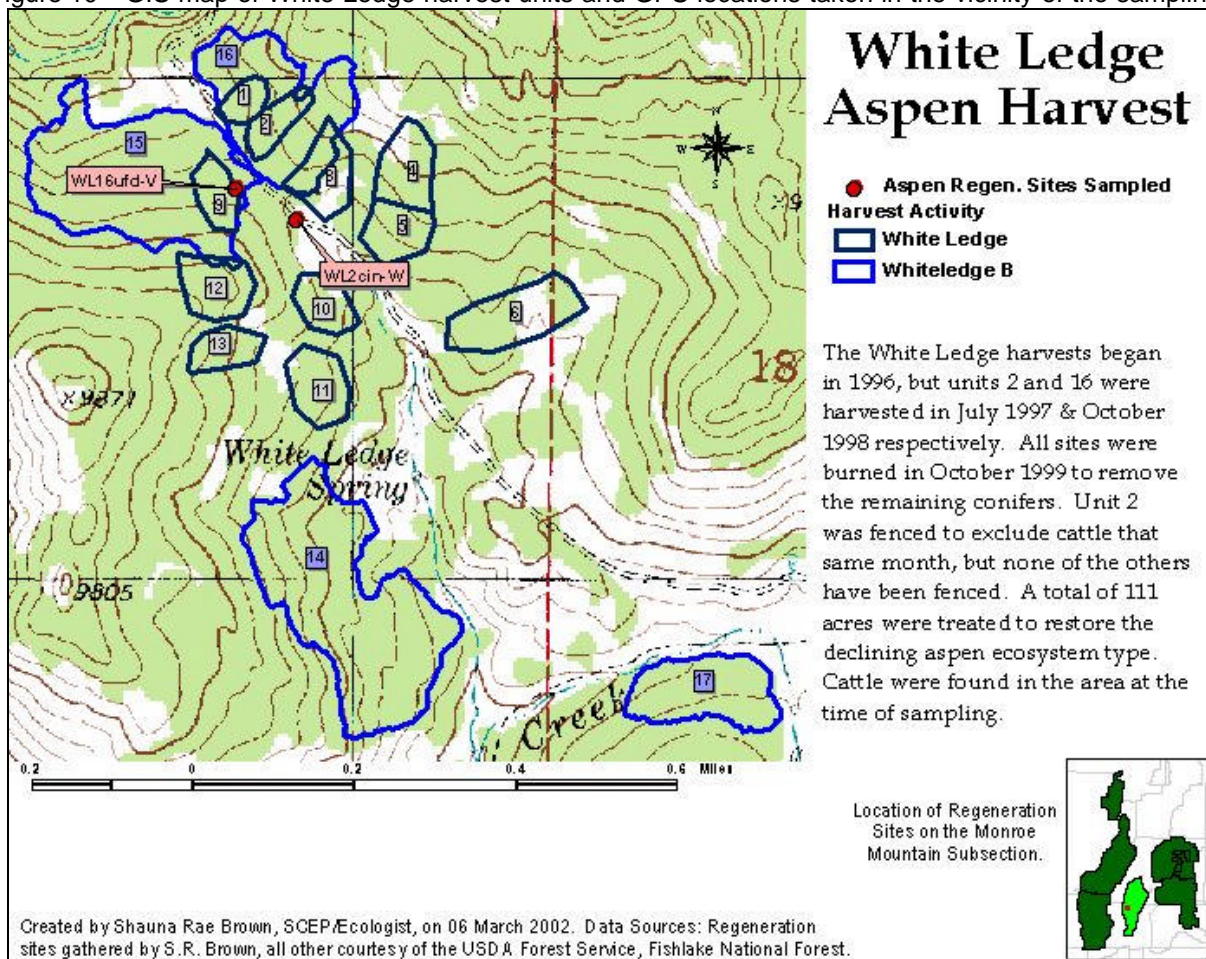


Table 9 - White Ledge Treatment Area Summary						
Unit	GPS Location	Acres	Harvest	Burned	Fenced	Fence Type
WL2	406891.58 E 4257711.56 N	2	July 1997	October 1999	October 1999	Cattle Exclosure
WL3	not sampled	4	1996	October 1999	no	~
WL4	not sampled	5	1996	October 1999	no	~
WL5	not sampled	3	1996	October 1999	no	~
WL6	not sampled	5	1998	October 1999	no	~
WL9	not sampled	4	1996	October 1999	no	~
WL10	not sampled	3	1996	October 1999	no	~
WL11	not sampled	4	1996	October 1999	no	~
WL12	not sampled	6	1998	not burned	no	~
WL14	not sampled	28	August 1999	October 1999	no	~
WL15	not sampled	24	July 1999	October 1999	no	~
WL16	406771.02 E 4257774.74 N	12	October 1998	October 1999	no	~
WL17	not sampled	8	October 1998	October 1999	no	~

**Oldroyd Fire** (OFece-J, OFecw-K, OFnw-I, OFre-R, OFrw-S, OFsc-T): The Oldroyd Fire burned 1329 acres July 27 through August 7, 2000. It was classified as an Unwanted Wildland Fire. Following the fire Burned Area Emergency Rehabilitation work was done, which included mapping high, medium and low intensity burn polygons, installing temporary cattle excluding fence, laying straw wattles, contour felling, and broadcast seeding selected high intensity burn areas. In mid- to late-July 2001, six areas were sampled to monitor aspen regeneration. Of the six areas sampled, two areas received moderate intense burns (OFece-J, OFecw-K), two areas received moderate to high intense burns (OFre-R, OFrw-S), one area received low to moderate burn intensity (OFnw-I) and one area received low burn intensity (OFsc-T).

Figure 11 - GIS map of The Oldroyd Fire and GPS locations taken in the vicinity of the sampling.

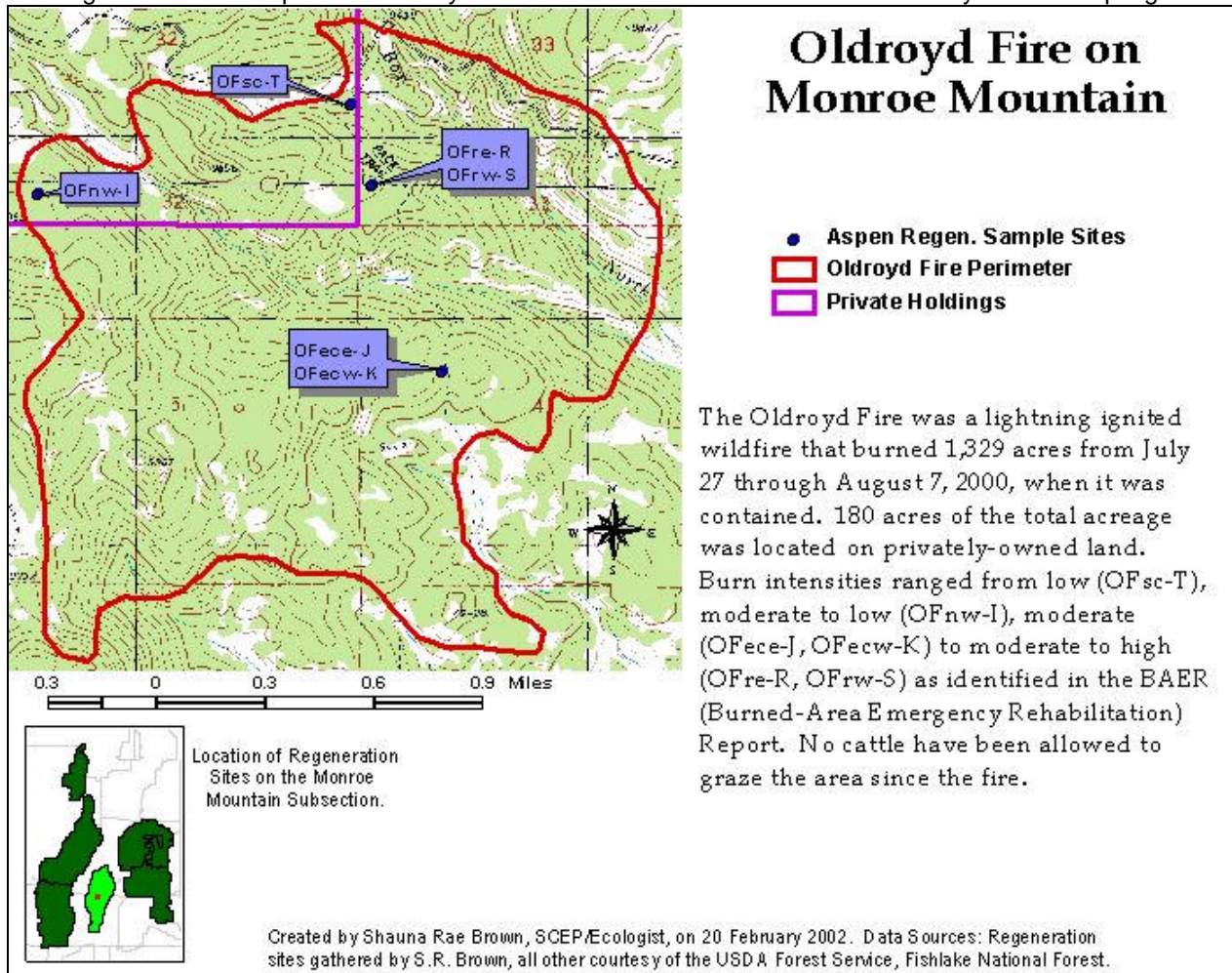


Table 10 - Oldroyd Fire Summary			
Site ID	GPS Location	Elevation	Burn Intensity
OFece-J	410365.00 E - 4260767.00 N	9450 ft.	Moderate
OFecw-K	410365.00 E - 4260767.00 N	9450 ft.	Moderate
OFnw-I	408568.92 E - 4261551.91 N	9925 ft.	Low - Moderate
OFre-R	410052.01 E - 4261590.64 N	9651 ft.	Moderate - High
OFrw-S	410052.01 E - 4261590.64 N	9651 ft.	Moderate - High
OFsc-T	409954.22 E - 4261943.17 N	9479 ft.	Low

## **Tushar Mountains Subsection**

***Pole Creek Fire*** (GSwin-Z, GScin-A, GSout-AA, RPufd-B, RPH1ufd-AB, RHP2ufd-AF, RPH3ufd-AD, RPH4ufd-AE): The Pole Creek Fire was a lightning ignited wildfire that started in June 1996. It burned 7,916 acres before it was contained and out in late-July 1996. It was originally treated as a “containment fire” until high winds caused it to jump the fire-lines, after which it was determined that if the fire was allowed to burn it would likely burn for several months. As a result, it was decided that the fire should be put out using helicopters to drop water on it, before it reached the nearby City Creek drainage.

Part of the Pole Creek Fire burned an area called Grindstone Flat (GF), where study plots were established in 1934. The study plots are fenced plots that have been closed to all grazing (both wildlife and cattle) from one plot and cattle from an adjacent plot. The exclosures were rebuilt in 1997. The area outside the fence is grazed by both wildlife and livestock. Cattle have been grazed annually from June 1 through October 15 in every year since and including the fire (1996-2001). Generally, 359 cattle were run on this, the Circleville, allotment, which encompasses the entire Pole Creek Fire polygon; however, in 1998 and 1999 only 348 cattle grazed the allotment.

Following the fire, certain areas have been opened up for salvage harvest, in which standing dead logs are logged for timber. The Rigger Park (RPH) area is one such area. Adjacent to Rigger Park is the Baker Spring area, as you can see on the map. Located adjacent to the Baker Spring 2 harvest is RPufd-B, which is outside the harvest area on a steep slope (50%) and allows it to be used as a control site, due to its proximity to the other sites.

Figure 12 - GIS map of the Rigger Park and Baker Spring salvage harvest units, located within the Pole Creek Fire polygon, and GPS locations taken in the vicinity of the sampling.

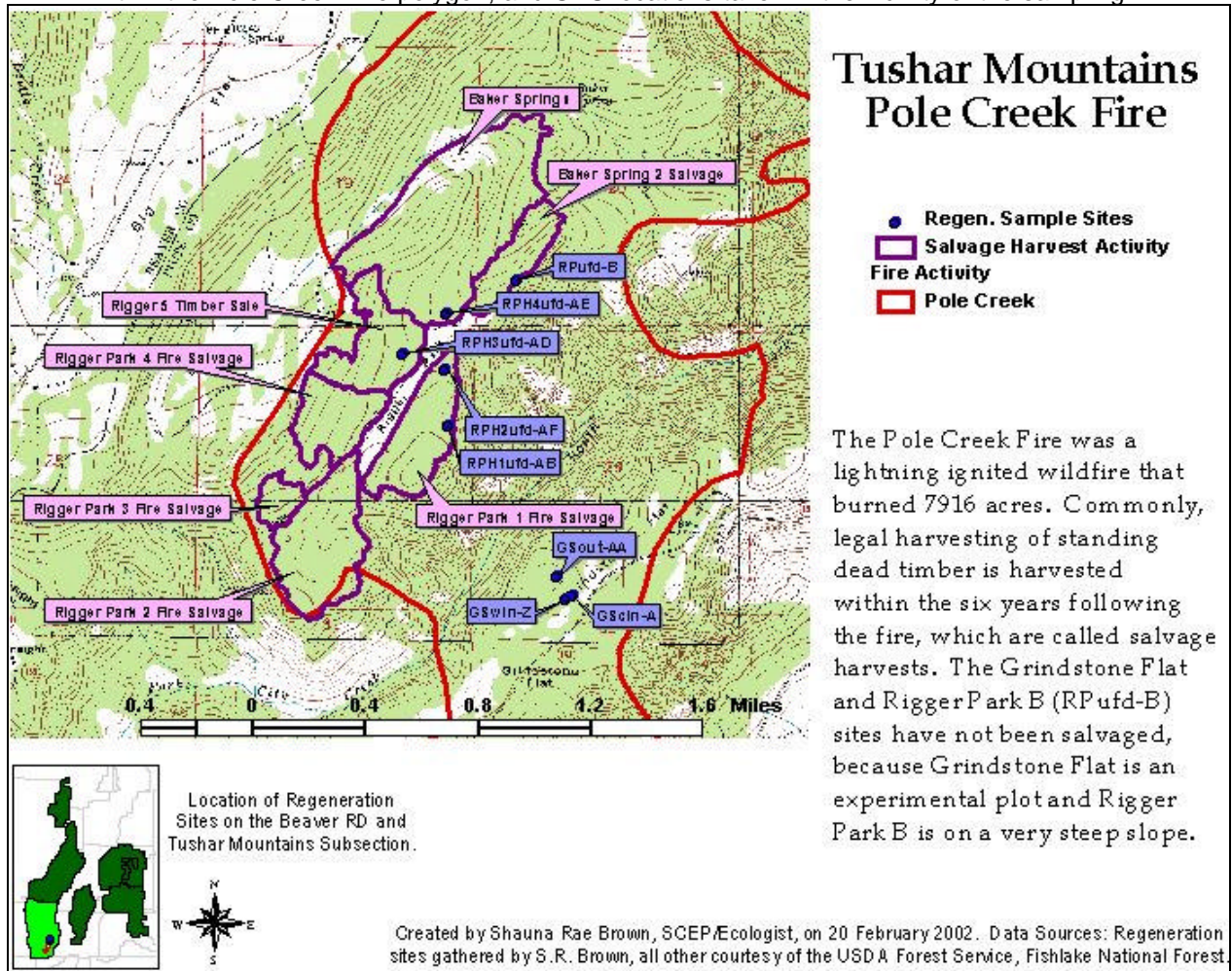


Table 11 - Pole Creek Fire Summary					
Unit	Site ID	GPS Location	Elevation	Fenced	Salvaged
none	GSwin-Z	383017.52 E 4234438.96 N	9281 ft.	1997	no
none	GScin-A	410507.95 E 4256850.54 N	9268 ft.	1997	no
none	GSout-AA	382970.74 E 4234563.03 N	9310 ft.	outside exclosures	no
none	RPufd-B	382738.29 E 4236257.63 N	~ 9600 ft.	no	no
Rigger Park 1	RPH1ufd-AB	382347.31 E 4235426.67 N	~ 9760 ft.	no	1 Oct 1998 - 1 Nov 1998
Rigger Park 1	RPH2ufd-AF	382329.59 E 4235746.36 N	~ 9720 ft.	no	1 Oct 1998 - 1 Nov 1998
Rigger Park 2	not sampled	~	unknown	no	1 Aug 1999 - 30 Sept 2000
Rigger Park 3	not sampled	~	unknown	no	20 Oct 1998 - 30 Nov 1998
Rigger Park 4	not sampled	~	unknown	no	20 Oct 1998 - 30 Nov 1998
Rigger Park 5	RPH3ufd-AD	382091.84 E 4235841.39 N	~ 9760 ft.	no	15 Sept 1999 - 30 Oct 2000
Baker Spring 1	RPH4ufd-AE	382334.25 E 4236065.13 N	~ 9710 ft.	no	30 Oct 2000 - 30 Sept 2002
Baker Spring 2	not sampled	~	unknown	no	1 Aug 2001 - 30 Sept 2002



Table 12 - Treatment Area Summary				
Treatment Area	Acres Treated	Year Cut	Year Burned	Year Fenced
Briggs Hollow 1 (wildlife exclos.)	19	Jan. 2000	~	mid-June 2000
Briggs Hollow 2 (cattle exclos.)	26	Feb.-Apr. 2000	~	mid-June 2000
Briggs Hollow 3 (wildlife exclos.)	3	May 2000	~	mid-June 2000
Briggs Hollow 5 (cattle exclos.)	10	May 2000	~	mid-June 2000
White Ledge 2 (cattle enclosure)	2	July 1997 - Sept. 1998	October 1999	October 1999
White Ledge 16 (unfenced)	12	July 1997 - Sept. 1998	October 1999	~
Dry Creek 1 (unfenced)	54	Jan., July - Sept. 1999	~	August 2001
Dry Creek 2 (cattle enclosure)	27	Jan., July - Sept. 1999	~	~
Farnsworth 3 (cattle exclos.)	3	Aug. - Sept. 1994	~	September 1995
Farnsworth 16 (unfenced)	2	Aug. - Sept. 1994	~	~
Oldroyd Fire	1,329	~	July - Aug. 2000	~
Pole Creek Fire (Grindstone Flat & Rigger Park)	7,916	1998-2001 Rigger Park Salvage only	1996	1997 Grindstone Flat only
Oldroyd Private Property Conifer Harvest (OPPufd-U)	?	Several different years	~	~
Oldroyd Private Property Aspen Harvest (OPPah-AG)	?	1999 or 2000	~	~
Burnt Flat (BFS16ufd-C)	?	1996-1997	~	~
Burnt Flat (BF2)	?	June - July 1997	~	July 1997