B. DEERLODGE FOREST PLAN

1-1 Use and Condition of Recreation Facilities

OBSERVATIONS – MIDDLE FORK FIRE

The Middle Fork Fire Complex had a significant impact on recreation use on the Pintler District. The fires occurred in the head of Rock Creek, one of the prime blue ribbon trout streams in Montana and an access to the Anaconda-Pintler Wilderness. All of the burned area was closed to public access during the period of significant fire activity and remained closed until the fires were controlled. Most of the recreation uses in the burned area are dispersed (undeveloped). Recreation facilities damaged or threatened by the Middle Fork Fires were primarily trails and trail structures. The fires created numerous snags and trees that are prone to windfall. This creates a safety concern for users and Forest Service crews.

The removal of vegetative cover as a result of the fires will result in an increase in overland runoff for the next 1-3 years. This increases the probability of surface erosion of the trail tread and requires additional work constructing water diversions.

The fires have damaged trail structures, which were in place to stabilize the trail and provide for user safety. Structures damaged by fire will require replacement.

FINDINGS

Hiline Trail #111 – The Falls Creek Fire burned over this trail for about 0.75 of a mile from the junction with the Falls Fork Trail #29 to Johnson Lake. This is a major trail within the Anaconda Pintler Wilderness. Approximately 3,015 feet of log retaining wall, one turnpike, and one puncheon were destroyed by the fire and will require replacement. Numerous snags were created as well as trees that had their roots burned out. Fire rehabilitation crews felled about 50 hazard trees.

The following trails received no post-fire survey. It is assumed the fire intensity was severe on affected portions.

Continental Divide Trail #9 – The Falls Creek Fire also burned approximately 0.5 mile of this trail, from Johnson Lake to Martin Lake. It is a major trail in the Anaconda Pintler Wilderness. Level I maintenance is normally performed on a yearly basis. The trail is located in mostly over-mature timber stands of lodgepole pine, spruce, and whitebark pine. The fire likely created numerous snags and trees prone to windfall as well as removed most of the ground vegetation adjacent to the trail.

Medicine Lake Trail #15 - The Cougar-Coyote Fire burned over the entire 2-miles of this secondary trail. The trail received Level I maintenance on a yearly basis. It is located in mostly over-mature lodgepole pine with some spruce and subalpine fir. Impacts are the same as above.

Fox Peak Trail #18 - The Cougar-Coyote Fire burned over the entire length of this 5-mile secondary trail including a few trail structures. The trail received Level I maintenance on an intermittent basis. The trail is located in mostly over-mature lodgepole pine with some Douglas-fir, spruce, and subalpine fir. Impacts are the same as above.

Ross Fork Trail #19 - Approximately 9 miles of this trail from its junction with the Point Lookout Trail #161 to its junction with the Bitterroot Divide Trail #313 were impacted by the Cougar-Coyote Fire. This trail is a secondary trail. The trail received intermittent Level I maintenance. The trail is located in mostly over-mature lodgepole pine with the upper 3 miles in large decadent spruce, subalpine fir, and whitebark pine. Impacts are the same as above.

Bowles Creek Trail #14 - The Skalkaho Falls Fire burned over approximately 1 mile of trail at the junction with the Bitterroot Divide Trail #313.The trail is a secondary trail in poor condition and received sporadic Level I maintenance. It is located in mostly over-mature lodgepole pine with some spruce and subalpine fir. Impacts are the same as above.

Signal Rock Trail #131 - The Skalkaho Falls fire also burned approximately 1 mile of trail where it joins the Bitterroot Divide Trail #313. The trail is a way trail that received Level I maintenance annually. The trail segment impacted by the fire is located in mostly over-mature lodgepole pine with some subalpine fir and Douglas-fir. Impacts are the same as above.

RECOMMENDATIONS

Remove hazard trees on all trails and log out twice a year for 5 years. Most will require installation of new cross drains using rock or treated timbers. Hiline Trail will require reconstruction of turnpikes and log retaining walls. Ross Fork Trail will require relocation of significant segments.

1-2 Spectrum of dispersed recreation opportunities

The Recreation Opportunity Spectrum was unchanged by the Fires

1-3 ORV Compliance and damage

OBSERVATIONS – MIDDLE FORK FIRES

The Middle Fork Fire Complex is made up of 5 separate fires on 10 different sites. With the exception of the Skalkaho Pass Fire, these fires occurred primarily in Wilderness, Inventoried Roadless Areas, or a Research Natural Area.

FINDINGS

ORV compliance with travel regulations has not changed in this area as a result of the fires. With the exception of the Skalkaho Pass area, the area does not receive heavy ORV use. The fires did not change the conditions sufficiently to encourage use where there was none before.

1-4 Hunter Recreation

OBSERVATIONS – MIDDLE FORK FIRES

The Middle Fork Complex burned portions of three subwatersheds (5^{th} hydrologic unit codes (HUCs)). These included the West Fork, Ross Fork, and Middle Fork of Rock Creek. The following discussions refer to the fire perimeter that occurred in all three 5^{th} code HUCs. Fire and fire suppression actions have the potential of affecting elk security by reducing cover and bringing human disturbance to the area. That disturbance could include fireline construction.

Elk security is the protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other human activities (Lyon and Christensen 1990). Overall, the present condition of the watershed provides for adequate hunting season security for elk. Low and mid elevations provide the least amount of elk security while upper elevations provide the greatest amount. On private land some elk live yearlong, preferring the irrigated pastures and lower hunter densities. Bull carryover is adequate and meets Montana Fish, Wildlife, and Park's Elk Plan.

FINDINGS

Elk Security – The fires reduced hiding cover. Following a forest fire, standing dead trees may provide adequate cover for big game (Davis 1976), but the Davis study did not consider the amount of dead trees that begin falling and continue to fall for years after the fire, reducing potential hiding cover. Mechanical fire line construction can affect elk security. Six miles of this mechanical line were constructed in the Middle Fork Complex. Rehab efforts on this mechanical line were aimed at discouraging new motorized (ATV) use along these corridors. During hunting season, motorized intrusions into hiding cover habitat via this mechanical line are anticipated. Reduced elk security is anticipated in the areas adjacent to this line. Rehab efforts on the narrowly constructed hand line should discourage motorized use.

The increased use of the burned areas due to mushroom pickers, hazard removal activities, or other human activities that typically occur following fires of this size will also affect elk security. If no additional roads or trails were established, elk security would remain adequate. In depth elk habitat analysis including cumulative effects should be completed before any commercial product removal.

The fires did not affect big game winter range. Because they burned in a mosaic pattern spread throughout the various watersheds, displacement of elk onto private land as a result of short-term loss of forage is not anticipated.

RECOMMENDATIONS

To provide for elk security, area closures restricting commercial product removal (timber, mushrooms) may have to be used.

- To provide for elk security and successful mechanical line rehab, "hunter patrols" should be increased during the big game hunting season.

1-5 Condition of significant cultural sites

OBSERVATIONS – MIDDLE FORK FIRES

The Middle Fork Complex fires impacted approximately 18,054 acres on the Beaverhead-Deerlodge National Forest. Cultural resource specialists have examined 700 acres, or 3.9 percent of the Forest System lands within the fire's area of potential effect to identify significant cultural resources. Of that total, 200 acres were surveyed prior to the fire activity, 200 acres were surveyed within the fire's perimeter during suppression activity, and 300 acres were surveyed within the unburned portion of the suppression area.

The portion of the Middle Fork Complex within the bounds of the original Cougar Creek Fire received no prior systematic cultural resource survey. Four prehistoric sites had been identified southeast of the fire, two of which (one vision quest and a lithic scatter) were of concern to the Salish-Kootenai Tribes. Two sites are located on the Bitterroot National Forest, and two are situated on the boundary between the Bitterroot and Beaverhead-Deerlodge National Forests. No historic sites had been identified prior to the fire.

The portion of the Middle Fork Complex in the Copper Creek and Falls Creek area had received minimal survey prior to the fire. This portion of the Anaconda-Pintler Wilderness received cultural resource survey as part of a Passport in Time project during the 1996-1997 field seasons. Archeologists and volunteers conducted reconnaissance surveys in high-probability areas. Historic sites were recorded near Johnson Lake, Little Johnson Lake, Kelly Lake, and Oreamnos Lake.

Within the initial fire complex at the headwaters of the Middle Fork, prehistoric sites are predictably found on lake margins, near springs, and at saddles and passes. Known sites include lithic scatters (campsites), sites associated with upper-elevation hunting activity, and one site that may indicate ritual use. Evidence at two sites dates them to the Archaic Period (estimated between 4000-6000 years ago). The Middle Fork may have been used as a travel route, for seasonal hunting, and for gathering of whitebark pine nuts and alpine plants. Sites have been recorded at Bitterroot, Pintler, and Oreamnos Passes, and Kelly, Johnson, Phyllis, Upper Phyllis, Upper Oreamnos, and smaller unnamed lakes. No Tribal association has been made at these sites. The area lies within the Flathead Treaty (1855) land. Reserved rights include most hunting and gathering activities.

Additional lands around Moose Lake, Frog Pond Basin, Sand Basin, and Emerine Ridge have been surveyed for site-specific projects. This area did not burn, but is within the APE as a result of fire suppression activity. Numerous historic structures have been identified, associated with recreation residences, mining, and logging, agriculture, and the Civilian Conservation Corps (CCC). This area also contains prehistoric sites and has a high potential for more sites to be discovered.

FINDINGS

Of the known sites within the fire's perimeter, both prehistoric and historic sites were affected. Since an archeologist was assigned to the fire, many of the known sites were visited prior to the fire reaching them. The fire's effect on some of the sites within the fire's perimeter is unknown (see Table 21).

During fire suppression activity, prehistoric and historic sites were identified. The fire may have affected the integrity of the sites, depending on the factors that could make the sites eligible.

The majority of the burned area has yet to be surveyed for cultural resource sites. For prehistoric sites, the change in workmanship, materials, setting, and feeling would be the fire's greatest potential effect. Prehistoric resources that could exist in the fire's perimeter include pictographs, stone circles, lithics, culturally modified (scarred) trees, campsites, trails, and spiritual sites.

Fire could have a more damaging effect on historic resources. Log and frame buildings, agricultural, and mining structures would all be more susceptible to fire. Workmanship, materials, setting, feeling, and association could be lost at historic sites. Sites that could exist in the fire's perimeter include mines and mining camps; mining and irrigation ditches, dams, and structures; logging camps and structures; communication lines, fences, trails, roads, administrative sites, trapper and range rider cabins, CCC facilities, and homesteads.

Table 17. Fire Effects on Known Sites within the Middle Fork Complex

Smithsonian #	Site Name	National Register Status	Fire Effects
24GN75	Forsman Barn	Ineligible	None, Edge of Contingency Line
24GN75 (A1)	Forsman Homestead	Unknown	Wrapped
24GN101	Historic Habitation	Unevaluated	Wrapped, Edge of Contingency Line
24GN174	Historic Road	Unresolved	Widened, Setting Altered

24GN174	Historic Road	Unresolved	Widened, Setting Altered
To be assigned	Cow Camp Meadows Cabin/prehistoric	Unevaluated	Used as Spike Camp
To be assigned	Lower Kent Mine	Unevaluated	Lined/Burned out around
To be assigned	Congdon Mine	Unevaluated	None
To be assigned	Congdon Mine Habitation	Unevaluated	None
To be assigned	Medicine Lake Multicomponent	Unevaluated	Burned in Coyote
To be assigned	Medicine Lake Archeology Site	Unevaluated	Burned in Coyote
24RA520	Vision Quest	Unevaluated	None
24RA559	Abundance Saddle	Unevaluated	Burned
To be assigned	Uinta Ground Squirrel Prehistoric	Unevaluated	None, Located during fire
To be assigned	Bitterroot Pass Lithics	Unevaluated	None
To be assigned	Johnson Lake Prehistoric	Unevaluated	None
24GN868	Falls Fork Trail #29	Unevaluated	Partially Burned
To be assigned	Frog Pond Basin	Unevaluated	Wrapped
To be assigned	McGuire's Cabin	Unevaluated	Wrapped
To be assigned	Harris Mining	Unevaluated	Wrapped
To be assigned	Millers Mining	Unevaluated	Wrapped
To be assigned	Mining cabin	Unevaluated	Wrapped/limbed
24GN169	Mine	Unknown	Limbed
24GN520	Moose Lake Guard Station	Eligible	Cargo Site/sprinkled

24GN812	Antonioli Cabin	Eligible	Limbed/sprinkled
24GN813	Neal Cabin	Eligible	Limbed/sprinkled
24GN827	Wind	Ineligible	Limbed/sprinkled
To be assigned	Vote Smart/Great Divide Ranch	Unevaluated	None
24GN814	Bellinger/Sunnyside	Eligible	Sprinkled/limbed
To be assigned	Rosselot Residence	Unevaluated	Sprinkled/limbed
24GN817	Graham	Eligible	Sprinkled/limbed
24GN818	Guanell	Ineligible	Sprinkled/limbed
24GN826	Waite	Ineligible	Sprinkled/limbed
24GN819	VanDyk, Jane	Eligible	Sprinkled/limbed
24GN825	Hauk	Ineligible	Sprinkled/limbed
24GN823	Youlden/Macnamee Camp	Ineligible	Sprinkled/limbed
24GN824	Newman	Ineligible	Sprinkled/limbed
24GN816	Burton	Eligible	Sprinkled/limbed
24GN820	Hay	Ineligible	Sprinkled/limbed
24GN815	Bennett (Lot 8)	Ineligible	Sprinkled/limbed
24GN821	Archbishop Hunthausen	Eligible	Sprinkled/limbed
24GN822	Lolo Camp	Ineligible (?)	Sprinkled/limbed
To be assigned	Senate Mine	Unevaluated	Unknown/sprinkled
To be assigned	Gallagher	Unevaluated	Sprinkled/limbed
24GN32	Waterwheel	Unevaluated	Scratchline/sprinkler
To be assigned	Old Dominion Mine	Unevaluated	Scratchline
24GN555	Emerine Lookout	Eligible	Wrapped

24GN521	West Fork Ranger Station	Ineligible	Cougar Fire Base Camp
24GN511	Lithic Scatter	Unevaluated	Unknown
To be assigned	Josie/Emerine Saddle Prehistoric	Unevaluated	None, in Undeveloped Contingency Line
To be assigned	Emerine Mountain stone cairns	Unevaluated	None, in Undeveloped Contingency Line

RECOMMENDATIONS

- Site and structure protection should be implemented for sites within the fire area to minimize future fire threats to known National Register-eligible sites.
- Public education signs should be posted at trailheads and campgrounds reminding Forest users of laws protecting heritage sites.
- Section 106 requirements need to be implemented for all rehabilitation work proposed with this long-term plan.

2-1 Change in roadless resources

OBSERVATIONS - MIDDLE FORK FIRE

The Cougar Fire, the largest in the Middle Fork Fire Complex, burned in parts of Emerine Roadless Area (identified in the Deerlodge Forest Plan, Appendix C, page C-1, as 01-423) and Sapphires Roadless Ares (identified as 01-421 on page C-179 of the Plan). These two roadless areas total 88,775 acres. Another 44,416 acres of the Sapphire Roadless Area lays over the divide on the Bitterroot National Forest.

FINDINGS

Firelines in the roadless areas were primarily constructed by hand of Fire Line Explosives. These lines were rehabilitated immediately following fire suppression and are difficult to distinguish a year later. Some dozer line was constructed in the Emerine Roadless Area. Dozer lines were also rehabilitated immediately following fire suppression, but may remain identifiable because of the change in forest canopy. Soils were disturbed, water bars constructed and debris piled over the roadway to protect soils and prevent use. These rehabilitated fire lines impact the roadless character in a very localized way, but do not affect the overall roadless quality or their potential for wilderness consideration.

3-1 Wilderness - trail conditions, encounters

OBSERVATIONS – MIDDLE FORK FIRE

The Middle Fork Fire Complex had a significant impact on recreation use on the Pintler District. The Middle Fork Fire and Falls Fork Fire burned inside the Anaconda-Pintler Wilderness. All of the burned area was closed to public access during the period of significant fire activity and remained closed until the fires were controlled. Most of the recreation uses in the burned area are dispersed

(undeveloped). Recreation facilities damaged or threatened by the Middle Fork Fires were primarily trails and trail structures. The fires created numerous snags and trees that are prone to windfall. This creates a safety concern for users and Forest Service crews.

The removal of vegetative cover as a result of the fires will result in an increase in overland runoff for the next 1-3 years. This increases the probability of surface erosion of the trail tread and requires additional work constructing water diversions.

The fires have damaged trail structures, which were in place to stabilize the trail and provide for user safety. Structures damaged by fire will require replacement.

FINDINGS

The Falls Creek Fire affected two major Wilderness trails.

Hiline Trail #111 - Approximately 0.75 miles of this trail, from its junction with the Falls Fork Trail #29 to Johnson Lake, was impacted by the Falls Creek Fire. This is a major trail within the Anaconda Pintler Wilderness. Approximately 3,015 feet of log retaining wall, one turnpike, and one puncheon were destroyed by the fire and will require replacement. Numerous snags were created as well as trees that had their roots burned out. About 50 hazard trees were felled by the fire rehabilitation crews.

Continental Divide Trail #9 - Approximately 0.5 mile of this trail from Johnson Lake to Martin Lake was impacted by the Falls Creek Fire. Although no post-fire survey was conducted, it is assumed the fire intensity was severe on the affected portions. This trail is a major trail within the Anaconda Pintler Wilderness. The trail received Level I maintenance on a yearly basis. The trail is located in mostly over-mature timber stands of lodgepole pine, spruce, and whitebark pine. The fire likely created numerous snags and trees prone to windfall as well as removed most of the ground vegetation adjacent to the trail.

RECOMMENDATIONS

On both trails, remove hazard trees and log out twice a year for 5 years. Install new cross drains using rock or treated timbers. Hiline Trail will require reconstruction of turnpikes and log retaining walls.

4-1 Elk, mule deer, moose, mountain goat populations

Effects on big game populations were not evaluated as a concern of the Middle Fork Fires. Since the fires burned in a mosaic pattern spread throughout various watersheds, significant displacement of the big game species, elk, deer, mountain goat and moose, has not occurred. Habitat is not currently a limiting factor for population levels of these species. See Item 4-2 and 4-4 for a discussion about habitat and security.

4-2 Elk, mule deer, moose and goat habitat

Loss of habitat for mule deer, moose and mountain goats was not identified as a concern in evaluating the effects of the Middle Fork Fires. Nor was loss of forage for elk. Loss of elk security habitat was a concern, see item 4-4.

4-3 Land use activities affecting big game

The Middle Fork Fires and fire suppression efforts did not pose a threat to the viability of any ungulate population.

4-4 Elk security

OBSERVATIONS – MIDDLE FORK FIRES

The Middle Fork Complex burned portions of three subwatersheds (5th hydrologic unit codes (HUCs)). These included the West Fork, Ross Fork, and Middle Fork of Rock Creek. The following discussions refer to the fire perimeter that occurred in all three 5th code HUCs. Fire and fire suppression actions have the potential of affecting elk security by reducing cover and bringing human disturbance to the area. That disturbance could include fireline construction.

Elk security is the protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other human activities (Lyon and Christensen 1990). Before the fires, this area provided for adequate hunting season security for elk. Low and mid elevations provide the least amount of elk security while upper elevations provide the greatest amount. On private land some elk live yearlong, preferring the irrigated pastures and lower hunter densities. Bull carryover is adequate and meets Montana fish, Wildlife, and Park's Elk Plan.

FINDINGS

Elk Security – The fires reduced hiding cover. Following a forest fire, standing dead trees may provide adequate cover for big game (Davis 1976), but the Davis study did not consider the amount of dead trees that begin falling and continue to fall for years after the fire, reducing potential hiding cover. Mechanical fire line construction can affect elk security. Six miles of this mechanical line were constructed in the Middle Fork Complex. Rehab efforts on this mechanical line were aimed at discouraging new motorized (ATV) use along these corridors. During hunting season, motorized intrusions into hiding cover habitat via this mechanical line are anticipated. Reduced elk security is anticipated in the areas adjacent to this line. Rehab efforts on the narrowly constructed hand line should discourage motorized use.

The increased use of the burned areas due to mushroom pickers, hazard removal activities, or other human activities that typically occur following fires of this size will also affect elk security. If no additional roads or trails were established, elk security would remain adequate. In depth elk habitat analysis including cumulative effects should be completed before any commercial product removal.

No big game winter range was affected by the fires. Since the fires burned in a mosaic pattern spread throughout the various watersheds, no displacement of elk onto private land as a result of the short-term loss of forage is anticipated.

RECOMMENDATIONS

To provide for elk security, area closures restricting commercial product removal (timber, mushrooms) may have to be used.

To provide for elk security and successful mechanical line rehab, "hunter patrols" should be increased during the big game hunting season.

4-5 Indicator species – Bighorn Sheep habitat

No Bighorn Sheep habitat was involved in the Middle Fork Fires.

4-6 Indicator species – lodgepole pine, mountain grassland, evergreen shrub, riparian

The Deerlodge Forest Plan 5-Year Monitoring Report (1988-1994) recommends a replacement for this monitoring item and describes several problems related to the use of management indicator species concept. Every species listed for these habitats continues to be addressed in environmental assessments or impact statements for timber, range, minerals or recreational projects, until the monitoring requirement is changed.

For the purpose of monitoring effects of the fire, this report looks at three important categories of species tied to the habitats listed: forest carnivores (primarily lynx), cavity nesters, and amphibians.

OBSERVATIONS – MIDDLE FORK FIRES

Forest Carnivores - Canada lynx were listed as a threatened species in April 2000. Lynx are present on the district, and lynx habitat exists within the fire perimeter. Lynx analysis units (LAUs) were delineated following procedures outlined in the Lynx Conservation Assessment and Strategy. These units correlate directly to subwatershed delineations for 6th code Hydrologic Units. Prior to the fires, denning, foraging, and travel habitat for lynx, exist at mid and upper elevations, but foraging habitat (early seral communities) is limiting.

Cavity-nesting Habitat – Snags occur when standing trees die, principally from injury, suppression, fire, lightening disease, insect infestation, and weather extremes (Raphael and White 1984). Many studies document widespread use of snags by wildlife (such as black-backed woodpecker) for nesting, feeding, shelter, communication, and resting. Modern day fire suppression has nearly excluded fire from these areas, resulting in an existing condition dominated by older trees. Old growth stands support a high density and variety of cavity nesting birds (Mannan 1980), primarily because of the high number of large diameter snags they provide. These older and therefore larger trees increase the potential to be utilized for nesting or foraging habitat (Loose and Anderson 1995). Very little primary feeding or nesting habitat (recently burned or beetle infested stands) occurred pre-fire in the watersheds for the black-backed woodpecker. If individuals of this species occurred in the area, the numbers were low.

Amphibians – Little is known about species distribution in any of the subwatersheds within the fire perimeter. During the fires, there was a confirmed sighting of a long-toed salamander at Kelly Lake (Little Johnson 2 Fire) and an unconfirmed sighting of a wood frog in the Medicine Lake area. The habitat conditions of the burned areas contained sufficient forest canopy and microhabitat including downed logs, litter, and duff to support amphibian populations.

FINDINGS

Forest Carnivores - The fires of the Middle Fork Complex affected seven LAUs to some degree (Table 17). Sixty-one percent of the Ross LAU was affected by fire. This LAU was heavily forested, much of which has now been converted to a non-suitable condition. Fifteen percent of the Falls Fork LAU was affected by fire and may be of concern. The remaining LAUs experienced less than 10% change (Table 17). In the short term, there is a negative correlation between lynx use and amount of area burned (Fox 1978). Denning habitat has been converted to non-suitable condition but is anticipated to be replaced with foraging habitat, which is limiting within the watersheds. Snowshoe

hares, a primary food source of the lynx, recolonize within five years. The Lynx Conservation and Assessment Strategy (LCAS) speaks favorably toward restoration of natural fire regimes but recognizes these short-term tradeoffs.

Table 18. Lynx Analysis Units Affected by the Middle Fork Complex

LAU Name	LAU Number	% Affected	'Burned' Acres	'Unburned' Acres	Total Acres
Falls Fork	170102020801	15%	2,063	12,117	14,180
Copper/APWild	170102020802	5%	977	16,790	17,767
Ross	170102020901	61%	12,598	7,919	20,517
SFRoss	170102020902	2%	419	19,564	19,983
WFRock	170102021001	6%	823	12,256	13,079
SandBasin	170102021002	7%	791	11,124	11,915
NFRockUp	170102021003	3%	406	11,665	12,071

"% Affected" indicates the percentage of the LAU within a fire perimeter and thus potentially affected. "Burned" acres indicate acres within the fire perimeter but not precisely mapped or assessed at this time. "Unburned" acres indicate area unaffected by the fire. (Source: BAER Team wildlife assessment for Mussigbrod and Middle Fork Complex Fires, Sept. 2000).

Throughout the fire suppression planning process, project objectives, standards, and guidelines outlined in the LCAS were incorporated into daily shift plans. This minimized the effects of fire suppression activities on lynx habitat. This team effort was accomplished as only 2 miles of mechanical line were built in lynx habitat, and this line has been rehabbed with an emphasis on reducing the creation of permanent travel ways.

No project needs are anticipated for dealing with affected lynx habitat.

Cavity-nesting Habitat – Snag densities have increased greatly. Bird density tended to increase with increased snag density (Raphael and White 1984). Burned areas are beneficial to numerous bird species and are apparently necessary for some like the black-backed woodpecker (Hutto 1995). While there is a surge in the snag density in burned areas, over the long term, forested areas still provide the best opportunity for continuous snag recruitment. In burned forests, an initial density of snags declines over time with little opportunity for snag replacement. As snags begin to fall or are removed through salvaging or firewood programs, snag retention guidelines need to be incorporated.

Amphibians – The fact that there are no reports of high mortality for any herpetile species may indicate that amphibians and reptiles are not highly vulnerable to fire (Means et al. 1981). Because of the dry conditions of the forest at the time of the Middle Fork Fire Complex, many amphibians were not surface active, and therefore were not likely killed by the fires. Areas of high fire severity (Medicine Lake area), where surface objects such as logs and stumps are burned up, would

immediately decrease available hiding cover, but post-fire sprouting of shrubby species would result in a long-term, overall increase in low hiding cover (Crane 1982). Any substantial change in runoff rates, erosion, or water tables caused by fire could degrade breeding sites.

4-7 Old Growth Habitat

Management Indicator Species for old growth habitat are the Goshawk, Northern 3-toed Woodpecker and Piliated Woodpecker. See the discussion of Woodpecker habitat under Cavity Nesters in Item 4-6. Old growth stands also provide denning habitat for lynx. See the discussion of Forest Carnivores, also in Item 4-6.

5- 1 Pools formed and population numbers – Westslope Cutthroat Trout

The intent of this monitoring item is to insure management practices do not decrease instream cover or fish numbers, using Cutthroat trout as the indicator. Since the Deerlodge Forest Plan was written, bull trout have been listed under the Endangered Species Act. Effects of the Middle Fork Fire Complex and fire suppression efforts were evaluated for both bull trout and Westslope cutthroat trout habitats. We did not look specifically at pools or sediment (Item 5-2) but at characteristics of the watersheds burned, percent burned, severity of the burn and the types of habitat available prior to burning.

OBSERVATIONS – MIDDLE FORK FIRE COMPLEX

The importance of the bull trout population in Rock Creek has been recognized by both State and Federal agencies during large-scale planning efforts. The drainage is designated a "priority" watershed under INFISH (Inland Native Fish Strategy). It is considered a "category 1" watershed in the Interior Columbia Basin Ecosystem Management Project (ICBEMP), and it contains numerous "core areas" in the State's restoration plan for bull trout. Core areas include the East, Middle, Ross, and West Forks (all 5th field watersheds) and the Stony Creek, Wyman Gulch, Hogback Creek, Alder Creek, Cinnamon Bear Creek, Welcome Creek, Ranch Creek, and Gilbert Creek subwatersheds. Rock Creek is also designated a "blue ribbon" trout stream by the State in recognition of the high recreational fishery value of the stream.

Rock Creek supports one of the strongest populations of bull trout in Montana outside of the Flathead River and Blackfoot River drainages (Thomas, 1992). Fluvial fish inhabit the mainstem and migrate to spawn in tributary streams throughout the length of Rock Creek. Small, adfluvial populations persist in Kaiser Lake, Moose Lake, and Mud Lake. An isolated population inhabits the East Fork reservoir, spawning and rearing in the stream reaches upstream of the reservoir. Bull trout occur in all 36 sub-watersheds in Rock Creek. Spawning has been documented in approximately 55 stream miles, in 19 streams, located in 16 sub-watersheds. No spawning has been documented in the mainstem of Rock Creek.

Preliminary evidence from an ongoing radio-telemetry project indicates the bull trout in Rock Creek probably constitute a single sub-population (G. Carnefix, personal communication) with separate groups of fish utilizing specific tributary streams for spawning and rearing. Adult fish spawning in different tributaries co-mingle in the mainstem outside the spawning season.

Major spawning tributaries are located in all seven watersheds. Each of these watersheds provide spawning and rearing habitat for the fluvial population of bull trout in Rock Creek. Tributary streams in each of the watersheds provides some adult habitat outside spawning, although most adult fish use the mainstem except during spawning migrations. The watersheds are East Fork Rock Creek, Middle

Fork Rock Creek, Ross Fork Rock Creek, West Fork Rock Creek, Upper Willow Creek, Rock Creek upstream of Butte Cabin Creek to the Forks confluence, and Rock Creek, mouth to Butte Cabin Creek (including all tributaries).

Connectivity is generally good throughout the drainage with the exception of the East Fork, which is isolated from the rest of Rock Creek by a dam. The reservoir above the dam supports an adfluvial population of bull trout that spawn upstream of the reservoir in the East Fork and in the lower end of Page Creek.

The Middle Fork watershed may be the most important bull trout spawning and rearing area in the Rock Creek sub-basin, containing 30-40% of redds detected annually in Rock Creek. All major tributaries support significant numbers of spawning adults, and most provide high value rearing habitat for juveniles and sub-adults. The lower portion of the watershed does provide a small amount of overwinter habitat for adults, but functions primarily as a major spawning and rearing location for fluvial fish from throughout the length of Rock Creek.

In 1999, 46% of the radio tagged bull trout that made spawning migrations moved to locations in this watershed. The wilderness portion of the Middle Fork, Carpp Creek, and Meyers Creek provide abundant, high quality rearing habitat. These streams, along with a portion of Copper Creek and additional portions of the Middle Fork, are used extensively for spawning.

Table 19. Watershed Characteristics for the Middle Fork

6HUC #	Size (acre)	Ownership % Federal % State % Private	Parent Material dominant/ sub-dominant	Miles of Stream <2%/>2% gradient	Vegetation* % forest/ % non-forest/ shrub	Riparian* (acres)
0801	14,113	99/0/1	Belts/ Granitics	1.7/44.8	85/14/1	55
0802	17,687	99/0/1	Belts/ Granitics	7.9/42.1	95/3/2	237
0803	13,951	98/0/2	Belts/ Glacial deposits	8.4/31.7	92/4/4	320
0804	11,235	99/0/1	Belts	1.5/24.5	74/25/1	48
0805	20,777	65/1/34	Glacial deposits /Belts	20.4/39.1	71/18/11	387
Total	77,763	89/t/11		39.9/182.2	83/12/5	1,047

***** Vegetation classes derived from SILC data

The Ross Fork provides important bull trout spawning and rearing habitat. The upper portion of the watershed supports moderate-to-high densities of juveniles and sub-adults. Total amount of

spawning is lower than would be expected, possibly due to an irrigation diversion structure that limits passage for migratory fish from Rock Creek. We have not detected hybridization, nor have we found eastern brook trout in known bull trout spawning habitat, even though eastern brook trout are present in much of the watershed.

Table 20. Watershed Characteristics for the Ross Fork

6HUC #	Size (acre)	Ownership % Federal % State % Private	Parent Material dominant/ sub-dominant	Miles of Stream <2%/>2% gradient	Vegetation* % forest/ % non-forest/ shrub	Riparian* (acres)
0901	20,409	99/0/t	Granitics/ Glacial deposits	10/56.3	95/4/1	226
0902	19,973	99/0/t	Granitics/ Glacial deposits	8.8/68.1	98/2/t	195
0903	13,743	38/0/62	Belts/ Glacial deposits	34/37.5	63/23/14	329
Total	54,125	84/t/16		52.8/161.9	88/8/4	750

***** Vegetation classes derived from SILC data.

The West Fork provides some bull trout spawning and rearing habitat. It may provide habitat for both resident and migratory fish. Our sampling indicates the presence of moderate densities of juveniles, sub-adults, and adults (resident sized) during the summer.

Total amount of spawning is low due to limited suitable habitat in the granitic geology of the watershed. Spawning does occur between Coal Gulch and Fuse Creek. A few redds have been located in this section, and radio-tagged fish have been tracked to this reach during the spawning season. This reach does contain a substantial amount of suitable spawning gravel, but both spawning and rearing habitat is limited by the quantity of sand filling the interstitial spaces.

The upper West Fork (above Sand Basin Creek), Bowles Creek, and the North Fork all provide some rearing habitat. Mud Lake, in the headwaters of the North Fork, does support bull trout. We don't have any information on location of spawning for these fish. Populations appear to be stable. Bull trout and Westslope cutthroat trout densities, in the upper portion of the watershed, have remained stable over a 60 year period (Upper Camp-Duncie EIS, 1992).

Table 21. Watershed Characteristics for the West Fork

6HUC #	Size (acre)	Ownership % Federal % State % Private	Parent Material dominant/ sub-dominant	Miles of Stream <2%/>2% gradient	Vegetation* % forest/ % non-forest/ shrub	Riparian* (acres)
1001	12,953	100/0/0	Granitics/ Glacial deposits	8.3/42.5	98/t/2	100
1002	11,910	100/0/0	Granitics/ Belts	16.6/40.2	96/3/1	318
1003	12,032	100/0/0	Granitics/ Belts	5.6/34	95/5/t	105
1004	22,778	77/3/20	Volcanics/ Glacial deposits	15.8/64.4	83/9/8	383
Total	59,673	91/1/8		46.3/181.1	91/5/4	906

***:** Vegetation classes derived from SILC data.

FINDINGS

The Middle Fork Complex consisted of four large fires (Cougar/Coyote, Falls Fork, Copper Creek, and Skalkaho Falls) and several small fires (Medicine Lake, O'Brien 1 and 2, and Emerine). These fires occurred in three 5th field HUCs (Middle Fork – NRCS #1701020208, Ross Fork – NRCS #1701020209, and West Fork – NRCS #1701020210) in the Flint-Rock sub-basin.

The Middle Fork fires burned about 18,000 acres (approximately 9%) in these three watersheds. Only about one-quarter (approximately 4,500 acres) burned with a moderate intensity fire. The majority of the burned acres supported a low intensity ground fire. Most of the higher intensity burned areas are located away from riparian areas. Riparian areas generally did not burn, or if they did, the fire was for the most part a low intensity burn. The most notable exception to this description occurred around Medicine Lake, an area that burned intensely.

Fire suppression activities may have had more adverse impacts to fisheries than the fires. Mechanical line construction resulted in direct sediment delivery to Elk Creek and Sand Basin Creek during suppression activities. Water dipping occurred in Mud Lake (bull trout and Westslope cutthroat trout), Kaiser Lake (bull trout and Westslope cutthroat trout), Little Fish Lake (cutthroat trout), Medicine Lake (cutthroat trout), and Johnson Lake (cutthroat trout). On one occasion, water was dipped from Sand Basin Creek, a small stream known to support Westslope cutthroat trout and presumed to support bull trout.

Fire retardant was dropped during the early stages of the Cougar Creek Fire. Care was taken to avoid retardant delivery in areas adjacent to streams and lakes. Fire foam was used for one day on the Skalkaho Falls Fire. Inspection of the operation did not reveal any contact with either Crystal Creek

or the North Fork Rock Creek.

RECOMMENDATIONS

These fires had little, if any, impact on ESA listed or R-1 sensitive species due to the small percentage of area burned within the affected watersheds, the generally low intensity of the fires, and the minimal amount of riparian area burned. Even Medicine Lake, a locally important recreational fishery, should not be adversely affected over the longer term by the magnitude or intensity of the fires. While fire suppression activities did result in some direct and indirect adverse affects to both protected and recreational fisheries, the impacts were localized and generally of a low magnitude.

The Fisheries Biologist did not recommend any additional rehab, either in the short-term (BAER) or the long-term (3-5 year timeframe) as a result of the fires in the Middle Fork Complex. Fire suppression rehab is already complete and should be sufficient to mitigate the effects of the activities.

No changes in management are needed at this time as a result of the fires or the suppression activities. If any ground disturbing activities are proposed (including but not limited to removal of some of the burned timber, or replacement of existing stream crossing structures), the effects of these activities will require additional analysis.

CONSULTATION

Three resource advisors were available at all times to the teams managing the Middle Fork Complex. Joe Harper (wildlife biologist), Sandi Morris (archeologist), and Steve Gerdes (fisheries biologist) worked with the incident command teams from July 23 through September 17. During this time, numerous contacts were made to other resource specialists, including Dave Salo (hydrologist), Dave Rupert (soil scientist), Jim Brammer (fisheries biologist). These specialists toured the fires and provided valuable information to the resource specialists to assist our efforts to minimize adverse effects from the suppression efforts.

Initial contact with Kate Walker, US Fish and Wildlife Service, was made August 1. Kate was updated for the duration of the fires.

5-2 Intragraval sediments and fish numbers

See Item 5-1 above.

5-3 Aquatic Invertebrate Populations

OBSERVATIONS – MIDDLE FORK FIRES

Aquatic macroinvertebrates are those insect species that have a life phase underwater. Macroinvertabrates have shown measurable response to a wide variety and intensity of changes in aquatic ecosystems, including organic enrichment, pesticides, sedimentation, heavy metals, thermal changes, acidification and flow fluctuations. Aquatic macroinvertebrates have been monitored at selected stations on the Deerlodge Forest since 1982; one of these stations is in the main Rock Creek downstream from the some of the Middle Fork Fires.

FINDINGS

Samples collected in the Fall of 2000 have not been analyzed to determine if any shifts in taxa have

occurred. Due to the small percentage of area burned within the affected watershed, the generally low intensity of the fires, and the minimal amount of riparian area burned, little impact is anticipated. No significant variation in parameters used to monitor macroinvertebrates have shown up in monitoring prior to the fires.

6-1 Streamside cover for fish

OBSERVATIONS – MIDDLE FORK FIRES

The intent of this monitoring item is to assure management activities do not degrade the habitat of riparian dependent species. See Item 5-1 for a description of the watersheds affected.

FINDINGS

Riparian areas within the Middle Fork Fire Complex generally did not burn, or if they did, the fire was for the most part a low intensity burn. The most notable exception to this description occurred around Medicine Lake, an area that burned intensely.

These fires had little, if any, impact on ESA listed or R-1 sensitive species due to the small percentage of area burned within the affected watersheds, the generally low intensity of the fires, and the minimal amount of riparian area burned. Even Medicine Lake, a locally important recreational fishery, should not be adversely affected over the longer term by the magnitude or intensity of the fires.

6-2 Riparian Rehabilitation

OBSERVATION – MIDDLE FORK FIRE COMPLEX

The Middle Fork fires burned about 18,000 acres (approximately 9%) in these three watersheds. Only about one-quarter (approximately 4,500 acres) burned with a moderate intensity fire. The majority of the burned acres supported a low intensity ground fire.

FINDINGS

Most of the higher intensity burned areas are located away from riparian areas. Riparian areas generally did not burn, or if they did, the fire was for the most part a low intensity burn. No rehabilitation work was recommended for burned riparian areas within the Middle Fork Fire Complex.

7-1a Range- utilization in transitory range

The intent of this monitoring item is to track grazing and trampling damage to reforested stands.

OBSERVATIONS – MIDDLE FORK FIRES

The only fire in the Middle Fork Complex that affected a grazing allotment as the Cougar Creek Fire. Sand Basin, Middle Fork and Ross Fork cattle allotments were affected. Prior to the fire, these three allotments had no fenced boundaries between them. Dense timbered stands served as natural barriers to livestock movement.

FINDINGS

On all three allotments, the fire burned in areas that receive little, if any cattle grazing. All of the areas were heavily timbered and were not accessible to cattle. As a result of the fire, some timbered

natural barriers have been removed or their effectiveness reduced. At this time it appears that fences may have to be constructed to prevent cattle drift into areas not authorized for grazing. Cattle use is being monitored over the next few years to determine if and where new fence construction may be required to keep cattle confined to suitable range.

7-1b Range – Utilization of available forage by livestock

OBSERVATIONS – MIDDLE FORK FIRES

Sand Basin, Middle Fork and Ross Fork cattle allotments were affected by the Cougar Creek Fire, part of the Middle Fork Fire complex.

FINDINGS

On all three allotments, the fire burned in areas that receive little, if any cattle grazing. Primary range was not affected to any degree. Cattle use is being monitored over the next few years to determine if and where new fence construction may be required to keep cattle confined to suitable range.

7-2 Range – Allotment Management Planning

The Beaverhead-Deerlodge Forest met its funded target of completing 9 new or updated Allotment Management Plans. None of these were in the area affected by the Middle Fork Fire Complex.

No immediate changes in Allotment Management Plans will be made as a result of the fires. Post-fire analysis determined that the changes are minimal and can be dealt with through adjustments in the Annual Operating Plans, if necessary.

7-3 Weed Infestations

OBSERVATIONS – MIDDLE FORK FIRES

Noxious weeds have mainly been a problem of shrub/grasslands and disturbed sites (harvest sites, roads, and developed recreation areas) in this landscape. Very few roads access these fires, and therefore weed control has not been a large problem, with low levels of control aimed at the backcountry. Most of the area's known weed populations have been kept in check with pro-active monitoring and district/county control programs.

FINIDNGS

Burn intensities were low and moderate within most of the fire perimeter. Native ground cover is anticipated to return promptly, reducing the potential spread of weeds. Where fire burned through effective forest shade cover, access is poor and the potential for rapid expansion of weeds is low. Destruction of ground vegetation from construction of fire line, spike camps, helispots, and staging areas has increased weed establishment potential on about 116 acres. Most of this "weed-friendly" disturbance occurred outside of the mapped fire boundaries, but it was directly a result of suppression efforts. The likelihood that additional weed seeds (species and quantities) were brought in by out-of-county vehicle traffic is high. Additional control needs will likely result from this traffic. Sites with high probability for weed infestation are:

- 35 acres used for helispots, staging areas, and spike camps will need monitoring and control of new weed infestations. These areas are considered low risk to weed expansion and because

these are remote, access will be difficult.

- 1.25 miles (2.5 acres) of wilderness trails burned over, resulting in a low risk of increased weed expansion.
- 17.5 (35 acres) miles of non-wilderness trails burned over, resulting in a low risk of increased weed expansion.
- 2 miles (4 acres) of dozer fire line have a high risk to weed expansion.
- 20 miles (40 acres) of system roads (2 miles inside the fires) have had considerable out-of-county vehicle and machinery traffic due to fire control efforts. These are high risk to weed expansion.

RECOMMENDATIONS

Because most of the effects of burning did not appreciably change the risk of epidemic weed expansion, only minor changes in the existing weed control needs are anticipated. Agreements with the County, as well as State and Federal regulations, dictate control of noxious weeds. The following management recommendations will allow the district to meet agreements and comply with laws:

- Coordinate with wilderness weed control efforts on the Wisdom District to monitor, map, and treat weed infestations on wilderness sites. Supplement the wilderness weed patrol position for coverage across the divide and into the Pintler District. Area affected includes trails, helispots, and spike camps in the Anaconda Pintler wilderness (12.5 acres).
- Increase funding, staffing, supplies, and equipment to the district Force Account weed control program, for five years, to meet additional weed control needs caused by wildfire and control efforts. This control program includes monitoring, mapping, data entry, and treatments on 104 acres additional to the current program:
    - 17.5 miles (35 acres) of non-wilderness trail that was burned over and used in fire suppression
    - 25 acres of non-wilderness helispots, spike camps, and staging areas
    - 20 miles (40 acres) of system road that underwent heavy, non-local vehicle traffic
    - 2 miles (4 acres) of dozer disturbance through open sites.
- Support the completion of the Forest Noxious Weed EIS that will include aerial spraying of noxious weeds. Many of the sites that may need to be treated would have to be done aerially because of their remote location and lack of any access.
- Monitor/survey all 116 acres annually during the growing season. Map known and discovered infestation sites using GPS technology and record conditions to the Forest Weed database. Treated sites will be monitored more frequently, and effectiveness of treatment assessed.

7-4 Range condition and trends

OBSERVATIONS – MIDDLE FORK FIRE COMPLEX

The only fire in the Middle Fork Complex that affected a grazing allotment as the Cougar Creek Fire. Sand Basin, Middle Fork and Ross Fork cattle allotments were affected.

FINDINGS

On all three allotments, the fire burned in areas that receive little, if any cattle grazing. All areas were heavily timbered and not accessible to cattle. Change in range condition and trends are not anticipated as a result of the Fires of 2000. Cattle use will be monitored over the next few years to determine what if any effects the fire had on use patterns

7-5 Permit Compliance

OBSERVATIONS – MIDDLE FORK FIRE COMPLEX

Sand Basin, Middle Fork and Ross Fork cattle allotments were affected by the fires.

FINDINGS

The Fire Season disrupted the livestock-grazing season and prescribed pasture use from July thru fire season. Permittees withdrew cattle from the Sand Basin Allotment when the Cougar Creek Fire started and did not return them. The Ross Fork Allotment permittees moved their cattle but brought them back later in September. On the Middle Fork, permittees moved their cattle from high pastures to lower pastures away from the fire and took them off the allotment earlier than their season allowed.

8-1 Timber – regulated volume prepared for sale

(Not applicable to post-fire monitoring, SEE ITEM 8-3_)

8-2 Timber assumptions: volume, condition, etc.

(Not applicable to post-fire monitoring)

8-3 Silvicultural assumptions and practices

OBSERVATIONS – MIDDLE FORK FIRE COMPLEX

Forest cover types, prior to Middle Fork wildfires, were dominated by lodgepole pine. Wet draws, riparian areas, and north slopes also contained mixtures of spruce and subalpine fir. Douglas-fir stands were confined to south facing slopes and lower elevations. Near timberline, forests consisted of a mixture of whitebark pine, subalpine fir, spruce and subalpine larch.

Stand size classes are dominated by poletimber and sawtimber. Large acreages of the sawtimber size stands existed in a decadent condition with numerous snags and heavy downfall. Mature stands of lodgepole pine contained sawtimber in volumes ranging from 8-12 MBF/acre, while mature fir stands could range up to 20 MBF/acre.

FINDINGS

Approximately 1,000 acres of burned timber within the Coyote and Skalkaho Pass fires lie within suitable timber management allocations (MA E1, E2, and F1), and 12,110 acres of burned timber lies within unsuitable allocations (Management Areas A4, A5, an D2). The majority of the fire burned in a mosaic type of low intensity. The condition of these stands are at high risk for spawning large bark beetle populations. Without controls, these areas are likely to sustain further loss of hiding cover, create more weed friendly habitat and add considerably to heavy dead fuel loads. The greatest post-fire concerns, from a silvicultural perspective, are the creation of conditions conducive to a bark

beetle epidemic and timely reforestation. See Item 11-1 for more on insect infestations and 8-6 for more on whitebark pine concerns.

8-4 Size of openings

(Not applicable to post-fire monitoring)

8-5 Regenerated yield projections

(Not applicable to post-fire monitoring)

8-6 Reforestation practices, planting targets

The intent of this monitoring item is to track whether post timber sale planting targets are being met. This discussion, however, relates to one of the key concerns of wildfire: post-fire reforestation.

OBSERVATION – MIDDLE FORK FIRES

Forest cover types, prior to Middle Fork wildfires, were dominated by lodgepole pine. Wet draws, riparian areas, and north slopes also contained mixtures of spruce and subalpine fir. Douglas-fir stands were confined to south facing slopes and lower elevations. Near timberline, forests consisted of a mixture of whitebark pine, subalpine fir, spruce and subalpine larch.

FINDINGS

The majority of the fire burned in a mosaic type of low intensity (Figure 4. Middle Fork Burn Intensity Map). For the most part, the forest communities affected here are adapted to regenerate following fire. However, severely burned areas may have situations (such as soil changes, long distance from seed sources, and destruction of soil seed) that may not lead to adequate or timely regeneration to desirable species. A small percentage of sites in the Middle Fork Fire Complex may require artificial regeneration to meet resource goals and Forest Plan objectives.

There is a particular concern with whitebark pine trees and subalpine larch; both considered communities at risk in southwest Montana. Whitebark pine trees on the highest ridges and at the upper timber edge that were burned by the fire were mature. The stands that were missed by the fire are at high risk of infection by whit pine blister rust. Infected seedlings and saplings face almost impossible odds or reaching maturity and the ability to produce cones (Double Sec DEIS, pg II-6).

RECOMMENDATIONS

Where surveys show the need, schedule artificial reforestation on severely burned sites not likely to naturally regenerate in a timely manner. Emphasis on whitebark pine is recommended, followed by sites on heat-sterilized soils.

8-7 Timber stand improvement thinning program

(Not applicable to post-fire monitoring)

8-8 Lands suitable for timber production

(Not applicable to post-fire monitoring)

9-1 Compliance with Local, State and Federal water quality standards

This monitoring item normally looks at implementation of Best Management Practices and results fror water monitoring stations. Because fire related issues are different than management activity induced issues, this year under 9-1 we look at:

- Increases in erosion, sedimentation, and nutrients with possible effects on stream channel stability and beneficial uses like municipal water supply and irrigation.
- Changes in stream flow regime, including short-term increases in peak flow. Potential effects include changes in stream channel stability and ability of culverts and bridges to pass peak flows. Peak flow analysis considers watersheds above the point where important infrastructure is first encountered.
- Changes in large woody debris (LWD) recruitment and its effect on stream channel stability.
- Reduction in streambank stability where vegetation plays a significant role in bank integrity.

OBSERVATIONS FROM MIDDLE FORK FIRE COMPLEX

The fires within the Middle Fork Complex fall within various tributaries of Rock Creek, a major tributary of the Clark Fork River. Streams analyzed within the complex include North Fork Rock Creek, Bowles Creek, Sand Basin Creek, Ross Fork Rock Creek, Copper Creek, and Middle Fork Rock Creek.

The upper basins of North Fork, Ross Fork, Copper Creek, and Middle Fork are generally heavily influenced by valley glaciation of belt rock geologic types. The lower portions have a more subdued topography due to ice cap glaciation, with granitic geologies becoming more apparent in many areas. Glacial till occupies the lower slopes and valley bottoms in much of the upper watersheds. Glacial till typically absorbs and retains water very well, providing a slow release of water throughout the year. Because surface runoff is rare, surface erosion is very limited as well. Drainage densities within areas of glacial till are typically low, further enhancing a slow release of water during storm events and snowmelt. Some areas of stream-dissected granitics exist, like in Sand Basin Creek. These areas do not reflect the water storage and surface stability characteristics of glacial till.

Annual precipitation ranges from 14-40 inches, with the bulk falling as snow during the winter or rainfall during late spring. Peak runoff typically occurs in late May or early June. Elevations range from about 5,600 feet at the lower watersheds to 10,464 feet at the head of Middle Fork. Coniferous forests dominate the vegetation types, with inclusions of wet meadows.

Past management actions include limited amounts of timber harvest, roads, trails, and livestock grazing. A good portion of the complex exists within the Anaconda Pintler Wilderness or roadless areas, with very minimal effects from management.

FINDINGS

All burned areas were viewed and videoed by helicopter flights. Limited on-the-ground review provided a validation of effects viewed by aerial reconnaissance. Both efforts were used to characterize burn severity. Mapping burn severity provides an important component in determining changes in peak flows. Watershed delineation for peak flow analysis occurred above important infrastructure items such as a bridges or culverts. Predicted post-fire peak flows (NRCS Peak Discharge Analysis) are rated in terms of a flood recurrence interval (USGS Water Resources Investigations Report 92-4048). This information can be used to determine the risk to infrastructure. Because snowmelt runoff regimes occur in a more gradual fashion than runoff generated from

intense rainfall, peak flow analysis may be substantially overestimate actual runoff conditions. Table 16 lists watersheds and respective components used in computing peak discharges.

Table 22. Peak Flow Increases in Middle Fork Watersheds

Watershed Name	Watershed Acres	Moderate Burn Intensity (%)	Peak Flow Increase (%)
North Fork Rock Creek	3,880	6	4
Ross Fork at Road 70	40,230	12	11
Copper Creek near Trailhead	7,815	5	4
Middle Fork at Road 5106	11,915	8	6
Bowles Creek	5,370	7	6
Sand Basin Creek	4,150	12	12

About 7% of the Rock Creek basin at the mouth of the West Fork is contained within mapped fire perimeters. Considering that the perimeter contains many acres of unburned or low intensity burned lands, this represents a minor effect on the basin at this scale.

North Fork Rock Creek - A small amount of fire consumed vegetation in the upper watershed near Skalkaho Pass, with only a small portion being stand replacement fire. Very little riparian area burned. No significant effects to peak flow, sediment, or stream stability are expected.

Bowles and Sand Basin Creek - Both watersheds experienced very limited burns in the upper portions of their basins. Very little riparian area burned. No significant effects to peak flow, sediment, or stream stability are expected.

Ross Fork - About 62% of the basin experienced fire; however, much of this is unburned or low intensity burn. Stand replacement fire burned in places in the upper basin and the tributary above Medicine Lake, but riparian areas were spared in most of the burn. The broad glacial valley in upper Ross Fork shows little effect of fire, with only light underburn in places. While local effects of erosion may occur, no significant down-stream effects from sedimentation, sediment bulking, or peak flow changes are expected. Medicine Lake may experience short-term effects from ash; however, the low gradient stream system above the lake should function as an effective filter for sediment and LWD.

Copper Creek - Only a small portion of the watershed burned, mainly near the Continental Divide, with very little riparian area. No significant effects to peak flow, sediment, or stream stability are expected.

Middle Fork - The majority of burning occurred within Falls Creek basin in the vicinity of Johnson Lake. Some of the burn constitutes stand replacement, with some small tributary streams experiencing burn. In other places, the burn perimeter includes areas dominated by bedrock at the surface. While there may be localized effects of erosion and sediment, no significant downstream effects to stream function are expected.

RECOMMENDATIONS

- Ensure that livestock grazing activities do not impede recovery potential of vegetation and watershed function. Livestock grazing activities within burned areas should involve input from resource specialists.
- Continue long-term macro-invertebrate monitoring on Sand Basin, Middle Fork Rock, Upper West Fork, and Ross Fork Rock Creek.

9-2 Riparian rehabilitation projects

See Item 6-2

9-3 Productivity changes in sensitive soils

This monitoring item insures management practices do not adversely affect soil productivity. Post-fire concerns are also focused on adverse effects to soil productivity, specific concerns are:

- Soil surfaces are exposed to erosion due to removal of plant canopies and duff layers.
- Soil erosion and runoff are intensified due to water repellency below soil surfaces.
- Soil organisms are affected due to soil heating and loss of living vegetation.
- Roads within burned watersheds can produce more erosion and sediment during runoff, especially on low standard and poorly maintained roads.

OBSERVATIONS – MIDDLE FORK FIRE COMPLEX

Soils in the Middle Fork fires have developed in decomposed Belt and granitic bedrock, granitic and mixed glacial deposits, and alluvium. Dominant soil classifications are Typic and Lithic Cryochrepts. Cryorthents, Cryoboralfs, and Cryoborolls also occur.

Landforms consist of moderate relief glaciated mountain slopes. Soils are shallow where glacial erosion is dominant, generally in the upper basins and on glacial troughs. Deep soils occur on glacial deposits and alluvium. Moderately deep soils are found on frost affected ridges

Dominant habitat types are subalpine fir/woodrush, grouse whortleberry, beargrass, dwarf huckleberry twinflower and Douglas fir/pinegrass and twinflower. A variety of riparian habitat types occur in strea bottoms.

FINDINGS

The fires were evaluated to determine if emergency or long-term rehabilitation measures were necessary to prevent damage to soil productivity. This was equated to soil loss due to erosion from soil no longer protected by a duff layer and canopy of vegetation.

Burn intensity was classified based on the size of fuel consumed by the fire:

- Low - 1 hour fuels not consumed
- Moderate - 1 hour fuels consumed, 100 hour fuels partially to completely consumed, 1000 hour fuels not consumed
- High - 1hour, 100 hour, and most 1000 hour fuels consumed

Burn severity was classified based on the condition of the duff layer and the soil under it:

- Low – duff surface charred but not consumed
- Moderate - duff charred black, no fire induced water repellency, no soil discoloration, roots flexible
- High - duff burned to white ash, areas of fire induced water repellency, soil discolored, roots brittle

Spot checks indicated that most areas with the canopy consumed classified as moderate burn intensity and those with brown needles classified as low burn intensity. Spot checks of burn severity indicated that areas with moderate burn intensity had a burn severity distribution of 5% high severity, 30% moderate severity, and 65% low severity. Areas of low burn intensity were classified as 100% low severity. Preliminary area estimates of burn intensity and burn severity are listed below.

Table 23. Estimated Burn Intensity Acres

Fire Complex	Fire Intensity	Acres
Middle Fork	High	0
	Moderate	3,600
	Low	5,950

Table 24. Estimated Burn Severity Acres

Fire Complex	Fire Intensity	Acres
Middle Fork	High	180
	Moderate	1,080
	Low	8,290

RECOMMENDATIONS

The combination of expected runoff events, habitat types, soils, landforms, and burn severity leads to the conclusion that no feasible emergency or long term rehabilitation is needed to prevent extensive soil damage from erosion. Some localized erosion will occur. The rationale for this statement is discussed below.

Spring runoff is the design storm for this evaluation. Between now and then only light rain is expected, followed by the normal snows that accumulate until spring. Soils should receive water slowly enough to permit infiltration. The mat of charred duff has protected the areas with moderate burn severity during the recent rains and will do so in the spring.

Some plants began growth this fall and, with light rain and warm weather, others are likely to appear before growth ceases for the year. Plants such as pinegrass, grouse whortleberry, beargrass, buffalo berry, currant, and other species will likely show up next spring. Lodgepole pine and some of the other conifers have dropped seed that will germinate in the spring. Existing plant roots are available to help bind the soil as well.

Most of the soils have rock content of 35% or higher with a fair component of surface rock. An erosion pavement will quickly develop if runoff becomes concentrated enough to cause erosion.

The most serious impacts from the fire have occurred on glacial landforms. These landforms generally do not concentrate overland flow as efficiently as stream dissected landforms do. Glacial deposits usually have the opposite effect, namely collecting water in depressions.

Finally, high burn severity occupies a small portion of the area and occurs in a mosaic pattern within the less severely affected areas.

It will be important to maintain existing roads within watersheds that burned, as needed, to control surface runoff on road surfaces and on natural surfaces that have burned. Obliteration may be necessary for some low standard roads if runoff cannot be controlled.

9-4 Water availability, water rights

(See Item 9-1, which includes a discussion of fire effects on peak flows and discharge as it relates to water availability. Water rights were not affected by the Middle Fork Fires)

10-1 Mineral activities

(Not applicable to post-fire monitoring)

11-1 Insect and disease infestations

OBSERVATIONS - MIDDLEFORK FIRES AND MUSSIGBROD

The Forest updated information gathered in 2000 during the summer of 2001 with the help of entomologists from the Research Branch of the Regional Office. The information below represents that more refined data gathered for both fires.

Bark Beetle existing conditions and typical fire effects on those conditions

All conifers in the fire area may host one or more bark beetle species and woodborers.

Tree Species And Some Of The Bark Beetles They Host

Tree Species	Primary Bark Beetle Which This Tree Species Hosts	Secondary Bark Beetle Which This Species Hosts
Lodgepole Pine	Mountain Pine Beetle (Dendroctonus ponderosae)	Pine Engraver (Ips pini) plus several others
Whitebark Pine	Mountain Pine Beetle (Dendroctonus ponderosae)	Several Ips species
Douglas-fir	Douglas-fir Beetle (Dendroctonus	Several others

	(Dendroctonus pseudotsugae)	
Engelmann spruce	Spruce Beetle (Dendroctonus rufipennis)	Ips tridens
Subalpine fir	Western Balsam Bark Beetle (Dryocetes confuses)	

All of these beetle species were present on the forest prior to the fires. Ground surveys confirmed that several areas in or near the fire perimeter had contained endemic spruce beetle populations prior to the fires of 2000. These include Bender Creek and North Fork of Rock Creek near Skalkaho Pass. These populations had been killing a few trees in these drainages each year, but hadn't expanded greatly. Douglas-fir beetle population was similarly low in population within the fire perimeter. Douglas-fir beetle has been active on the Bitterroot National Forest adjacent to our fires.

What is the historical range of beetle populations and how do they interact in the ecosystem?

Bark beetles and woodborers are native to the ecosystem, often experiencing boom and bust cycles. They have been described as "change agents" which induce death in trees; changes to forest stand densities, changes in course woody debris, changes in forest floor litter, and changes to amounts of sunlight reaching the forest floor. Indirectly, they influence timing, scale, and intensity of fires, water quality and quantity, wildlife use, trees species composition, age and size of remaining trees, and changes in commodity or amenity values.

Bark beetles respond to climate and tree characteristics. Woodborers interact with bark beetles, feeding on their larvae and competing for food under tree bark The last significant tree kill from bark beetles in or near the areas where the fires of 2000 burned the project area was from mountain pine beetle increase in the 1920's and 1930's

Western Balsam Bark Beetle has been increasing across the region. This isn't termed an epidemic, but the beetle is becoming a noticeable presence in the subalpine fir timber type, and is present in the Forest.

Mountain pine beetle is an aggressive primary beetle, attacking large, live, healthy lodgepole and whitebark pine It is considered to be the most important native bark beetle pest of mature pines in the Western United States. Populations can build fast and kill millions of trees A population outbreak is often followed by fire within 15 years We have no conclusive evidence that fire-stressed lodgepole is attractive to mountain pine beetle

There is some indication that fire damaged whitebark pine is susceptible to mountain pine beetle. Ips pini beetle (pine engraver) usually plays the role of a secondary beetle. This refers to its propensity to attack trees weakened through other means (drought, fire injury, wind throw). It may kill some otherwise healthy trees, but the probability of large-scale tree mortality is low. Low precipitation in spring and early summer predisposes lodgepole to attack. Outbreaks are normally 2 or 3 years long. Douglas-fir beetle can act in either primary or secondary roles. In endemic levels they infest scattered trees, including windfalls and fire-scorched or otherwise damaged trees. They can become an aggressive mortality factor if triggering events such as drought, fire, or wind throw strike areas that has sufficient beetles to respond. In those cases they can spread to adjacent green trees

Spruce beetles are typically present in low (endemic) population levels and as such facilitate

regeneration of spruce by creating small disturbances in the overstory tree canopy. But their population can escalate rapidly. These large die-offs and subsequent fire may have kept some willow bottoms stocked with willow rather than spruce.

Woodborers respond to mortality from other sources (such as fire or bark beetles).

FINDINGS AFTER THE FIRES OF 2000

How did the fire affect bark beetle habitat?

The fires varied in severity, producing a mosaic of habitat conditions for bark beetles. We classified beetle habitat within the fire perimeter into the categories in this table.

Classification of bark beetle habitat

Category of beetle habitat	Approximate % area within the burn
No beetle habitat or very small amount (water, rock, dead trees severely burned with no live cambium). Not susceptible to beetle mortality. We expect this type to produce few beetles and we expect few trees of this category to die due to beetles.	58% of area within fire perimeter
Category of beetle habitat	Approximate % area within the burn
Beetle habitat – mixes of fire damaged and undamaged trees throughout burn. (Present condition is 50% live trees and 50% dead) We expect beetles to produce successful broods in this category, and we expect beetles to kill trees and to increase population numbers in this zone.	42 % of area within fire perimeter

Of particular concern are conditions in which Douglas-fir beetle or spruce beetle would thrive. We sampled the area by walking transects during summer of 2001. In late fall of 2001 a Forest Service entomologist did intensive transects for beetles. She surveyed 85 spruce trees and 100 Douglas-fir trees, finding substantial numbers of both species As of fall 2001, one year after the fires, we found an increase in Ips, mountain pine beetle, spruce beetle and Douglas-fir beetle.

Noticeable mountain pine beetle increase is confined to fire-killed whitebark pine. It is not evident on lodgepole pine. Spruce bark beetle, Douglas-fir beetle, and ips have broods in both downed dead and standing dead trees. Downed logs with succulent bark are where most of the brood is now, although some standing dead trees and a few live trees contain beetles. Spruce trees burned so severely that they have no live foliage or cambium and do not contain beetles. In contrast, dead Douglas-fir with no foliage and severely burned bark sometimes contained beetles. We found this condition in Douglas-fir, in both Mussigbrod and Bender drainages. We documented no bark-beetle killed trees.

Our data indicates a trend of increasing population of beetles for four of the five beetle species that we have described, relative to pre-fire conditions. We will not know the full extent of beetle build-up for a few years. We do not have enough data to specify changes in populations of the fifth species (western balsam bark beetle).

What is the susceptibility of trees inside the fire perimeter to bark beetles?

The fire killed most of the trees in ½ of its area. Trees killed are no longer susceptible to bark beetle mortality so this discussion applies only to live trees. The fires of 2000 produced three elements necessary to place those trees inside their perimeters into a highly susceptible category. Those elements are: stressed (susceptible) trees from long drought and age, fire (a triggering mechanism), and presence of beetles that we have found in the fire perimeter.

Spruce beetle, Douglas-fir beetle, ips, and to a certain extent mountain pine beetle have already capitalized on these conditions. However, direct fire injury will probably account for more mortality than will bark beetles

What is the susceptibility of trees outside the fire perimeter to bark beetles?

Trees outside the fire perimeter do not have direct fire damage and so their vigor is unaffected by fire. But their proximity to the building population of beetles in the fire will mean their defenses against beetle will likely be tested in the next several years.

All of the bark beetle species discussed are natives of this ecosystem. Every tree in the area has at least one bark beetle that it hosts. Local endemic populations of beetles are a normal component of the ecosystem. To that extent, all the trees are susceptible to attack and mortality due to bark beetles. This interaction is a part of normal ecosystem function. We expect that normal background mortality to continue, regardless of fire effects.

Even large populations of bark beetles and resulting tree mortality can be part of normal ecosystem function. Fires, wind throw, and drought are typical triggering events for such buildups. But this type of buildup is of concern to forest management since it may impact special components of forest cover vegetation types (spruce and Douglas-fir in this area).

The following discussion describes how fires affected each beetle species and how the host trees near the fire perimeter are set up to respond.

1. Douglas-fir bark beetle in Douglas-fir outside fire perimeter:

Stand conditions conducive to beetle depredation are:

- Stands in which Douglas-fir is the dominant species and on sites where it is commonly found. Douglas-fir habitat types on south slopes and drier ridges sustain more beetle-caused mortality than others.
- Age of Douglas-fir. Greater than 100 years is highly susceptible. Older than 120 years is extreme.
- Size of the Douglas-fir. Trees less than 14 inches in diameter are less likely to be attacked successfully.
- Stand density. When basal area exceeds 150 square feet per acre, susceptibility increases.

The 10,533 unburned acres of Douglas-fir within 5 miles of the burn meet these 4 criteria. They are considered at risk to Douglas-fir beetle. Approximately 2,000 acres are very susceptible to beetles.

2. Spruce beetle in Engelmann spruce outside the fire perimeter:

Spruce stands are highly susceptible if they grow on well-drained sites in creek bottoms, have an average diameter breast high of 16 inches or larger, have a basal area greater than 150 square feet per acre, and have more than 65 percent spruce trees in the canopy.

36,169 acres of unburned spruce outside the fire perimeter but within 5 miles that meet this criterion. These stands of spruce can be considered susceptible to mortality from spruce beetle. 7,200 of these acres are in narrow riparian strips in which spruce forms a large portion of the tree biomass. These contain the largest spruce trees and best fit the description of "highly susceptible" to spruce beetle.

3. Mountain pine beetle in lodgepole pine and whitebark pine outside the fire perimeter:

Lodgepole pine outside the fire line is quite susceptible to attack by mountain pine beetle as judged by diameter, age and local environment, but the fires of 2000 did not exacerbate their susceptibility. These conditions existed prior to the fires of 2000 and continue now. The beetle has been building rapidly for two to four years in forest areas within 50 air miles (near Butte, Montana). We have seen small pockets near the north end of the burn complex for several years. Neither research literature nor our field surveys give strong indication that mountain pine beetle is attracted to fire-stressed lodgepole pine. That does not exclude the possibility that such interaction may occur. Whitebark pine may be susceptible to mountain pine beetle after fires. We found the beetle attacking fire-killed whitebark pine during summer of 2001), but not live trees

4. Pine Engraver (Ips) in lodgepole and whitebark pine outside the fire perimeter:

Ips is a secondary beetle; usually killing a few trees to a few hundred Trees outside the fire perimeter have experienced drought stress for several years. The fire provided habitat for ips beetle population increase. So lodgepole near the fire perimeter are at increased susceptibility. But we do not expect ips beetle to kill a significant number of trees outside the fire perimeter.

5. Western balsam bark beetle and subalpine fir:

Subalpine fir across our forest and regionally has experienced several years of dying-off (aerial insect and disease detection surveys, years 1999, 2000). Causes are not well understood. This may be natural succession, root rots, western balsam bark beetle, or other unknown causes. We have not detected an increase in population after fires of 2000. We have no conclusive evidence suggesting that the fires have increased susceptibility of subalpine fir to beetles. Nor do we know that the fires will increase the population of beetles, thus increasing pressure on the nearby subalpine fir trees.

SUMMARY - Ips, Douglas-fir beetle, spruce beetle, and mountain pine beetle show increased populations within the fire perimeter. We do not have strong evidence that the fires increased susceptibility for trees outside the fire for ips or mountain pine beetle. We do have adequate evidence that Douglas-fir and spruce trees outside the fire are at increased risk to mortality from beetle.

RECOMMENDATIONS

Analyze the feasibility of using harvest, trap trees, and/or pheromones to reduce Douglas-fir and spruce tree mortality outside fire perimeter. Monitor bark beetle population within and near to the fires of 2000. Monitor tree death due to direct (delayed) fire effects and bark beetles.

11-2 Air quality

Because of the wildfires burning throughout Montana and Idaho, air quality was poor to very poor

from July through early September. Exact data on levels and duration are not available.

The intent of this monitoring item, however, is to insure prescribed fire meets air quality standards of State and federal guidelines. During the fall of 2000, Airshed 7, which includes the Beaverhead-Deerlodge National Forest, experienced 9 non-burn days where the airshed was closed to prescribed burning. This was due to stagnant air conditions and residual smoke. In normal years, the Forest has NO non-burn days. In 2001 we had 1 non-burn day.

11-3 Fuel Treatment Outputs

FINDINGS

The Forest exceeded its FY2000 target of treating 3474 acres. Actual accomplishment was 4514 acres. This increase in accomplishment was due to a late September burning window that opened after fall rains reduced fire danger. Hazardous fuel reductions or increases resulting from wildfire are not accounted for in the reporting system. See discussions under Beaverhead Item 9-1 or Deerlodge Item 11-1.

11-4 Wildfire Acres

OBSERVATIONS

Wildfires burned 69,916 acres on the Beaverhead-Deerlodge National Forest from July 23rd to mid-September, 2000. One hundred and thirty five fires started in 2000, compared to 67 in a normal year. (See pages 5-7 for more data.)

FINDINGS

The Deerlodge Forest Plan projects an average of 224 acres. 1988 was the worst fire year in the West prior to 2000, and it's the only year the Deerlodge Forest burned more than the Forest Plan projection (8564 acres burned). The Middle Fork Fire Complex exceeded that several times over, with 18,000 acres burned on the Deerlodge side and 6,000 acres on the Bitterroot side.

12-1 Facilities - Road Construction

FINDINGS

The Fires of 2000 affected the Forests ability to meet its road-decommissioning target of 35 miles. Only 12 miles were accomplished due to the lack of personnel created by fire suppression activities. See page 4, "I: EFFECT OF FIRES ON FOREST OPERATIONS" for a more complete description.

The Forest also did not meet its road reconstruction target of 20.7 miles due to funding, not fire impacts. The only funding received from the Region was for additional work to the Centennial Divide project in the Gravelly Range. The 6 miles funded was accomplished.

12-2 Facilities - Road Management

FINDINGS - This item generally assesses road management activities using changes in road restrictions.

Roads in the vicinity of the Middle Fork Fires were closed to public access during the period of significant fire activity and remained closed until the fires were controlled. Road management returned to normal by October.

13-1 Economics – timber sale unit cost

(Not applicable to post-fire monitoring)

14-1 Effect of management on other agencies and communities

The Fire Season of 2000 raised issues about how management of the national Forest affects the local economy, resource values, local uses and lifestyles. In particular, the Forest was concerned about:

1. Communicating with the public the actual effects of fires and the rehabilitation needed.
2. Maintaining good relations developed during the fire season, especially between agencies.
3. Building support for long term community based actions to improve fire readiness
4. Increasing public understanding of the role of fire in our forests.

OBSERVATIONS – BEFORE THE MIDDLEFORK FIRE

Relationships - We enjoyed good relationships with news reporters before the fires, but had never had those relationships tested by a large-scale emergency. Reporters have been sympathetic to our push for "firewise" rural homeowners but needed newsworthy events or "hooks" to proceed with coverage, and we were finding those harder to develop.

We enjoyed good working relationships with county commissioners in both Granite and Beaverhead counties, in spite of differences that sometimes developed over policy.

Communities - Relationships with Granite County residents were fair to good. Granite County had enacted a "Catron County" style ordinance some years ago, but never had been aggressive about enforcing it or negative toward the Forest Service.

Anaconda-Deer Lodge County was only occasionally engaged in Forest Service issues, focusing more on local issues in Anaconda.

Public Safety - For about five years, the Butte Ranger District has worked to increase awareness among homeowners in Silver Bow County subdivisions of the need to become "firewise." The campaign began with a proclamation from the county chief executive, a full-page newspaper graphic, radio announcements, and a week of tips on TV weather segments of the nightly news.

Since then, the Butte Fire Protection Association was organized to bring local, state, and federal fire fighting and emergency agencies together. The group has held tabletop exercises and looked for publicity opportunities each summer to spark and continue interest. For three years, a public service announcement has run on KXLF-TV that was produced by the station and the forest's public affairs office for the BFPA.

BPFA has also stockpiled firewise publications, including door hangers, to be distributed by scouts or other groups throughout at-risk areas. Homeowner education was occasionally a theme at area county fairs in the late 1990s.

Education - The forest has not interpreted fires or their effects in any roadside signing. There was some environmental education work done with fire as a topic at the Birch Creek Center. There, one of the trails runs through a 1987 burn, and a 1998 prescribed burn is visible from campus. But, fire was not a major emphasis.

FINDINGS - AFTER THE MIDDLE FORK FIRES

Relationships - Good work by incident teams has given communities much needed personal contact that will be much harder for regular Forest staff to accomplish.

News reporters have been pleased by the job the Forest and two major incidents did keeping information flowing to them about the fires. Reporters' attention can be drawn back to the fires if we offer newsworthy events to cover, such as reseeding, announcing the results of our assessments, and so on.

Interest in rehab plans has been less than in actual rehab work and the photo opportunity that presents.

Service and other clubs in the Forest's area have sponsored talks presented about the fires, which gives us an opportunity to explain our rehab assessment and plans. We developed a power-point program to allow us to talk to audiences we don't contact ordinarily.

Communities - As memory of the fires fades, we can expect people to return to their pre-fire positions on timber harvest, forest health, and the role of the Forest Service. Making homes near forests safe may be the only "neutral" ground we'll find to operate in.

As we advocate for more prescribed burning or other management actions, we can expect to see groups choose sides on this issue, and we can expect the fire organization to be in the unaccustomed position of being "bad guys" in the view of some.

As fire prevention and fire use become a greater proportion of Forest Service work and budget, we can expect criticism from many quarters: some longing for more commodity production, others critical of management they feel is too intrusive.

RECOMMENDATIONS - LONG-TERM FIRE REHABILITATION & RESTORATION

Embark on a concerted, five-year campaign to make rural homes in our area "firewise."

- Hold community meetings to provide information on agency post-fire assessments. Encourage communities to organize for future fires. (Districts, ongoing)
- Use a professional agency to develop a plan
- Produce materials called for in the plan, such as TV ads, radio ads, and printed material
- Establish 1-2 fire education specialists to work with homeowners, community groups, and schools to carry out the firewise campaign. The specialist would have lead responsibility for coordinating a Forest Service presence at county fairs, sports shows, and other events where the firewise message would find a suitable audience. They would work with the Forest Public Affairs Officer to find opportunities to keep the firewise message before the public and organize community events to further strengthen the firewise message. Two positions could cover this large Forest, with support from the forest public affairs and fire staff.
- Repackage and distribute elementary and secondary fire education materials (including Firewise and Smokey materials) to area schools and at fairs, sports shows, and other events.
- Develop "firewise" exhibit panels for use at fairs, sports shows, and other events. Produce a scaled down tabletop version for agency office reception areas.
- Use images in the exhibit for an interactive website program and a power point program presented at area service clubs.

- Post power point and other interactive information at the forest website.
- Work with local communities, providing facilitation, educational materials, and assistance to develop local "firewise" plans and homeowner education efforts.
- Look for fire recovery events and invite reporters to cover them (PAO, Fire Education Specialists, ongoing)
- Visit service and other clubs to report on the fires' aftermaths, assessments, and to deliver the "firewise" message.

15-1 Effects of emerging issues and changing social values

FINIDNGS

Effects of the lack of fires, the use of prescribed fire, and protection of homes and property along the forest/private land interface all combine together to make fire management an increasingly controversial subject. This has been the case since before the 1996 Forest Monitoring and Evaluation Report identified FIRE as an emerging issue 5 years ago (BVHD Item 11-3). The National Fire Plan (Final Report, 1995, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy, October 2000) has effectively replaced many of the priorities for vegetation management laid out in our current Forest Plan. This issue will need to be addressed during Forest Plan Revision.

15-2 All Resources – lands not meeting physical or biological characteristics

(Not applicable to post-fire monitoring)

16-1 Research

Research needs following the Fires of 2000 were coordinated by the Regional Office. Several research and monitoring projects are underway in coordination with the Intermountain Research Station and others. In particular, staff from the Cooperative Forestry and Forest Health Protection office in Missoula have conducted research on the potential for bark beetle epidemics in the Middle Fork and Mussigbrod areas.