CHAPTER 1
PURPOSE AND NEED FOR ACTION

SUMMARY OF PROPOSED ACTIONS

The U.S. Forest Service has proposed a series of actions with the goal of forest restoration in the Upper South Platte Watershed on the Pike National Forest. These actions would include timber harvesting, prescribed burning, revegetation in the Buffalo Creek burn area, obliteration and reclamation of unnecessary roads, and trail improvements. This Environmental Assessment (EA) discloses the environmental consequences of implementing the proposed actions.

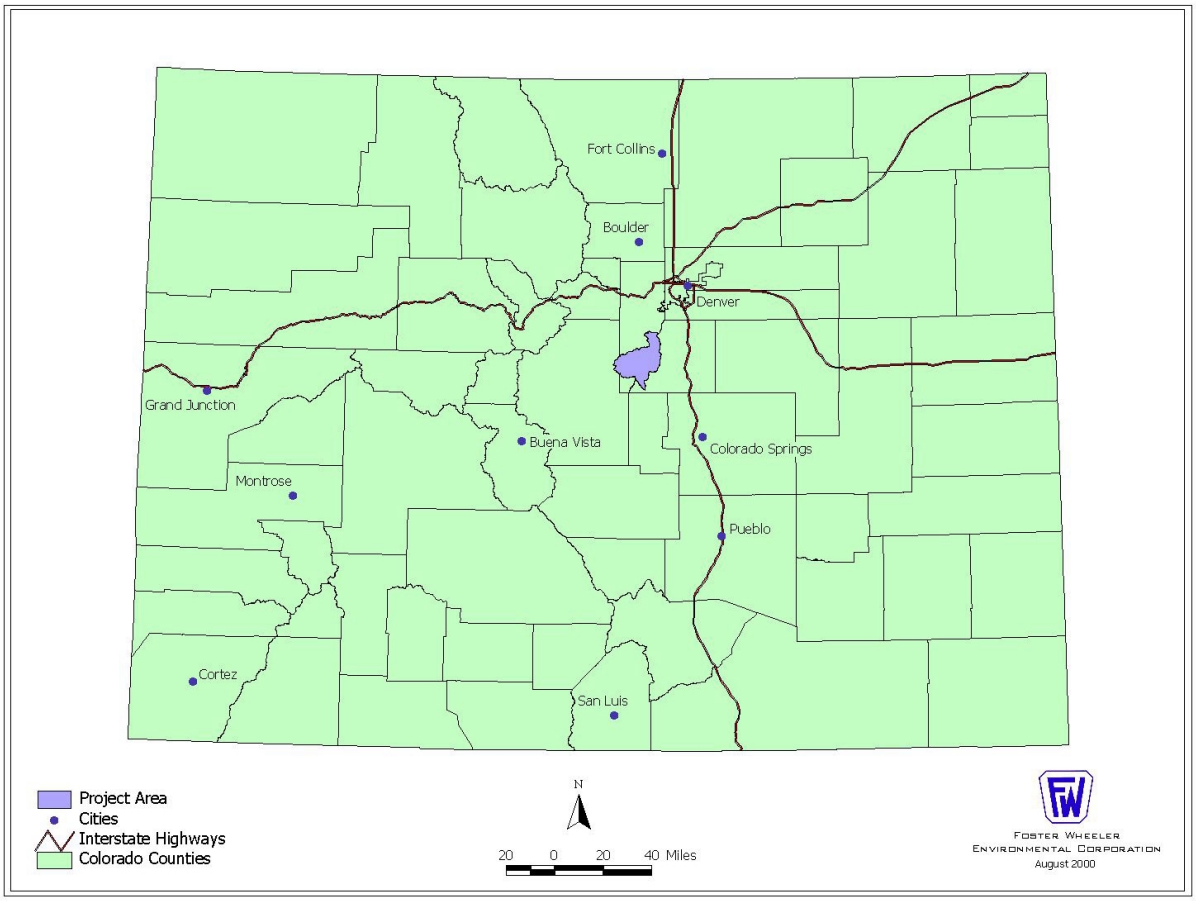
DESCRIPTION OF PROJECT AREA

The Upper South Platte watershed is located within the foothills of the Colorado Front Range of the Rocky Mountains. It is a large, important watershed that is a critical water supply for the city of Denver, providing 80 percent of the city's water supply. Due to its proximity to the city, it contains a large area of urban–forestinterface and provides easy access to fishing, hiking, and other outdoor pursuits. A portion of the South Platte River is a gold medal trout fishery.

The Project Area is approximately 140,000 acres in total area (public and private lands) and encompasses three sub-watersheds of the Upper South Platte River watershed including Horse Creek, Waterton/Deckers, and Buffalo Creek sub-watersheds. These watersheds are located in Jefferson and Douglas Counties, southwest of Denver (Maps 1-1 and 1-2). The project area targets subwatersheds with the highest fire and erosion risks within the Upper South Platte Basin. This area was selected based on recommendations from the Landscape Assessment of the Upper South Platte Watershed (Foster Wheeler, 1999). Approximately 120,000 acres of the Project Area are on National Forest land. The remaining areas within these sub-watersheds are predominately privately owned lands. However, there is also county land within the Project Area.

Elevations within the Project Area range from approximately 6,000 feet along the South Platte River to almost 9,000 feet at some of the higher peaks. The terrain is extremely varied and includes deep, narrow canyons; flat river-valley bottoms; broad meadows; rugged mountain foothills; steep slopes; rounded granite peaks; and scattered, rugged granite outcroppings. Portions of the Waterton/Deckers and Buffalo Creek watersheds are within the Lost Creek Wilderness Area.

A portion of the Project Area was burned in the 1996 Buffalo Creek fire. This large, hot fire resulted in loss of forest cover on 12,000 acres and burned several homes. Summer storms in the area of the burn caused catastrophic erosion and sediment deposition into the watershed's streams. Flooding events following the fire destroyed much of the stream channels and riparian zones along Buffalo and Spring Creeks. Even after four years, much of the burn area remains unvegetated. The Hi Meadows fire burned a small portion of the Project Area in the summer of 2000. This was also a large, hot fire that burned approximately 11,000 acres and 58 structures (see Proposed Action for further discussion of these fires).

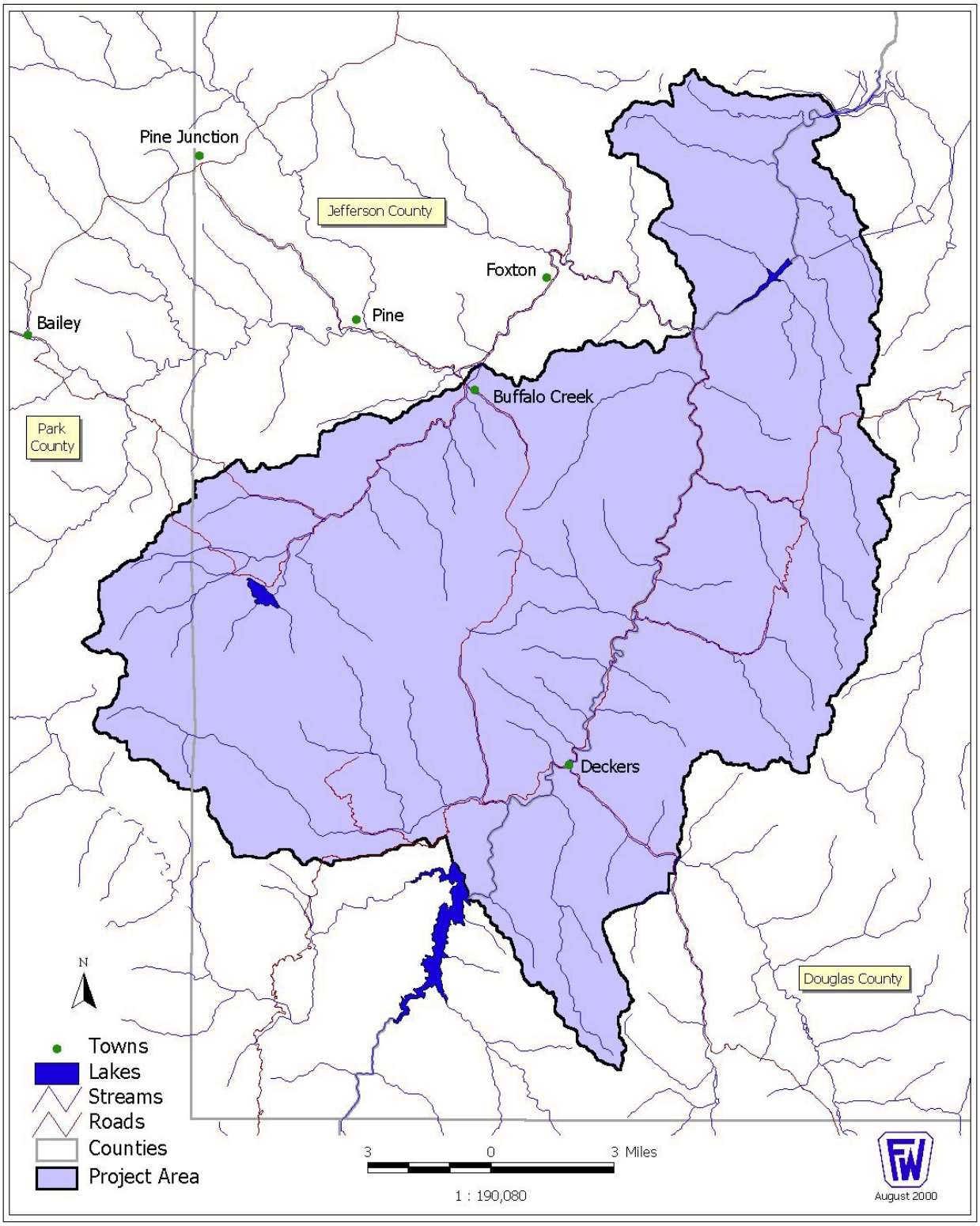


Map 1-1. Project Area Location

BACKGROUND

The Upper South Platte Watershed Protection and Restoration Project

The Upper South Platte Watershed Protection and Restoration Project was initiated in August 1998 to address concerns regarding continued soil and water problems resulting from the 1996 Buffalo Creek fire and the potential for future fires to cause problems in other parts of the watershed. The goal was to develop a strategy for watershed restoration and protection. The Project involves an interagency partnership between the US Forest Service, Colorado State Forest Service, Denver Water Board, US Geological Survey, Natural Resources Conservation Service, and the Environmental Protection Agency. The partners adopted watershed restoration as a guideline for management and project planning.



Map 1-2. Environmental Assessment Project Area

The first step was to complete a landscape assessment that would identify and prioritize restoration opportunities to maintain or restore watershed functions. A primary goal was to find areas for forest restoration that could reduce the extent and intensity of events such as the Buffalo Creek fire and strengthen the resilience of the most sensitive areas of the watershed if such events should occur.

The Landscape Assessment for the Upper South Platte Watershed (Foster Wheeler, 1999), which was completed in 1999, focused on identifying areas for restoration where forest conditions had deviated significantly from the historical composition. The deviations being due primarily to changes in the types of disturbances that regulate vegetation composition and structure. In these areas, the forest is no longer significantly regulated by the types of disturbances under which the ecosystem developed and is more susceptible to catastrophic events. The ultimate goal of the Assessment recommendations was to move the forest toward a condition that will provide a more sustainable long-term model for the ecosystem, based on the historic functioning of the ecosystem and with the constraints of the existing human presence and use.

Landscape Assessment - Summary

The following discussion summarizes some of the information presented in the Landscape Assessment for the Upper South Platte Watershed, particularly as it applies to the proposed action of this EA. For further, more detailed discussion, refer to the Landscape Assessment (Foster Wheeler, 1999).

HISTORICAL OR PRE-EUROPEAN CONDITION

Vegetation

The pre-European ponderosa pine forest was likely quite open with fewer trees, greater age diversity between stands, and larger openings than the area displays today. The forest would have been characterized by frequent fires, which were the primary disturbance factor in these forests. These fires varied in intensity and size. At times, large fires would move into the crowns and kill many trees. Crown fires played a critical role in maintaining the open stand structure and are likely to have occurred following wetter periods during which the understory vegetation had become established. This vegetation provided a ladder effect moving the fire from the ground into the canopy. In these types of events, the fire would have burned intensely in some locations, killing all trees in that area. In other areas of the same fire, the burning would have been limited to the surface, killing only some or smaller trees. Other areas would have been missed completely due to firebreaks.

Smaller fires that did not move into the crowns would have limited the growth of Douglas- fir, which does not tolerate fire well (see Chapter 3 Vegetation), to sites where fires were infrequent, particularly wetter, north-facing slopes. The smaller fires would also have kept the forest more open by limiting growth of understory trees.

Frequency and fire patterns created a varied burn pattern that in turn created a sustained vegetative pattern across the landscape. This mosaic pattern would be maintained as the patch-like variations of age classes, densities, and openings caused fires to skip around rather than kill all trees over several thousand acres. Some stands would have had a multitude of age classes from seedlings to trees more than 400 year old. There were probably few snags (standing dead trees) and cavities in live trees. A few stands would have been nearly even-aged due to stand-replacing fires followed by even-aged regeneration.

One key to the sustainability of the pre-European forest was the open condition. The open forest would have been somewhat protected against extensive fires because of the distance between tree crowns and larger openings. Openings may have covered 20 to 25 percent of the area, and some of these openings

may have persisted for decades due to climatic and seed source limitations. Regeneration would have begun immediately on other burned sites. Therefore, post-fire patterns of regrowth would have resulted in variations both in space and time, contributing to the complexity of the landscape.

In the subalpine forest, fire would also have been the major disturbance factor; however, windthrow and insect outbreaks may also have contributed to disturbance patterns. Fires in the subalpine zone appear to have been less frequent and more catastrophic. A typical fire pattern would be a stand-replacing crown fire that caused extensive mortality followed by a long (up to 300 or more years) fire-free period. This would have led to the establishment of large stands of primarily even-aged lodgepole pine with some aspen and spruce; spruce/fir would become established as an understory and eventual climax species.

Soils

The soils in the Upper South Platte watershed are highly erodible when exposed to the direct impacts of rain, sheetwash, rilling, or gullying. The primary processes controlling soil disturbance and erosion historically included wind and water. Wildland fire could have had negative impacts on soils by exposing them to the forces of erosion. A fire's intensity would determine the degree of detrimental impact. Soil should be viewed as both a habitat and selective growth medium when analyzing the effects of fire. Soils under dense vegetation contain the seeds of prior successional stands. A severe fire would kill a high percentage of these dormant seeds, whereas a low-intensity fire would scarify seed coats of many fire-adapted species, allowing germination in the next growing season.

Erosional events such as the one that followed the Buffalo Creek fire undoubtedly did occur. Hill-slope erosion following wildfire and high-rainfall events appear to have been a major source of sediment to the drainage network.

Aquatic Environment

The water runoff regime into the watershed's streams would have been somewhat different than current conditions. A lower density of trees would have reduced evapotranspiration and more water would have been available for streamflow. The forest openings would have created differing snowmelt patterns, earlier in open areas and later under tree cover. The increased runoff would probably have resulted in larger riparian areas that extended higher into the drainages.

The historical disturbance regime of more frequent fires most likely resulted in more frequent but less catastrophic sediment inputs due to erosion, transport, and deposition to the area's streams than occurs today. These more-frequent events would appear as pulses of sediment to the system, and the majority would not cause the watersheds' streams to move out of dynamic equilibrium (Foster Wheeler, 1999). Large disturbance events such as large fires and subsequent flooding and large-scale deposition (such as occurred in Buffalo Creek) would have occurred, although infrequently. These events would have tended to degrade affected stream channels by overwhelming them with deposition and causing them to move out of dynamic equilibrium. The paleoflood records indicate that events of this magnitude occurred approximately every 250 years.

Historically, the longnose sucker, white sucker, longnose dace, and greenback cutthroat trout were known to inhabit the Upper South Platte River. The greenback cutthroat trout, believed to have been a common species historically, is no longer found in the Project Area. Habitat loss, habitat modification and hybridization with or displacement by non-native trout species has eliminated greenbacks from most of its native range. The historic disturbance regimes would have resulted in more frequent, less catastrophic sediment inputs to the system. The sediment inputs would have consisted mostly of sand and gravels, and would have been easily transported through the system. High-magnitude events would have caused similar disruption to fish habitat as seen in Buffalo Creek.

EXISTING CONDITION OF THE UPPER SOUTH PLATTE WATERSHED

Vegetation

The effects of logging, grazing, and fire suppression have altered the character of nearly the entire forest. The ponderosa pine/Douglas-fir forests have been altered most significantly from the historic condition. Logging eliminated a large portion of the old growth. Across the landscape, trees growing in the openings created by logging did not have to compete with large trees due to selective harvesting. Fire suppression kept natural fires from reducing or eliminating growth of some trees, particularly Douglas-fir. The survival of new trees may also have been aided by grazing, which eliminated most of the grasses with which the trees would have competed for water and nutrients and which were needed to carry ground fires. As a result, conditions were created that brought a larger proportion of trees to maturity than would have been possible historically. These conditions created a forest that is more uniform and dense than the historical forest with its mosaic of different-aged trees and tree densities across the landscape.

The greatest departure from the historical condition is found in watersheds with dense ponderosa pine and Douglas-fir. The Douglas-fir component is proportionately higher than the expected historical condition because fires that were suppressed would have kept the Douglas-fir populations low and more limited to wetter, north-facing sites. Douglas-fir is more shade tolerant than ponderosa pine and can become established in the understory, becoming the site's climax species in the absence of fire.

The existing condition includes a forest that is relatively homogeneous and dense across the landscape. Individual stands may actually have more age class diversity than historical stands due to a lack of ground fires that would have limited the growth of a Douglas-fir understory. The density of the forest results in connected crowns where there are few openings that can create fire breaks (openings and widely spaced trees). Although ground fuels are light to moderate, the ground fuels can preheat the crown fuels during summer burning periods. These conditions increase the potential for catastrophic fires.

Soils

The primary changes in disturbance factors, and potential for increased erosion, include the addition of roads and trail networks, grazing, and suburban and rural development. The combined net effect of these changes may leave surface soil layers in an unstable or unprotected state, increasing the potential for erosion and deposition in area streams and reservoirs.

One of the greater risks to the soils is severe-intensity wildfires over a large area, which, due to the change in vegetation patterns, is a higher risk than would have been found historically. Although large erosional events, such as those that followed the Buffalo Creek fire, have been noted historically, the potential for this type of event occurring on a larger scale and potentially with more frequency has increased significantly from the historical condition. These types of fires not only increase erosion, but can destroy the seed source over a wide area. In the past, it is likely that patterns of soil erosion varied temporally and spatially. The current forest conditions increase the likelihood of large-scale erosion over a more uniform area due to fire.

Aquatic Environment

In the watershed, some of the most significant changes from historical conditions include a change in vegetation cover throughout the watershed, the introduction of roads, the addition of Cheesman Lake (reservoir), the introduction of nonnative trout species, and a change in the historical disturbance regime. The influence on runoff due to a change in vegetation cover is discussed above, under the *Historical or Pre-European Condition*.

Roads and trails can increase erosion by numerous mechanisms. Soil compaction reduces, or eliminates, infiltration of surface water, which increases sheet erosion thus leading to gully erosion during rainfall or snowmelt. A network of roads and trails may refocus overland flow into artificial flow networks that may be even more erosive. Poor maintenance can be the most significant problem due to erosion of roadfill and even slope failure. Maintenance of used roads and rehabilitation of unused roads, including drainage systems, is key to limiting these impacts.

Cheesman Lake, completed in 1905, is the only major reservoir in the watershed. It has altered flow regimes for the headwaters of the South Platte River by reducing peak flows and increasing low flows. This has actually had a beneficial impact on fisheries, and the South Platte River below Cheesman is now a gold medal trout fishery. This section of the river probably supported a smaller population of trout before Cheesman Dam was constructed.

As discussed above, one of the main changes in the fish population has been the introduction of nonnative trout species, which was partly responsible for the decline of the greenback cutthroat trout. Habitat loss due to logging, mining and agricultural use, particularly in the late 1800s, also caused major declines in greenback populations. Parts of the watershed are currently being examined by the US Fish and Wildlife Service for reintroduction of this species.

The main watershed health concern is that the forest is set up for a series of catastrophic fires, such as the Buffalo Creek and Hi Meadow fires or larger. The current disturbance regime could result in larger, more catastrophic events that could reduce the quality of larger portions of fish habitat than the smaller and more frequent disturbances that appeared to be typical historically. The historical condition would therefore result in more sustainable trout populations in the watershed. The available data does suggest that these fires and the flooding following the Buffalo Creek fire were within the historical context. However, the watershed appears to be in a condition where many more, and potentially larger, similar events could occur within the next 250 years. The potential magnitude and frequency of these events is due to the large areas of uniform tree cover and high fuels in the forest. These conditions put the watershed at risk for major impacts to the area's streams, the water supply, and aquatic habitat that do not fit into the historical context and do not contribute to long-term sustainability.

SUSTAINABLE CONDITION – LANDSCAPE RESTORATION RECOMMENDATIONS

The intent of the actions proposed by this EA is to work toward restoring the landscape to a sustainable condition, in turn lessening the potential for catastrophic events that could significantly affect the forest, wildlife habitat, soils, and aquatic environment. The pre-European condition is useful for analyzing what historically was a more sustainable condition; however, those conditions cannot be replicated in parts of the watershed due to permanent changes in the environment, including the presence of permanent roads, urban areas, houses, etc. Sometime in the pre-European condition there would have been areas of large, intense fires. These types of fires would not be tolerable in an area so close to human development. Additionally, the watershed is a valuable water supply to the city of Denver, and what historically may have been natural, massive erosion events, may be something from which the water supply now needs to be shielded. The key is therefore to find a balance that emulates the pre-European conditions to an acceptable degree and still protects the human uses of the watershed.

Vegetation

The goal in restoring vegetation to a sustainable condition is to reduce tree density and create persistent openings in the forest canopy. Two approaches are suggested, including large-scale thinning and an attempt to restore forest mosaic conditions. Thinning is recommended to reduce tree density throughout the restoration area. The thinning would be somewhat selective in order to try to replicate the historical

species distribution, with ponderosa pine dominating in most areas and Douglas-fir dominating on north-facing slopes.

The mosaic approach is also recommended to create openings in the landscape. Prescribed fire could be used to reduce fuel loadings, create mosaic conditions, and maintain created forest openings. Some areas should remain unchanged. In order to reduce fire risk, it was also recommended that opportunities for restoration in areas where topographic features provide additional fire protection be sought.

Soils and Aquatic Environments

The intensity of fires in the pre-European condition most likely varied from hot and severe to moderate surface fires, which resulted in a varying pattern of erosion. The sequence of wildfire, increased runoff, erosion, and downstream sedimentation is of concern because of the potential for intense fires in this area. In contrast to intense wildfires, low- or moderate-intensity burns generally do not result in a corresponding increase in runoff and erosion (Foster Wheeler, 1999). A reduction in fuels by prescribed fire or removal should reduce the threat of soil erosion, flooding, and sedimentation without harming the soils.

In order to reduce existing and potential future erosion due to introduced roads and trails, opportunities for correcting designs, improving maintenance, or closing unused roads should be sought throughout the restoration area. Reclamation of unused roads is also recommended. Any new road construction should be minimized.

PRIORITY WATERSHEDS FOR RESTORATION

The Landscape Assessment used the three primary subcomponents discussed above to study the watershed: forest vegetation and wildlife, soils, and aquatic environments. Two subwatersheds in the Upper South Platte Watershed—Waterton/Deckers and Horse Creek—were consistently identified as priority areas for restoration. Buffalo Creek did not score as high as some others for fire hazard, primarily because of the 1996 fire, which reduced fire risk in a portion of that watershed. However, several areas in the unburned portions of the Buffalo Creek watershed are at a high risk for fire. Additionally, areas that were burned are in need of restoration and revegetation to reduce the risk to soils and aquatic environments. Table 1-1 summarizes some of the risk factors that were studied and the relative risks for the watersheds included in this EA.

Table 1-1. Watershed Restoration Ranking for Subcomponents of the Watershed

Watershed	Fire Hazard	Priority for Restoration for the Watershed Subcomponents		
		Vegetation & Wildlife	Soils	Aquatic Environments
Waterton/Deckers	High	High	High	Very High
Horse Creek	High	Medium High	Extreme	Very High
Buffalo Creek	Medium	Medium High	High	High

A few additional watersheds appeared to be good targets for restoration. Elk Creek, Deer Creek, and Lower North Fork watersheds are located in the area with the largest human concentration and include large sections of private lands. There is an on-going project by the Colorado State Forest Service in Elk Creek watershed (See Chapter 2 - Alternatives – Future Foreseeable Actions). A small portion of the Elk Creek watershed burned in the Hi Meadow fire. However, the majority of the watershed was not burned and remains a target for restoration. The Colorado State Forest Service's project was only minimally affected by the fire. Other priority watersheds may be considered at a later date for restoration.

PROPOSED ACTIONS AND PURPOSE AND NEED

The U.S. Forest Service proposes in this EA to carry out forest restoration subprojects (see below) as part of the Upper South Platte Watershed Protection and Restoration Project. The Project is a cooperative effort between the U.S. Forest Service, Colorado Forest Service, Denver Water Board, and other federal and state agencies, local governments, and interested parties to plan, implement, and monitor restoration projects in the Upper South Platte River Basin (Business Plan for the Upper South Platte Restoration and Protection Project, 2000). It is a collaborative, innovative approach for assessing forest conditions and implementing management actions on a landscape level on both public and private lands within the basin. This EA is one of many projects that are being conducted, are planned, or will be considered in the future in order to achieve the following goals of the Upper South Platte Watershed Protection and Restoration Project:

- **Protect water quality for all users**
- **Reduce risks of large catastrophic wildfires**
- **Reduce risks to human life and property**
- **Create sustainable forest conditions in the Upper South Platte River Basin**
- **Integrate research, monitoring, and management**

Proposed Actions

The proposed actions evaluated in this EA represent the first phase of work that the U.S. Forest Service and its partners would implement under the Upper South Platte Watershed Protection and Restoration

Project. Other nonfederal and future federal restoration subprojects are addressed as connected actions in this document. Future federal restoration actions will be developed based on the outcome of ongoing planning, monitoring, and research in the Upper South Platte basin and evaluated in more detail in subsequent National Environmental Policy Act (NEPA) documents where federal actions are required. The proposed actions were developed with consideration of U.S. Forest Service management policies, legislative mandates, and approved forest management plans.

This EA evaluates a U.S. Forest Service proposal to achieve the stated goals of the Upper South Platte Watershed Protection and Restoration Project through four forest restoration subprojects. The actions or subprojects that are proposed include vegetation treatments, road reclamation, trail improvements and burn area revegetation. The specific actions proposed in this document would:

- **Treat 17,400 acres of dense forest with thinning and created openings**
- **Reclaim 25 miles of unclassified roads**
- **Improve 7.5 miles of South Platte River access trails**
- **Plant 60 acres of riparian and 1,000 acres of upland habitat in the Buffalo Creek burn area**

Purpose and Need for the Proposed Actions

VEGETATION TREATMENT

The purposes of the proposed vegetation treatments are to reduce the risk of large-scale fires and subsequent erosion in the Upper South Platte watershed that could threaten property and human life and exacerbate soil and water quality problems and to create or restore the forest to more sustainable conditions. The proposed action of these treatments also has the goal of improving prairie montane skipper habitat in order to reduce the current downward trend of this threatened butterfly.

As discussed above (*Background*), the current forest conditions combined with greater human encroachment into the forest lands have dramatically increased the risk of loss of life and property from wildfires in recent years. The current forested landscape condition does not reflect the historic disturbance regime and is not sustainable. Past fire control, logging, and grazing allowed smaller, thin-barked trees to proliferate. This resulted in relatively dense, even-aged, closed-crown forest conditions throughout the ponderosa pine/Douglas-fir forest that have a much higher risk of catastrophic fire compared to pre-settlement conditions. Because the forests have very little down wood to permit low-intensity ground fires, prescribed fires are unable to modify the forest structure. The existing small trees serve as ladder fuels, permitting surface fires to climb into the tree canopy and become crown fires. Wildfire will carry as a high-intensity crown fire under hot, dry, and windy conditions.

The 1996 Buffalo Creek and the 2000 Hi Meadow fires clearly demonstrated the potential devastation that large-scale fires can cause. The Buffalo Creek fire burned almost 10,000 acres in less than 11 hours and eventually burned a total of 12,000 acres. The fire destroyed several homes and essential forest cover on highly erodible soils. Heavy rainfall and floods following the fire resulted in two fatalities and caused substantial erosion and sedimentation. The fire also had severe impacts on downstream reservoirs that supply water to the Denver metropolitan area. Nearly 80 percent of the water used by the 1.5 million Denver metropolitan residents comes from or is transmitted through this river drainage. The Denver Water Board spent nearly $1 million on water quality cleanup and dredging operations at Strontia Springs reservoir after the flood. They anticipate spending an additional $10-15 million on future

cleanup, dredging, and water-treatment modifications over the next 10 years because of the Buffalo Creek fire.

In June of 2000, the Hi Meadows fire burned nearly 11,000 acres, including a small portion of the Project Area. This fire destroyed 58 structures, including 51 homes. This fire followed a hot and dry period. These conditions combined with high winds created a high-intensity and fast moving crown fire in portions of the burn area. The fire suppression efforts cost nearly $5,000,000. Heavy rains have caused erosion and flooding, although not to the extent of the Buffalo Creek fire. The potential for further erosion and flooding from the Hi Meadow fire is at this time unknown because the fire was so recent.

Current research within the Upper South Platte watershed (Kaufmann, et al., submitted) and knowledge of wildfire behavior indicates that modification of forest structure and composition, as proposed in this EA, would help fire-control efforts and reduce the likelihood of future large-scale fires. The Hi Meadow Incident Operations Report (June, 2000) examined previous forest management activities on the behavior of this fire. The report found that "It is evident that thinning and prescribed fire reduced the spread and intensity of the High [sic] Meadow wildfire."

The proposed actions are also needed to help protect recreational resources, including the highly regarded South Platte River trout fishery, within the Project Area. This project would also increase forest structure and composition diversity, increase resistance to widespread insect and disease events, and increase the structural diversity of wildlife habitat. The project would improve habitat for the threatened pawnee montane skipper.

ROAD RECLAMATION

The purpose of the proposed road reclamation is to reduce road-related sediment from unclassified roads. Unclassified roads are roads that are not intended to be part of and are not managed as part of, the forest transportation system. They include temporary roads, unplanned roads, off-road vehicle tracks, and abandoned travelways. The action is needed because many unclassified roads have accelerated soil loss and increased stream sedimentation that reduces aquatic habitat productivity. Many of these roads were created for temporary access associated with fire suppression, timber harvest, and mineral exploration. Expanding off-road vehicle use has widened some roads and created additional new roads. Most of these roads are poorly located and/or not maintained and were not intended for long-term vehicle use.

Project area soils are highly erodible when exposed to the direct impacts of rain, sheetwash (overland flow), rilling, or gullying (Foster Wheeler, 1999). Roads compact soils, which reduces infiltration of surface water into the soil column. This increases sheet erosion, which can lead to rill and gully erosion during periods of rainfall or snowmelt. Roads also refocus overland flow, rills, and streamlets into artificial flow networks that move water downslope. The poorly maintained drainage ditches and culverts on roads built on fine-textured fill have also caused slope failure and erosion.

SOUTH PLATTE RIVER ACCESS TRAIL IMPROVEMENTS

The purposes of proposed improvements to river access trails, including Gill Trail, are to create a safe and sustainable trail system to meet the needs of hikers and fisherman while reducing soil erosion and vegetation loss and to improve habitat near the South Platte River.

The proposed work is needed to improve safety, reduce trail-related sediment, and restore disturbed habitat. Just an hour from Denver, the South Platte River continues to receive almost one half million visitors each year. Past efforts have protected and restored riparian habitat at many of the heavily visited sites along the river that were damaged by vehicle traffic. With so many people using this river, foot traffic has also begun to impact the riparian areas. Anglers and other river users have created an

extensive network of social trails throughout the riparian vegetation that take visitors from parking sites to the river. These trails overlap or wind through the willows like a maze. Many of these social trails are on steep riverbanks that are often unstable and highly erodible. Once the route becomes too steep or unstable, it is abandoned in favor of a new, temporarily more stable route. Unfortunately, as this process continues along the riverbank, it causes riparian vegetation loss, reduces riverbank stability, and increases river sediment loading.

The Gill Trail travels through the Cheesman Canyon and accesses a nationally known fishery along the South Platte River. The trail is also used by many hikers interested in seeing the natural rugged canyon scenery and the historic Cheesman Dam. The original Gill Trail was built about 40 years ago but stopped short of Cheesman Reservoir. There have been no major trail improvements since then. An estimated 25,000 visitors per year use the trail, and their effects are evident. Crumbling side-slope trails have caused numerous braided routes and excessive erosion. Many social trails have developed as alternate routes to Cheesman Reservoir, with some sections being dangerous. The excessive and braided trails also cut through habitat used by the pawnee montane skipper, a species federally listed as threatened, killing the plants on which they depend.

BUFFALO CREEK BURN AREA REVEGETATION

The purpose of this project would be to help reestablish riparian and forest communities within the Buffalo Creek burn area and to reduce erosion and stream sediment loading.

This action is needed because, four years after the Buffalo Creek fire, much of the burn area remains unvegetated and is a major source of stream sediment. The fire and subsequent flooding events decimated stream channels and riparian areas along much of Buffalo and Spring Creeks. Large areas adjacent to these streams are poorly vegetated sediment deposits that are easily eroded during high runoff. Periodic high flows continue to carry these sediments downstream to the main stem of the South Platte, adversely affecting downstream water quality and habitat. Revegetation of the floodplains and riparian areas would increase their potential for trapping and storing sediment. Additional tree planting in the upland burned areas would also reduce sediment entering the streams, compliment the riparian restoration, and provide upland vegetative diversity.

As required under section 303(d) of the Clean Water Act, the state of Colorado has compiled a list of streams that are impaired and do not fully or partially support their beneficial uses. Because of existing sediment problems, Buffalo and Spring Creeks are on a Monitoring and Evaluation list for possible inclusion on this 303(d) List. The proposal would reduce sediment and improve water quality over time. This project would help to protect and maintain state designated beneficial uses.

PLANNING PROCESS

SCOPE OF THE ANALYSIS

This environmental assessment evaluates the proposal according to NEPA standards conducted to meet the intent of NEPA, standards in the Pike and San Isabel Management Plan (Land and Resource

Management Plan: Pike and San Isabel National Forests, Comanche and Cimmaron National Grasslands, 1984), Forest Service Manuals, and the Environmental Policy and Procedures Handbook. The EA analyzes specific actions that tier from the Forest Plan.

This EA presents a proposal that was not anticipated at the time of the Forest Plan (1984). The concept for restoration of this scope and magnitude was initiated following the Buffalo Creek fire of 1996 and included several different agencies, including the U.S. Forest Service, Colorado State Forest Service, Denver Water Board, and the Environmental Protection Agency. Therefore, the types of activities proposed may not necessarily be guided by the management prescriptions designed at the time of the Forest Plan. A part of the analysis will be to identify the current management prescriptions of the Forest Plan and compare this guidance to the proposed activities. Activities can then be identified as within or outside of the Forest Plan direction.

This EA will analyze the environmental, social, and economic consequences of the proposed action and reasonable, implementable alternatives to that action, while meeting the purpose and need. An EA is not a decision document. It is a document that discloses the environmental consequences of implementing the proposed action or alternatives to that action. The decision will be documented in a decision notice signed by the responsible official. The South Platte District Ranger is the responsible official for deciding what actions will be taken.

DECISIONS TO BE MADE

The Forest Service operates under the concept of multiple-use management. This type of management requires trade-offs between the various resources and uses of the forest. The objective is to balance resource uses across the forest. The decisions that must be made in connection with this proposed action depend on the answers to these questions:

1. **Should harvesting and prescribed fire be completed to reduce tree density and create openings in the restoration area?**
2. **Should unclassified roads be reclaimed to reduce existing and potential future erosion and sedimentation to streams?**
3. **Should South Platte River access trails be improved to create a more safe and sustainable trail system and reduce erosion and vegetation loss?**
4. **Should parts of the Buffalo Creek burn area be revegetated to help reestablish riparian and forest communities and reduce erosion and stream sediment loading?**

The objective for making these decisions will be to set the best long-term, sustainable management strategy for the Upper South Platte Project Area while wholly, or partially, meeting the purpose and need. These decisions will be guided by the land allocation and resource management objectives and guidelines set forth in the Forest Plan, along with public input, to select a reasonable, balanced, and appropriate decision.

ALTERNATIVES AND ANALYSIS

Alternatives

The agency must consider three types of alternatives (40 CFR 1508.25[b])

> "(1) No-action alternative. (2) Other reasonable courses of actions. (3) Mitigation measures (not in the proposed action)."

Included in Chapter 2, Alternatives, is a description of the No-Action alternative (Alternative 1) and the range of action alternatives that would entirely, or partially, satisfy the Purpose and Need of the proposal.

Impacts

Three types of impacts must be considered in the analyses—direct, indirect, and cumulative (40 CFR 1508.25[c]). The direct and indirect impacts of the proposed action and alternatives are discussed in detail in Chapter 4, Environmental Consequences. In addition, for each substantial issue, potential cumulative impacts of reasonably foreseeable or similar actions are disclosed. Cumulative impacts are determined based on the definition of 40 CFR 1508.7. The incremental impact of the proposed action and alternatives is considered when added to other past, present, and reasonably foreseeable future actions. The Proposed Action is also evaluated for (a) the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity (NEPA Sec. 102 (c)(iv)); (b) any irreversible or irretrievable commitments of resources should the alternative be implemented (Sec. 102 (c)(v)); and (c) any adverse impacts that cannot be avoided should the action be implemented (Sec. 102(c)(ii)).].

Incorporation of the Forest Plan

This document is tiered to and repeatedly references the Land and Resource Management Plan: Pike and San Isabel National Forests; Comanche and Cimarron National Grasslands, which sets forth the direction for managing the resources of the Pike and San Isabel National Forests. For clarity, that document is referred to as the "Forest Plan."

Planning for activities on National Forest System lands involves two levels of decisions. The first level is development of a Forest Plan that provides direction for all resource management programs, practices, uses, and protection measures. The Forest Plan consists of both Forest-wide and area-specific standards and guidelines that provide for land uses with anticipated resource outputs under a given set of management constraints. The outputs are not fixed decisions by the Forest Plan, because all conditions required to produce the outputs are not controlled by the agency and because environmental conditions may change. These plans also contain general cumulative effects of the anticipated actions, i.e., effect of regional roadless values, regional wildlife populations, and the water quality of major drainage systems.

The second level of planning occurs during Forest Plan implementation. It usually involves the analysis and implementation of site-specific management practices designed to achieve the goals and objectives of the Forest Plan. However, as discussed above (Scope of the Analysis), this EA presents a proposal that was not anticipated at the time of the Forest Plan (1984). The proposed actions may not follow the site-specific management practices that were prescribed. It is possible that one or more Forest Plan Amendments will be required if one of the action alternatives is chosen.

THE SCHEDULE

The schedule of completion for this EA is outlined below.

March, 2000	Public information meetings with the U.S. Forest Service
April 22, 2000	Publication of the news release for public meetings
May 2-4, 2000	Public meetings
August, 2000	Environmental Assessment released to public
September, 2000	End of public comment period
September, 2000	Forest Service issues finding of no significant impact (FONSI) or notice of intent (NOI) to perform EIS
October, 2000	End of decision appeal period
November, 2000	Project implementation, if FONSI is issued