

South Platte Protection Plan

Cover Letter

Proposal for South Platte Protection Plan

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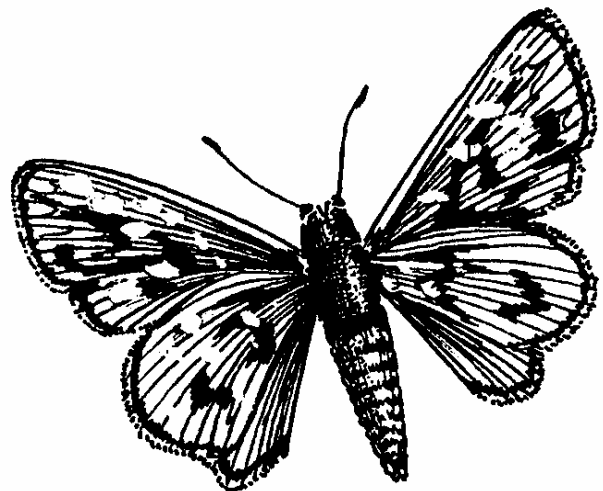
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June 12, 2003

Mr. Bob Leaverton, Forest Supervisor
Pike and San Isabel National Forests
1920 Valley Drive
Pueblo, CO 81008

Dear Forest Supervisor Leaverton:

We are pleased to re-submit the South Platte Protection Plan (SPPP) for your consideration in the Final EIS for the Wild and Scenic Rivers Study of the South Platte River. As requested, we are re-submitting the entire SPPP. After last summer's combination of drought and fire, the Forest Service met with many of the participants who helped develop the original SPPP and all agreed that it was important to re-examine the plan in light of the Hayman Fire and the record drought year. The SPPP was revised in that process. The changes are relatively few, but they reflect important lessons learned over the past year.

Specifically, revisions were made to the Streamflow Management Plan and its accompanying Enforcement Plan (Attachment B), the Recreation Management Plan (Attachment C), and the Water Development Principles (Attachment F). We have also attached a revised copy of the proposed amendments to the Pike-San Isabel Forest Plan that accompanied the SPPP.

We would also like to reiterate our recommendation, first expressed in a February 27, 2001 letter to Gail Kimbell, that the Forest Service postpone a formal conclusion to its Wild and Scenic Study indefinitely rather than making a decision on whether the river is "suitable" or "not suitable" for designation. We believe that the collaborative efforts underlying the SPPP will be served best if the Forest Service does not make a suitability determination as that would alienate key stakeholders in the SPPP process, regardless of which way that decision went.

Finally, we would like to express our appreciation to the Forest Service for your long-standing support of our efforts. Your staff – and especially Lance Tyler, Sue Spear, Connie Young-Dubovsky, and John Hill – have been a very valuable resource. Without the information and encouragement they have provided throughout the SPPP process, we could not have completed our efforts. Thank you!

Sincerely,

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Lakewood, CO 80225

SPPP Participants

PROPOSAL FOR SOUTH PLATTE PROTECTION PLAN

The undersigned submit this Proposal to the US Forest Service on behalf of those who have attached endorsements or who will submit endorsements. This Proposal represents a response to the invitation from the Forest Service to submit more details to explain what would be included in Alternative A2 as described in the Forest Service Draft Legislative EIS ("LEIS") dated March 1997. We are asking the Forest Service to consider the South Platte Protection Plan as an expanded description of Alternative A2, and urge a supplemental environmental analysis of this alternative to wild and scenic designation.

The Proposal reflects the contributions and views of a wide range of "stakeholders," including recreation users, local governments, environmental interests, state agencies, water suppliers, and basin residents. Although these interests (listed at the end of this proposal) have participated openly and contributed to this document, none should be assumed to have recommended or preferred this alternative to designation unless they have submitted a specific endorsement of the South Platte Protection Plan. The process has striven to incorporate the interests and ideas of all of these groups as they relate to protection and enhancement of the values identified on certain parts of the South Platte River and its North Fork.

Throughout the process, it has been clearly understood between the participating parties that the South Platte Protection Plan was being drafted to provide further definition to Alternative A2, an alternative in lieu of designation under the Wild and Scenic Rivers Act. It has also been understood, and is reiterated here, that the commitments to proceed with this Proposal by local government endorsers is contingent upon the selection by USFS of Alternative A2 and rejection by the USFS of designation pursuant to the Wild and Scenic Rivers Act.

CONTENTS

The South Platte Protection Plan proposal consists of this primary document with the following attachments:

- Attachment A ORV Protection Summary
- Attachment B Streamflow Management Plan
- Attachment C Recreation, Wildlife & Scenery Report
- Attachment D Endowment Plan
- Attachment E Watershed Management
- Attachment F Denver's South Platte Right-of-Way

All of the above, taken in their entirety, constitute the South Platte Protection Plan.

PURPOSE

The purpose of the South Platte Protection Plan is to protect those river-related values [outstandingly remarkable values (“ORVs”)] identified by the USFS. These values are historic cultural resources, fisheries, geologic, recreational, scenic, and wildlife. The Proposal also recognizes that the Colorado Front Range communities rely heavily upon the South Platte for drinking water supply and other municipal and industrial uses that agriculture throughout northeastern Colorado depends heavily on South Platte flows, and river values must be protected in the context of preserving these functions as well. We believe that the interests of all these communities can be maintained through common dialogue toward an approach in which the many values on the river -- habitat, ecosystem, and human-based -- can all be addressed in coordination and balance with one another. It is this mutual respect for the many important uses that is central to the South Platte Protection Plan.

OUTLINE

The South Platte Protection Plan consists of the eight actions set forth below. (These are also summarized in the maps on pages 3 and 4.

1. **Protect canyons.** A commitment not to build any water works facilities in Cheesman Canyon and Elevenmile Canyon.
2. **Flow Management Plan.** More fully described in Attachment B consisting of:
 - Temperature goals through management of top and bottom releases from reservoirs.
 - Minimum streamflows.
 - Ramping (changing gradually) outflow changes from storage.
 - New valves, monitors, gages.
 - Coordination with DOW re channel work on North Fork.
 - Public input to annual operating plans.
 - Consideration of whitewater and fisheries in Roberts Tunnel discharges, within the limitations described in the Flow Plan.
3. **Recreation, Wildlife, Scenery and Other Values.** (More fully described in Attachment C). A management partnership between Colorado State Parks and the U.S. Forest Service is proposed, all the way from Elevenmile Reservoir to Chatfield Reservoir. Until the partnership is in place, portions of the area would be cooperatively managed by the Forest Service, Denver Water, Jefferson County and Douglas County. The proposal also includes proposed recreation management by

Jefferson County Open Space along portions of the North Fork, and a special recreation area at Bailey Canyon to be managed by the US Forest Service.

4. **Cooperative water quality initiatives** through an Upper South Platte Watershed Steering Committee, composed of interested local governments, agencies and parties in the basin, which was triggered by this proposal but is expected to continue independently of the South Platte Protection Plan. (Watershed management is more fully described in Attachment E).
5. **Endowment.** Front Range local governments and water suppliers will contribute at least one million dollars to be spent on the values identified by the Forest Service. (More fully described in Attachment D). A board will be convened within 90 days following a decision by the U.S. Forest Service to adopt the South Platte Protection Plan in lieu of designation.
6. **The South Platte Enhancement Board.** A coordinating forum, the South Platte Enhancement Board, will provide comments and responses on activities such as land use or land management planning decisions, as well as deciding expenditures from the endowment. (More fully described in Attachment D).
7. **Withdrawal of 1986 applications for conditional storage rights.** Both Denver Water and the Metropolitan Denver Water Authority would withdraw Water Court applications for 780,000 acre feet of additional storage at the Two Forks reservoir site.
8. **Alternatives to development of Denver's right-of-way.** Denver Water and environmental groups have proposed a working relationship that could lead to alternative projects and allow Denver later to relinquish its 1931 right-of-way on the South Platte at Two Forks. (More fully described in Attachment F).

It is proposed that enforcement of the South Platte Protection Plan be provided by a written agreement between the U.S. Forest Service and those entities making commitments within the Plan. We understand and expect that such an agreement shall be written in a manner to provide for enforcement through the Administrative Procedures Act by citizen or group with standing in a manner similar to remedies available if a river were designated under the Wild and Scenic Rivers Act. It is further recommended that such an agreement provide for public participation in the event of significant changes to the written agreement, leases to State Parks or other major concessionaires, or in the event of adoption of a Recreation Management Plan or amendments thereto so that the public can ascertain and comment on consistency with the South Platte Protection Plan.

RECREATION MANAGEMENT

The proponents of the South Platte Protection Plan recommend a unified recreation management approach, including U.S. Forest lands and lands owned by Denver Water, in a U.S. Forest Service/Colorado Division of Parks and Outdoor Recreation ("State Parks") management partnership. Provided that a Management Agreement can be developed between the U.S. Forest Service and State Parks, Denver Water commits to make its properties, from Elevenmile Reservoir to Chatfield Reservoir, including Cheesman Reservoir and Waterton Canyon, available for lease to the recreation manager. The exact lands and boundaries to be included in a lease must be worked out with the recreation managers considering the needs of effective management, concerns of neighboring land owners and recreation users, and other relevant recreation-related issues. These steps should begin with a joint recreation management study. Denver Water commits to participate in such a study and to include its lands for consideration as part of the recreation area. (Lands owned by Denver Water to be considered in the Recreation Management Study are shown on the map on page 6.)

Development of a Recreation Management Plan should have the latitude to meet the needs of recreationists in current times as well as those needs that may evolve in the future. However, it was the consensus of those interests working on the South Platte Protection Plan that Recreation Management should adhere to the following principles:

- 1. Intensity of Development.** The river corridor between Elevenmile and Chatfield reservoirs constitute today a locale for dispersed recreation. It is very desirable to maintain the area as dispersed recreation. Those areas with heavy use and road access (e.g., Elevenmile Canyon, the downstream portion of Waterton Canyon, and the Deckers Valley) will require more management and facilities than areas that are more pristine and less accessible (e.g., Cheesman Canyon, Wildcat Canyon). It is noted that the guidelines enumerated herein for levels of development are consistent with the federal designations previously proposed by the U.S. Forest Service.
- 2. Recreation at Cheesman Reservoir.** The Recreation Task Force encountered viewpoints ranging from maintenance of Cheesman Reservoir in a near wilderness condition to advocates for motorized boating and increased recreational opportunities on that property. It is expected that the level of recreational use of the Cheesman Reservoir property will be a controversial issue that should be planned through an open process with extensive public participation.
- 3. Wildlife Protection.** Attachment C should be read in the context that Recreation Management throughout the river corridor is expected to include management to meet the needs of wildlife in the area. Management goals in Attachment C include providing resource and ecological protection or restoration for wildlife and plant species. Furthermore, an area considered most sensitive for wildlife is Segment C, which runs from Beaver Creek downstream to the high water line of Cheesman Reservoir. This includes Wildcat Canyon. Attachment C discusses the current uses

and values which include a wide range of vegetation types and foraging and habitat for many wildlife species. It also notes that it provides connecting landscape linkages for potential wildlife movement corridors to Lost Creek Wilderness and nearby low road density areas of Cheesman watershed, Sheep Rock, Thunder Butte, Green Mountain and Gun Barrel roadless areas.

4. **Concerns of Area Residents.** A number of concerns were received from area residents along the South Platte. These concerns focused primarily on protection of private property from unauthorized trespass, wildfire hazards related to both authorized and unauthorized campfires, the limited capabilities of local volunteer organizations in responding to emergencies, and the crowding of roads that are used by residents. It is strongly recommended that a special effort be made to include area residents in the public participation process for development of a Recreation Management Plan.
5. **Other Values.** The South Platte Protection Plan has focused primarily on those "outstandingly remarkable values" identified by the U.S. Forest Service because that is the standard that the Forest Service must use in judging the Plan. The exclusion of other important values including wide varieties of wildlife, the high quality rock climbing along the North Fork and the all-terrain vehicle trails above Nighthawk, as well as many more, were not intended to exclude those values from consideration in the Recreation Management Plan. It is further recommended that mining and timbering policies in the area be planned and managed in a manner consistent with recreation, wildlife, and scenic values.
6. **North Fork Management.** Jefferson County Open Space, through its land acquisitions process, will consider the management of additional lands along the North Fork within Jefferson County. A precise boundary division between the State Parks/USFS partnership and Jefferson County Open Space should be determined as part of a Recreation Management planning process. In the area through Bailey Canyon on the North Fork, it is recommended that the U.S. Forest Service manage for a special recreation area with emphasis on whitewater recreation, but inclusive of other appropriate dispersed recreation activities.

OTHER WATER SUPPLY OPERATIONS

Water suppliers and Front Range local governments have engaged in developing Alternative A2 because of the great significance this part of the South Platte represents in meeting the water supply needs of present and future customers. It is estimated that well over half of the people of the State of Colorado receive water supply through water systems that rely heavily on this part of the South Platte. As such, this river plays a key role in the socio-economic viability of our state. It is critical that this key role be protected and maintained, and that sufficient flexibility will be maintained to accommodate changes to these systems for future growth. Water suppliers are committed to working closely with those representing other interests on the river in order to protect and enhance all of the important values of the river.

The Forest Service Draft LEIS reflects the tremendous variability in flow that currently can occur on the River. The Draft LEIS states that flow currently varies between 10 cfs and 6,300 cfs. In addition, it should be expected new water will be brought through the mainstem over time. Much of this increased flow reflects conditional water rights already in place where there is substantial reliance on the ability to use the mainstem as a part of the conveyance process. Additionally, new water will come from projects that are under preliminary consideration or from projects that are yet to be anticipated. The South Platte Protection Plan is intended neither to prohibit nor allow development of those water supplies. Numerous laws and regulations provide substantial protection for the values on the stream. Each project will be considered on a case by case basis and evaluated on its own merits at the time of application. Endorsement of this plan does not indicate support for any project.

Projects are or may be proposed by a variety of water providers including, but not limited to, the cities of Aurora, Denver and Thornton and the counties of Arapahoe, Jefferson and Douglas. Other water could be introduced into the South Platte from or through the Arkansas basin. Denver intends to divert more water from Dillon down the North Fork as demand increases, and may consider expansion of existing reservoirs on the South Platte. There is discussion between Denver, Aurora and others about possibly expanding Antero Reservoir.

AREA AFFECTED

The South Platte Protection Plan generally addresses the same area as recommended for designation by Alternative B. That includes the South Platte mainstem from below Elevenmile Reservoir to the Confluence of the mainstem with the North Fork of the South Platte River, and the North Fork from Insmont to the Confluence. However, this Proposal expands that area by its recommendation for a USFS/State Parks partnership along the mainstem from Elevenmile Reservoir all the way to Chatfield Reservoir (both are currently state parks), including Cheesman Reservoir. Portions of the North Fork would be managed by Jefferson County Open Space and the US Forest Service. The width of the area protected is generally considered to be 1/4 mile from each side of the river. However, it should be noted that the US Forest Service is not limited on federal lands to the 1/4 mile rule, and it is recommended that the river valley within federally managed lands be planned and managed in a manner compatible with adjacent uses and values. Similarly, the lands owned by Denver Water and Jefferson County Open Space often extend more than 1/4 mile from the river, and such outlying lands will also be considered for a role in protecting or enhancing the river values. Precise boundaries should be fixed by recreation management agencies following a comprehensive recreation management plan.

BENEFITS OF THE SOUTH PLATTE PROTECTION PLAN

Numerous immediate benefits to the values on the South Platte will be achieved through the South Platte Protection Plan. The Plan provides for local governments,

water providers, and state and federal governments to combine their capabilities while maintaining an important level of water management flexibility. This kind of synergy may be effective in protecting and balancing the many uses on the river.

Benefits of the South Platte Protection Plan include:

- Additional local dollars that would not otherwise be available will be provided through a one million dollar endowment for the exclusive benefit of the values which the South Platte Protection Plan is designed to protect. Along with the endowment, the potential exists to leverage funds through additional funding sources.
- Through the South Platte Enhancement Board, expanded opportunities will be available for intergovernmental coordination and user input on recreation and land use management.
- The South Platte Protection Plan includes a broad geographical area stretching beyond the boundaries of the LEIS Alternative J. The South Platte Protection Plan is taking a broad perspective, incorporating the North Fork, Waterton Canyon, and Cheesman Reservoir and looking at management of connected uses such as hiking trails and wildlife needs that go beyond the immediate river corridor.
- Water suppliers and local governments would voluntarily support the permanent protection of Cheesman and Elevenmile Canyons from development of any water facilities. Denver Water would withdraw its application for a conditional decree for 780,000 acre feet of storage at the Two Forks Reservoir site. The Metropolitan Denver Water Authority would withdraw a similar application at the same site.
- This Plan would bring greater focus to local governments bringing authority and resources with regard to open space, safety services (such as the county sheriff), road development and maintenance, view protection and other land use management capabilities. These particular powers and capabilities would bring a wealth of resources and attention to enhance protection of the values on this stream.
- Denver Water lands would be included for recreation management under the South Platte Protection Plan. Jefferson County Open Space will consider the management of additional lands along the North Fork through its acquisition process.
- The South Platte Protection Plan provides flow benefits by operating existing storage facilities to provide minimum flows, to moderate ramping rates, and to assist in achieving temperature goals.

THE COLLABORATIVE PROCESS

One of the benefits that has already accrued as a result of putting together this proposal is increased communication among a very broad cross-section of interests. We believe this is only the start of a healthy long-term process for making decisions about the South Platte far into the future.

From the very beginning, the water suppliers told interest groups that they were not dealing with a blank slate because the outline for what A2 would be was already contained in the Draft LEIS. The suppliers said their intention was to "flesh out the details" of that outline as well as what was spelled out in the December 20, 1996 letter from Front Range water providers to Forest Supervisor Rick Cables. (Letter is attached.) The water suppliers said they would put together a plan that would be parallel to (or better than) Wild & Scenic designation in terms of protection, but that would also allow for the flexibility needed to provide water to metropolitan Denver. At the same time, they wanted to collaboratively build a plan, with the help of interest groups, that would address as many of everyone's concerns as possible.

That being said, the interest groups were very involved in every aspect of formulating the South Platte Protection Plan. Before the public group process began, the water suppliers contacted representatives from all of the various interests along the river. They hired a facilitator to interview them at length to:

1. determine their concerns for the river,
2. explain their reasons for or against designation and/or A2, and
3. tell us under what conditions they would be willing to attend meetings to help create an alternative plan.

Many of the groups made it clear that they would help us create an alternative only with the understanding that their involvement did not necessarily mean they would endorse the final product. The water suppliers agreed to this baseline, and made it clear they were looking for ideas from interest groups so that their concerns could be addressed regardless of whether they ended up endorsing the final South Platte Protection Plan.

With this understanding, four work groups were put together to address the four major components of the plan: flows; water quality; recreation, scenery and wildlife; and the endowment fund. Invitees to the work groups included a balance of environmentalists, counties, water providers, recreationists and landowners. (See appendix for lists of attendees and meetings.) Participants attended over 46 meetings — some of which lasted 4-5 hours — to put together this plan representing their expressed interests and concerns. Despite their reservations, the interest groups put a great deal of time and effort into this lengthy process.

Later in the process a meeting was held to discuss plans for meeting the water supply needs within metropolitan Denver. This group, composed of water suppliers, counties, and environmental interests discussed what alternatives exist for supplying water in addition to or as an alternative to storage at the Two Forks site. This discussion was also pursued further in other groups. This work was deemed pivotal to coming to some understanding about the reserved ROW.

In addition, three large public meetings were held at the beginning, middle and end of the process to get comments from the general public and to allow participants in individual work groups to hear what other groups were doing. These were generally well attended and provided useful feedback.

Near the end of the process, yet another group was formed to tie the various components of the plan together. This group -- the Synthesis Committee -- determined what elements were missing or contradictory when looked at as a whole. It looked at some of the overarching issues of all four work groups. This group was composed of members of the various interest groups, water suppliers and counties, as well as some new people to give a fresh perspective to the product.

Throughout the process, people were requested to inform their constituents of the progress and to bring back comments and concerns. After all the work groups finished, the final proposal was sent out once again to all the parties for final comments. The South Platte Protection Plan before you reflects our efforts to balance the comments from the various interests with those of the water suppliers and counties.

It should be noted that, despite our efforts, not all entities involved felt as represented or involved as others. Inevitably, when pursuing an effort of this magnitude, meeting times and locations will not please everyone. This is particularly so when dealing with such a broad geographic reach. In addition, some of the groups had neither the staff, time nor resources necessary to maintain extensive involvement. Nonetheless, we did have participation from as far away as Colorado Springs, Longmont, and Fairplay to varying degrees. All meetings were open and posted with someone who could be called at anytime. In addition, work group drafts and other documents were always available on request.

While there was a fair amount of suspicion and pessimism expressed by most of the interest groups in the beginning of the process, six months of working together, attending numerous meetings and devising agreements, has greatly improved communication, reduced the amount of misinformation in some areas, and led to greater understanding among many of the key parties.

"The Players" in Wild & Scenic

Environmentalists

Trout Unlimited
 Audubon Society
 Colorado Hist. Soc.
 Sierra Club
 South Platte Eco Proj
 Env. Defense Fund
 CO Env. Coalition
 CO Wildlife Fed
 Nature Conservancy
 Wilderness Society
 High Country Cit. Alliance

Recreationists

American Whitewater
 CO White Water Assn
 Canoeists
 CO Mt Club
 Bighorn 4-WD Club
 CO Assn of 4WD
 Motorcyclists
 United Sportsmen
 Anglers' Covey
 Wild Trout
 CO Off-Hiway Veh. Assn
 ACCESS Fund (rockclimbers)
 Trail Conservation Services
 (mountain biking)
 CO Fishing Federation

Landowners

Deckers-Trumbull area
 Buffalo-Pine area
 Wigwam Club
 Scraggy View area
 Estabrook area
 Denver Water
 Jefferson County
 USFS
 Sportsmen's Paradise

Federal Gov't.

USFS
 BLM
 USF&WS
 EPA
 CORPS

State Gov't.

Dept of Natural Resources
 Divn. of Wildlife
 Divn. of Parks & Rec
 Water Conserv. Board
 Water Quality Control Div.

Local Gov't.

Aurora
 Park County
 Douglas County
 Jefferson County
 Denver City & County
 Adams County
 Arapahoe County
 El Paso County
 Colorado Springs
 Arvada
 Castle Rock
 Englewood
 Glendale
 Lakewood
 Littleton
 Thornton
 Broomfield

Other Interests

Public Lands Multiple Use Coalition
 Farm Bureau
 Timber
 Cattlemens' Assn
 Mining

Water Suppliers

Denver Water
Alameda Water & Sanitation Dist
Bear Creek Water & Sanitation Dist
Centennial Water & Sanitation Dist
Cherry Creek Valley Water & San Dist
Consolidated Mutual Water Co
Douglas County Water Resource Authority
Arapahoe County Water & Wastewater
Castle Pines Metro Dist
Castle Pines North Metro Dist
East Cherry Creek Valley Water & San Dist
Meridian Metro Dist
North Douglas County Water & San Dist
Parker Water & San Dist
Pinery Water & Wastewater
Roxborough Park Metro Dist
Stonegate Village Metro Dist
Willows Water Dist
Inverness Water & San Dist
Ken-Caryl Ranch Water & San Dist
Lakehurst Water & San Dist
Parker Water & San Dist
Platte Canyon Water & San Dist
South East Englewood Water Dist
Southwest Group
Southwest Metro Water & San Dist

NOTE: Some of these groups are in more than one category.

FORWARDED ON BEHALF OF THE DENVER BOARD OF WATER
COMMISSIONERS AND THE WILD AND SCENIC TASK FORCE:

H. J. Barry

H. J. Barry, III, Manager
Denver Water

Tom Griswold

Tom Griswold, Chairman
Wild and Scenic Task Force

Attachment A

ORV PROTECTION SUMMARY

I. Introduction

The Forest Service, in the Draft LEIS, identified the Outstandingly Remarkable Values (ORVs) for each segment of the river. Following is a summary of the ORVs for each segment, and the actions and goals proposed to protect and enhance each ORV in each segment. For purposes of this overview, values which the Forest Service did not consider outstandingly remarkable are not included, although protection of some other values are specifically recommended in other sections of this Proposal. Enforcement of any items included in the South Platte Protection Plan are expected to be addressed by the US Forest Service following a final federal decision.

II. Common Benefits

Several actions in the A2 Plan will benefit ORV's throughout all segments.

A. Endowment

Water suppliers and local governments in the Front Range agree to create an Endowment Fund overseen by the South Platte Enhancement Board (further described in Attachment D). Water suppliers, local governments and other members of the South Platte Protection Plan Enhancement Board (Enhancement Board) will contribute at least one million dollars, over a course of three years beginning six months after the Forest Service has taken a final agency action deciding to not recommend for designation the areas which it has identified as eligible along the South Platte and North Fork, to protect and enhance the values throughout the South Platte Protection Plan area. The Enhancement Board, made up of seventeen representative stakeholders, will determine the allocation of funds and provide advice and comment on matters relevant to protecting outstanding values within the geographic reach on the mainstem of the South Platte and the North Fork. The Endowment Fund will be structured to allow for contributions from other interested parties.

B. Cooperation

Alternative A2 establishes processes for a high level of cooperation between governments and agencies having a stake in the management of the South Platte and North Fork rivers in the affected area. Because the plan was initially proposed by local governments throughout the Front Range, it brings those cities, counties and water and sanitation districts together to work with the state and federal agencies as well as a wide variety of user groups to specifically establish coordinated planning, management and implementation for the benefit of all of the resources and activities contained in the South Platte Protection Plan. Methods to implement this cooperation include: the South Platte Enhancement Board established as part of the endowment plan; the yearly

coordinating efforts called for under the flow agreement; the recommendation from the recreation committee for a partnership in the recreation management by the Forest Service, State Parks, Jefferson County, and others; and the Upper South Platte Watershed Steering Committee.

III. South Platte River Mainstem

A. Segment A (downstream of Elevenmile Dam to Lake George)

The Forest Service studied Segments A, B and C in 1984. The 1984 Forest Plan concludes that these segments possess the ORVs of Recreation, Scenery, Geology, Fisheries and Wildlife, but did not specify which values were found in which segments. In the 1997 Draft LEIS, the Forest Service further discussed the values by segment, as follows.

1. Recreational

a) General Description of ORV

The 1997 Draft LEIS states that Elevenmile Canyon is one of the most popular destinations in the Forest, attracting people from all over the region year-round for rock climbing, camping, picnicking, fishing, water play, floating, tubing, hiking and scenic viewing. Alternative A2 contains several components designed to protect and enhance this ORV.

b) Elevenmile Canyon Ecosystem Management Project

Between 1992 and 1995, the U.S. Forest Service developed this plan which locates recreation areas by type and, if implemented through a recreation manager, will protect the recreation values that were identified in the Draft LEIS as outstandingly remarkable. The plan addresses access in a manner to better protect the environment. It provides that the Forest Service will only allow overnight camping away from the river. This segment is almost entirely within the National Forest, and implementation is the responsibility of the U.S. Forest Service and its recreation manager through a concession agreement.

c) Flow Management

The Streamflow Management Plan (Attachment B) provides additional benefits to the ORVs of scenery and recreation through sedimentation and erosion control. By improving fish habitat, it enhances fishery opportunities. Responsibilities for streamflow management are set forth below under Fisheries.

d) Canyon Protection

The identified values will be further protected by the commitment contained in this proposal by water suppliers in the Front Range to not build any water facilities within Elevenmile Canyon, and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a Special Use Permit for any water facility.

e) Public Education

Denver Water, and other water providers endorsing Alternative A2, agree to distribute educational information about the ORVs, recreational opportunities, regulations and ongoing protection efforts on the South Platte as inserts into water bills, mailed directly to ratepayers. The purpose of the educational information is not to attract more users to the corridor but to raise public awareness and to provide guidance for protecting the natural values. This action will be the responsibility of the water suppliers, but the recreation manager must provide appropriate information and identify issues of concern.

Additional educational brochures or signs, (explaining such issues as the conflicts between vehicle crossings and fish habitat, the erosional effects of short-cutting switchbacks, the significance of geologic formations, etc.) would be eligible for funding through the endowment. Public education is the responsibility of the recreation manager, but the South Platte Enhancement Board and Coordinating Forum will also make recommendations as issues come to their attention. Recreation user groups will also be encouraged to educate their membership about responsible use of the resource.

2. Scenery

a) General Description of ORV

The Forest-wide visual resource inventory classifies the scenery in Segment A as "Class A -- Distinctive" due to the highly scenic features found in the area. Specifically, the area has a great deal of diversity in land form, water, color and vegetation, including granite rock formations, steep forested canyon with several small waterfalls, and the old railroad tunnels along the road.

b) Management

Protection of scenery involves control over development, road-building, timbering, and other acts of humankind. The scenery values in Segment A can be protected by the land management of the U.S. Forest Service and the recreation management of the recreation manager, as determined in the Elevenmile Canyon Ecosystem Management Project.

c) Canyon Protection

Water suppliers have committed upon acceptance of this proposal to refrain from building any water facilities within Elevenmile Canyon and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a special use permit for any water facility. That commitment will avoid possible inundation of some scenic values.

3. Geology

a) General Description of ORV

The 1997 Draft LEIS states that the area contains rare and exemplary geologic features, especially the exposed rock outcroppings in the canyon walls.

b) Management

Protection of geology involves avoidance in the vicinity of geologic features of development, road-building, timbering and other signs of humankind. The geologic values in Segment A can be protected by the land management of the U.S. Forest Service and the recreation management of the recreation manager, as determined the Elevenmile Canyon Ecosystem Management Project.

c) Canyon Protection

The geologic values will be further protected by the commitment contained in this proposal by water suppliers in the Front Range to not build any water facilities within Elevenmile Canyon, and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a Special Use Permit for any water facility.

4. Fisheries

a) General Description of the ORV

The Forest Service has identified this segment as containing nationally renowned brown and rainbow trout populations and habitat. Along with Segment B, this segment contains some of the most diverse habitat conditions of any of the study areas and is recognized by the Colorado Division of Wildlife as an important quality trout fishery in the state. Along with other study segments of the South Platte, this segment is a nationally important producer of brown and rainbow trout and draws people from all over the region. The upper 3 miles of the segment is a designated quality fisheries area with special fishing regulations in effect.

b) Streamflow Management Plan

The Streamflow Management Plan (Attachment B) capitalizes on the water delivery system currently available to benefit fishery resources, and creates a dynamic plan that can develop over time. As a means of reaching these goals, DOW identified specific ranges of flow and temperature designed to maintain and enhance instream trout habitat on the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork.

Denver Water and Aurora are committed to taking the specific actions necessary to implement the Streamflow Management Plan. In accordance with the principles in that Plan, Denver Water and Aurora will install gauges to measure streamflow and snow levels, and manage their daily operations in a manner designed to carry out the commitments in the Streamflow Management Plan and to achieve the specified goals. In Segment A, these commitments include minimum flow releases at Spinney Mountain Reservoir and Elevenmile Reservoir, ramping (changing gradually) outflow changes from Elevenmile Reservoir, and revised spill operation procedures at Elevenmile Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout.

c) Wetlands and Streambed Protection

The quality of the fishery and fish habitat is also affected by recreation management designed to protect streamside wetlands and damage to the streambed. That management is set forth in the Elevenmile Canyon Ecosystem Management Project.

d) Canyon Protection

The stream fishery values will be further protected by the commitment contained in this proposal by water suppliers in the Front Range to not build any water facilities within Elevenmile Canyon, and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a Special Use Permit for any water facility.

B. Segment B (from Lake George downstream to the mouth of Beaver Creek)

1. Fisheries – Brown and Rainbow Trout Populations and Habitat

See the General Description of the ORV in Segment A, above.

In Segment B, the commitments in the Streamflow Management Plan include minimum flow releases at Spinney Mountain Reservoir and Elevenmile Reservoir, ramping (changing gradually) outflow changes from Elevenmile Reservoir, and revised spill operation procedures at Elevenmile Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout.

C. Segment C (downstream of Beaver Creek to the inlet of Cheesman Reservoir)

1. Scenery

a) General Description of ORV

The study corridor located between 8,500 and 6,850 feet possesses a great deal of diversity in landform, water, color, and vegetation, notable in the geographic region. This includes large granite rock formations and a steep forested canyon with several small waterfalls. In addition, there is the diversity of vegetation, including meadows, aspen, willows, Douglas-fir, and ponderosa pine forests. The area lies within an undeveloped canyon that is a vestige of primitive America and draws people from all over the region for its ruggedness, remoteness, and scenic beauty.

b) Management

Protection of scenery involves control over development, road-building, timbering and other acts of humankind. The scenery values in Segment C can be protected by the land management of the U.S. Forest Service and the recreation management of the recreation manager, as determined in a recreation management plan. Only the U.S. Forest Service has authority to adopt a plan for National Forest lands.

2. Geology

a) Description of ORV

The area is known for its variety of rare and exemplary geologic features. The segment lies in an area of relatively young topography, with north-south trending complex mountains cut by deep, rugged canyons. Like Segment A, the entire area has been formed by Precambrian granite formations. These rocky outcrops predominate throughout the segment. Massive rock outcrops are exposed in the canyon walls, except where the bedrock is marked by a covering of talus and soil. Unlike Segment A, the outcrops are more numerous, much more vertical and dominant, and there are massive granite cliffs that tower over river.

b) Management

Protection of geology involves avoidance in the vicinity of geologic features of development, road-building, timbering, and other signs of humankind. The geologic values in Segment C can be protected by the land management of the U.S. Forest Service and the recreation management of the recreation manager, as determined in a recreation management plan.

3. Fisheries – Brown and Rainbow Trout Populations and Habitat

This segment contains nationally renowned brown and rainbow trout populations and habitat. The fishery in this segment is solely supported by self-reproducing rainbow and brown trout, and as such, is designated as Colorado Wild Trout Water. This section of river contains the second highest amount of habitat in the study segments (next to Segment D). The area is recognized by DOW as an important quality trout fishery in the state. Along with other study segments of the South Platte, this segment is a nationally important producer of brown and rainbow trout and draws people from all over the region. Although the size of the trout is not as exceptional as in other segments, the catch rates are quite high due to the abundance of fish present.

a) Flow Management

The Streamflow Management Plan (Attachment B) capitalizes on the water delivery system currently available to benefit fishery resources, and creates a dynamic plan that can develop over time. As a means of reaching these goals, DOW identified specific ranges of flow and temperature designed to maintain and enhance instream trout habitat on the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork.

Denver Water and Aurora are committed to taking the specific actions necessary to implement the Streamflow Management Plan. In accordance with the principles in that Plan, Denver Water and Aurora will install gauges to measure streamflow and snow levels, and manage their daily operations in a manner designed to carry out the commitments in the Streamflow Management Plan and to achieve the specified goals. In Segment C, these commitments include minimum flow releases at Spinney Mountain Reservoir and Elevenmile Reservoir, ramping (changing gradually) outflow changes

from Elevenmile Reservoir, and revised spill operation procedures at Elevenmile Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout.

b) Wetlands and Streambed Protection

The quality of the fishery and fish habitat is also affected by recreation management designed to protect streamside wetlands and damage to the streambed. That management should be set forth in a recreation management plan, developed by a recreation management agency. In Section C, such a plan should be developed in concert with the U.S. Forest Service that manage the land.

4. Wildlife – Pawnee Montane Skipper Butterfly and Habitat

The only wildlife values identified by the Forest Service as an ORV is the Pawnee Montane Skipper butterfly, a threatened species, although there are other wildlife values that can be protected through recreation management. Within Segment C, the habitat of the Skipper is approximately 16.2 acres within the quarter-mile corridor on U.S. Forest land and approximately 39.4 acres within the corridor on Denver Water's land. The only known population of this Skipper occurs on the Pikes Peak granite formation in the South Platte River drainage system in Colorado.

Although, as previously noted, the Endangered Species Act carries a separate statutory mandate than the Wild and Scenic Rivers Act, in the context of which this report is being prepared, the two may have common goals and objectives. Denver Water has participated in the development of a Draft Recovery Plan as a member of the Pawnee Montane Skipper Recovery Working Group. Following approval, publication, and public comment on the Recovery Plan, it is anticipated that the FWS will develop a proposed Memorandum of Understanding (MOU) outlining actions to be taken in attempting to achieve the goal of delisting the species. It is anticipated that the South Platte Enhancement Board to be created as part of Alternative A2 may provide comments to the FWS on means by which the goals of the Recovery Plan and the goals of the Recreation Plan may be mutually achieved.

To the extent that Skipper habitat exists on lands owned by Denver Water in Segment C, any lease of those lands to a recreation manager will specify that areas of Skipper habitat will be managed in a manner to protect the species. This commitment is subject to future critical habitat mapping, delisting of the species, or changes to the Endangered Species Act.

D. Segment D (downstream of Cheesman Dam to the Wigwam Club)

1. Recreational – Fishing, Hiking and Scenic Viewing

a) General Description of ORV

Within Segment D, the Forest Service has specifically identified Cheesman Canyon as a destination which attracts people from all over the region for hiking, flyfishing and scenic viewing. The canyon is one of the most heavily fished sections in the state. The Gill Trail is heavily used by anglers, hikers, nature observers and photographers.

b) Public Education

Denver Water, and other water providers endorsing Alternative A2, agree to distribute educational information about the ORVs, recreational opportunities, regulations and ongoing protection efforts on the South Platte as inserts into water bills, mailed directly to ratepayers. This action will be the responsibility of the water suppliers, but the recreation manager must provide appropriate information and identify issues of concern.

Additional educational brochures or signs, (explaining such issues as the conflicts between vehicle crossings and fish habitat, the erosional effects of short-cutting switchbacks, the significance of geologic formations, etc.) would be eligible for funding through the endowment. Public education is the responsibility of the recreation manager, but the South Platte Enhancement Board and Coordinating Forum will also make recommendations as issues come to their attention. Recreation user groups will also be encouraged to educate their membership about responsible use of the resource.

c) Canyon Protection

Front Range water suppliers have committed upon acceptance of this proposal to refrain from building any water facilities within Cheesman Canyon and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a special use permit for any water facility. That commitment will protect the type of recreational activities identified as values in the Draft LEIS.

d) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw the 1986 applications for 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That action will follow through on the commitment to avoid water facilities in Cheesman Canyon and end plans that could have inundated the recreational values in portions of Segment D.

e) Recreation Management

Almost one mile of the land along the South Platte River below Cheesman Dam is owned by Denver Water. Denver Water agrees to make this land available for a recreation lease by an experienced and qualified recreation manager.

f) Flow Management

The Streamflow Management Plan (Attachment B) capitalizes on the water delivery system currently available to benefit fishery resources, and creates a dynamic plan that can develop over time. As a means of reaching these goals, DOW identified specific ranges of flow and temperature designed to maintain and enhance instream trout habitat on the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork.

In Segment D, Denver Water commits to minimum flow releases at Cheesman Reservoir, ramping (changing gradually) outflow changes from Cheesman Reservoir,

and revised spill operation procedures at Cheesman Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout.

2. Fisheries – Brown and Rainbow Trout Populations and Habitat

Segment D contains nationally renowned brown and rainbow trout populations and habitat. This segment contains exceptionally high fish habitat and is a nationally important producer of wild brown and rainbow trout. This stretch represents three miles of wild and Gold Medal trout streams in the state.

a) Flow Management

The Streamflow Management Plan (Attachment B) capitalizes on the water delivery system currently available to benefit fishery resources, and creates a dynamic plan that can develop over time. As a means of reaching these goals, DOW identified specific ranges of flow and temperature designed to maintain and enhance instream trout habitat on the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork.

In Segment D, Denver Water commits to minimum flow releases at Cheesman Reservoir, ramping (changing gradually) outflow changes from Cheesman Reservoir, and revised spill operation procedures at Cheesman Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout.

b) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw the 1986 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That action will follow through on the commitment to avoid water facilities in Cheesman Canyon and end plans that could have inundated fishery values in portions of Segment D.

c) Canyon Protection

Front Range water suppliers have committed by this proposal to refrain from building any water facilities within Cheesman Canyon and to support an amendment to the Pike and San Isabel Forest Plan to reserve this unique canyon from availability for a special use permit for any water facility. That commitment will further protect wild trout fisheries.

3. Wildlife – Pawnee Montane Skipper Butterfly and Habitat

The only wildlife values identified by the Forest Service as an ORV in Segment D is the Pawnee Montane Skipper Butterfly, a threatened species, although there are other wildlife values that can be protected by the recreation management proposed.

a) Pawnee Montane Skipper

The Pawnee Montane Skipper is a species of butterfly listed as threatened by the U.S. Fish and Wildlife Service pursuant to the Endangered Species Act. Within Segment D, the habitat of the Skipper is approximately 92.2 acres within the quarter-mile corridor on U.S. Forest land and approximately 136.9 acres within the corridor on Denver Water's land. Any lease of those Denver Water lands to a recreation manager will specify the

areas of Skipper habitat will be managed in a manner to protect the species. This commitment is subject to future critical habitat mapping, delisting of the species, or changes to the Endangered Species Act. See additional information on this subject in Segment D above.

E. Segment E (upstream boundary of the Wigwam Club downstream to the confluence with the North Fork)

1. Recreational – Camping, picnicking, hiking, fishing, boating, scenic driving and other day use

a) General Description of the ORV

The quality and diversity of developed and dispersed recreation opportunities along this and the accessibility and proximity of the area to major metropolitan areas provides an excellent year-round recreation resource. This segment is considered the best recreational river within the region of analysis primarily because of the amount and diversity of opportunities presented to such a large population base. It contains a section of the Colorado Trail.

b) Recreation Management

Segment E contains a significant percentage of land outside of the National Forest. It includes lands owned by Denver Water. Provided that a management agreement can be developed between the U.S. Forest Service and State Parks (or with another experienced and qualified recreation manager), Denver Water commits to make its lands within Segment E available for lease to the recreation manager. The exact lands and boundaries to be included in a lease will be worked out with the recreation manager considering the needs of effective management, concerns of neighboring landowners and recreation users, and other relevant recreation-related issues.

c) Front Range Mountain Backdrop Project

Five Front Range counties have been cooperating to study, plan and preserve key parcels of the mountain backdrop along the Front Range. Douglas County and Jefferson County have been two of the Task Force member counties that have reviewed proposed lands in the Chatfield basin area. Jefferson County is coordinating discussions with potential partners for the goal of coordinating efforts and options available for the most beneficial outcome of the mountain backdrop. Involvement is voluntary, with the involved parties developing site specific solutions to address land preservation, sensitive siting, reclamation, preservation and enhancement of wildlife habitat and beneficial use of affected lands. The program will be extended to include areas in Segment E.

2. Fisheries – Brown and Rainbow Trout Populations and Habitat

This segment contains nationally renowned brown and rainbow trout populations and habitat. The DOW lists the South Platte from the Wigwam Club to the confluence with the North Fork as Gold Medal waters.

a) Streamflow Management Plan

The Streamflow Management Plan (Attachment B) capitalizes on the water delivery system currently available to benefit fishery resources, and creates a dynamic plan that can develop over time. As a means of reaching these goals, DOW identified specific ranges of flow and temperature designed to maintain and enhance instream trout habitat on the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork.

In Segment E, Denver Water commits to minimum flow releases at Cheesman Reservoir, ramping (changing gradually) outflow changes from Cheesman Reservoir, and revised spill operation procedures at Cheesman Reservoir to target temperature ranges in the river below that are conducive to rainbow and brown trout

b) Wetlands and Streambed Protection

The quality of the fishery and fish habitat is also affected by recreation management designed to protect streamside wetlands and damage to the streambed. That management should be set forth in a recreation management plan, developed by a recreation management agency. In Section B, such a plan should be developed in concert with the U.S. Forest Service that manages some of the land.

c) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw their respective applications filed in 1986 for 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That commitment will provide additional protection to portions of the recreational values of Segment E.

3. Wildlife –

a) Pawnee Montane Skipper Butterfly and Habitat

See information on this subject in Segment C, above.

Skipper habitat is found within this segment outside of the boundaries of the National Forest. The lease of Denver Water lands to a recreation manager will specify that areas of habitat will be managed in a manner to protect the species.

b) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw the 1986 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That commitment will provide additional protection to the wildlife values of Segment E.

IV. North Fork of the South Platte River

A. Segment H (North Fork from Insmont to its confluence with the South Platte mainstem)

1. Recreational – Whitewater Kayaking, Picnicking, Fishing, Hiking, Riding, Rock Climbing, Scenic Driving

a) Fishing

The Streamflow Management Plan contains a goal to complete future channel work in a manner that maintains or enhances aquatic habitat. Denver Water will coordinate with the Colorado Division of Wildlife to review plans for any channel work in Segment H. Recreational managers will develop plans to manage fisheries and wildlife, coordinating with DOW.

b) Scenic Viewing/Scenery

Front Range Mountain Backdrop Project -- Five Front Range counties have been cooperating to study, plan and preserve key parcels of the mountain backdrop along the Front Range. Douglas County and Jefferson County have been two of the Task Force member counties that have reviewed proposed lands in the Chatfield basin area. Jefferson County is coordinating discussions with potential partners for the goal of coordinating efforts and options available for the most beneficial outcome of the mountain backdrop. Involvement is voluntary with the involved parties developing site specific solutions to address land preservation, sensitive siting, reclamation, preservation and enhancement of wildlife habitat and beneficial use of affected lands. The program will be extended to include areas in Segment H.

c) Recreation Management

The interest of State Parks serving in partnership as a recreation manager has been primarily focused on the mainstem of the South Platte River. However, it may be beneficial to tie in some properties on the North Fork near the confluence as part of the State Park/USFS system.

Segment H includes lands owned by Denver Water. Provided that a management agreement can be developed between the U.S. Forest Service and State Parks (or with another experienced and qualified recreation manager), Denver Water commits to make its lands within Segment H available for lease to the recreation manager. The exact lands and boundaries to be included in a lease will be worked out with the recreation manager considering the needs of effective management, concerns of neighboring landowners and recreation users, and other relevant recreation-related issues.

Jefferson County Open Space offers to manage lands in the North Fork within Jefferson County. Jeffco Open Space currently has other properties for recreational management along the North Fork and within the proximity of the North Fork. Denver Water is also willing to make its lands available for lease to Jeffco Open Space for the purpose of protecting the values identified by the U.S. Forest Service along the North

Fork. The boundary between Jeffco Open Space and the mainstem recreation manager, using lands held by Denver Water, will be determined based on recreation management needs and the views of affected neighbors and users.

d) Bailey Canyon

The U.S. Forest Service is urged to manage the North Fork and vicinity from Insmont to Pine Valley Ranch as a special recreation area with emphasis on whitewater recreation, but inclusive of other dispersed recreation activities, such as hiking, fishing and backpacking. This proposal recommends the following management guidelines:

- Facilitate discussions to improve whitewater access to Bailey Canyon.
- Provide a hiking trail along the river where possible.
- Withdrawal of the area within Bailey Canyon for new mining claims.
- Develop plans to protect private property against trespass.

Projects to accomplish these goals would be eligible for funding from the endowment.

e) Flow Management

Because of water supply objectives, a lack of control facilities and a variety of other considerations, no firm flow commitments are being proposed for the North Fork. However, Denver Water will commit to the same ramping (changing gradually) outflow changes from the Roberts Tunnel that were set for reservoirs on the mainstem. Also, whitewater flow goals will be taken into consideration in operation plans during the recreation season, so long as seasonal and annual volumes discharged from the Roberts Tunnel are not changed.

f) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw their respective applications filed in 1986 for 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That commitment will provide additional protection to portions of the recreational values of Segment H.

2. Wildlife

a) Pawnee Montane Skipper Butterfly and Habitat

See information on this subject in Segment C, above.

Skipper habitat is found within this segment outside of the boundaries of the National Forest. The lease of Denver Water lands to recreation managers will specify that areas of habitat will be managed in a manner to protect the species.

b) Peregrine Falcon

Jefferson County Open Space has assumed management responsibility for Cathedral Spires through an MOU with BLM, Fish & Wildlife Service, and Colorado DNR. Jeffco Open Space agreed to manage the parcel for the primary purpose of recovery of the Peregrine Falcon. Denver Water has agreed to fence off access to Cathedral Spires

across its property when required for species protection. The entire site is closed to recreationists during the nesting period. DOW is in the process of developing an memorandum of understanding to further delineate action items designed to lead to the recovery and delisting of the species. This commitment is subject to future critical habitat mapping, delisting of the species, or changes to the Endangered Species Act.

c) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw the 1986 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That commitment will provide additional protection to the recreation values of Segment H.

3. Cultural

a) Estabrook Historic District and North Fork Historic District including the Denver South Park and Pacific Railroad Grade

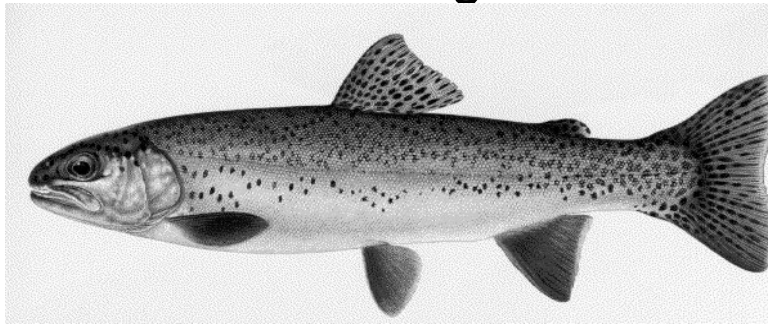
Pursuant to the National Historic Preservation Act of 1966, 16 U.S.C. §407, the State Historic Preservation Office (SHPO) has designated two historic districts along the North Fork of the South Platte: the Estabrook and the North Fork Historic Districts. Both districts are associated with the operation of the Denver, South Park and Pacific Railroad and the valley's history as a popular recreation and tourism area.

A 1986 Cultural Resource Inventory Report, prepared by Engineering Science, considers several methods of protecting historic features, from avoidance of impact through relocation of projects, to isolation through physical or visual barriers, and protection via warning and educational signs. Such techniques will be incorporated into the recreation lease in order to protect and enhance the historic/cultural ORV.

b) Storage Right Withdrawal

Denver Water and the Metro Denver Water Authority have agreed to withdraw the 1986 780,000 acre feet of additional storage at the Two Forks site if Alternative A2 is selected by the U.S. Forest Service. That commitment will provide additional protection to the cultural values of Segment H.

Streamflow Management Plan



for the

Upper South Platte River

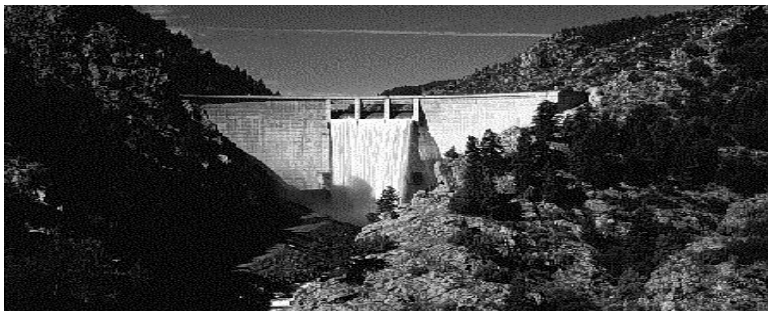


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Table 1 - Summary of Plan Goals and Commitments

The following are obligations to be met by the responsible parties. The details of the commitments are contained in the page reference. All commitments are subject to the principles contained on page 4.

	Commitment	Responsible Party	Page No.
1.	No loss of existing or future water supply.	All water suppliers	B-4
2.	Minimum outflow from Spinney Mountain Reservoir – 32 cfs or inflow.	Aurora	B-8
3.	Minimum outflow from Eleven Mile Reservoir -- 32 cfs or inflow.	Denver Water	B-8
4.	Minimum outflow from Cheesman Reservoir -- 35 cfs (August-March) and 40 cfs (April-July) or inflow.	Denver Water	B-9
5.	Ramp outflow changes at Eleven Mile and Cheesman Reservoirs and Roberts Tunnel.	Denver Water	B-11, 16
6.	Channel work on the North Fork will maintain or enhance structural trout habitat –CDOW will be consulted.	Denver Water	B-16
7.	Operators will meet each spring with fishery, whitewater, and other interests to arrange upcoming operations.	Denver Water and Aurora	B-17
8.	Install new equipment: low flow valve at Eleven Mile, stream temperature monitors at Eleven Mile and Cheesman Reservoirs, SNOTEL gages in watershed.	Denver Water and Aurora	B-12, 13, 15
9.	Stream Channel Maintenance and Improvement – Identify degraded stream channel areas and sedimentation sources, and develop in-stream channel improvement projects.	Forest Service, CDOW, all interested water users	B-5

The following represent desirable outcomes. Some goals are more attainable than others. They are intended as guidance for water suppliers in their operating decisions. All goals are subject to the principles contained on page 4. The details of the goals are contained on the page referenced.

Goal	Level of Attainability	Responsible Party	Page No.
1. Spinney Mountain Reservoir --When inflow is low make storage releases to maintain minimum outflow.	Unknown due to need for available downstream storage and other factors	Aurora and Denver Water	B-7
2. Eleven Mile Reservoir – When inflow is low make storage releases to maintain minimum outflow.		Denver Water	B-8
3. Cheesman Reservoir – When inflow is low make storage releases to maintain minimum outflow.		Denver Water	B-9
4. Operate Spinney Mountain Reservoir for outflows in optimum range of 50 to 150 cfs.	Expect higher flow than optimum every year – natural flows exceed optimum high flows	Aurora	B-7
5. Operate Eleven Mile Reservoir for outflows in optimum range of 50 to 100 cfs.		Denver Water	B-8
6. Operate Cheesman Reservoir for outflows in optimum range of 50 to 150 cfs (August-March) and 100 to 225 cfs (April-July).		Denver Water	B-9
7. Spinney Mountain Reservoir – Operate to minimize spilling.		Aurora	B-12
8. Eleven Mile Reservoir – When reservoir is spilling, operate to discharge within optimum range of 50-60° F (June – September) with a maximum of 65° F and fluctuations no more than 10°F per day.	Need more operational experience. Good success at lower flows – expect less attainability at higher flows	Denver Water	B-12
9. Cheesman Reservoir –When reservoir is spilling, operate to discharge within optimum range of 50-60° F (June – September) with a maximum of 65° F and fluctuations no more than 10°F per day.		Denver Water	B-13
10. Discharges from the Roberts Tunnel into the North Fork will consider the needs of whitewater recreation and fish habitat. Desirable whitewater streamflow is 300 to 500 cfs.	Strictly contingent on water demands in Denver	Denver Water	B-17
11. Annual operating plans to emphasize limiting fluctuations when they would harm life stages of brown and rainbow trout.	Experience has shown that there is limited ability to reduce higher flows and fluctuations from storm events	Denver Water and Aurora	B-9

STREAMFLOW MANAGEMENT PLAN for the UPPER SOUTH PLATTE RIVER

I. INTRODUCTION

A. Purpose

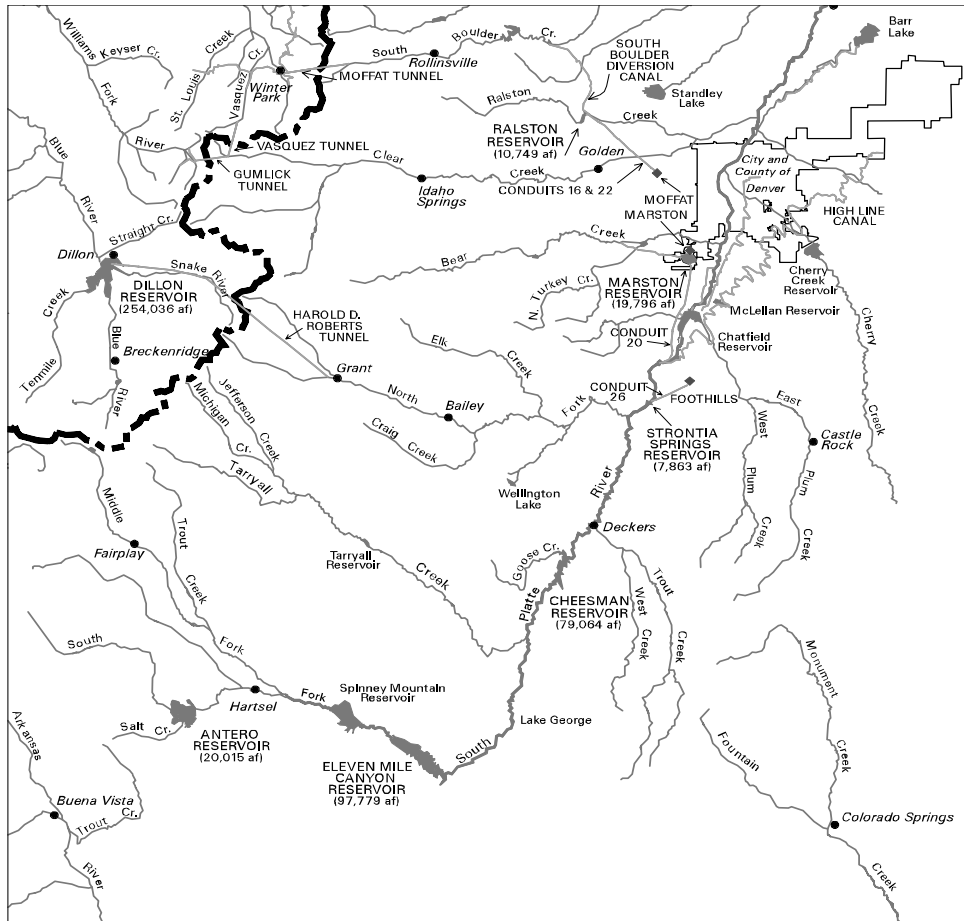
The Streamflow Management Plan is part of a locally generated alternative (the South Platte Protection Plan or SPPP) to a Forest Service recommendation for designation of the South Platte River under the Wild and Scenic Rivers Act. The Streamflow Management Plan was cooperatively developed to identify opportunities for operating water supply facilities in ways that protect and in some instances enhance the trout fisheries and whitewater recreation in the South Platte River while maintaining the current and future water supply functions of the river and facilities. Trout fisheries and whitewater recreation are two of the “Outstandingly Remarkable Values” (ORV’s) listed in the Forest Service’s 1997 Legislative Environmental Impact Statement. Operations under this Plan will not cause participating water users to lose existing or future water supply. The stream reaches covered by this Plan are the mainstem of the South Platte River from Spinney Mountain Reservoir downstream to the confluence with the North Fork and the North Fork of the South Platte River from the Roberts Tunnel to the confluence with the mainstem (Figure 1).

Through cooperative and voluntary development, this Plan provides benefits to the fisheries and whitewater recreation that are not likely to occur through Wild and Scenic designation of the river. These benefits for the fisheries include establishing minimum releases from Cheesman and Eleven Mile Reservoirs, moderating stream temperature when reservoirs spill, establishing guidelines for reservoir outflow fluctuations, managing streamflow during spawning periods, and allowing interested parties to participate in the establishment of annual operating plans for Spinney, Eleven Mile, and Cheesman reservoirs. There is also consideration given to whitewater recreation for the North Fork. Benefits are summarized in Table 1.

A major benefit of this Plan is providing minimum streamflows. The Forest Service can not control streamflow under the Wild and Scenic Act. The Forest Service might apply for instream water rights but those rights, if obtained, would be so junior (in an already over appropriated stream) that they would be ineffective for fishery purposes. Also, the Wild and Scenic Act does not allow the Forest Service to control how reservoirs are operated. Therefore, the benefits such as controlling water temperature and limiting streamflow fluctuations would not result from Wild and Scenic designation. Another

Figure 1

Upper South Platte River



LEGEND

- Major Lake or Reservoir
- Continental Divide
- Denver Water Treatment Plant
- Major Stream or River
- Town
- Major Canal or Tunnel



Scale 1:1,000,000



June 2003

This Geographic Information Systems (GIS) map is provided "as is" with no claim by the Denver Water Board as to the completeness, usefulness or accuracy of its content. Copyright 2003 Denver Water

benefit of this Plan is improvements to the North Fork. Wild and Scenic designation, under the Forest Service's preferred Alternative J of the Draft Environmental Impact Statement, would not cover the North Fork.

Facilities directly involved in the Streamflow Management Plan are Spinney Mountain, Eleven Mile and Cheesman reservoirs, and the Roberts Tunnel. Other facilities are indirectly involved as explained later.

B. Development

Beginning in about 1988, Denver Water and the Division of Wildlife began a process of working more closely together to educate each other and to manage water supply operations to benefit trout. While it was acknowledged that the fisheries were already outstanding—particularly immediately downstream of the reservoirs—the group met to discuss ways to enhance the fisheries even further. This Plan is a continuation of those fishery efforts. Whitewater recreation is an important management effort added to this Plan.

This Plan was developed in 1997 by representatives from the Colorado Division of Wildlife (CDOW), Denver Water, City of Aurora, Trout Unlimited, Wigwam Club, American Whitewater, and Park County Water Preservation Coalition. The Forest Service observed the collaborative effort, provided information as needed, and helped maintain coordination between the agency and the working group. Although various agencies and interested parties participated in the Streamflow Management Plan discussions, participation does not necessarily imply an entity's support of the South Platte Protection Plan (SPPP).

In 1999, the Plan was revised at the request of the USFS and appeared in the Supplemental DLEIS issued by the USFS in 2000. The Plan was further modified as described in the Appendix on Enforcement Procedures for the commitments described in the Plan.

In the spring of 2003, some modifications were made to the Plan because of the drought and the Hayman and other fires in 2002. Very little rain has fallen so far on the areas burned in 2002. Estimates at this time are that with rainfall, very large volumes of sediment will enter the stream system and reservoirs. The amount and impact of erosion and sedimentation are not known at this time. It is expected to affect the fisheries, river system and reservoirs and alter the way in which they are managed. These changes cannot be anticipated in this Plan. It is recognized that management may need to be adapted to the changes experienced.

C. Layout

Section II describes the principles of the Plan. This is followed by an explanation of the operational goals and commitments established by this Plan. Section III includes background information on the resources covered by this Plan. To better understand the Plan, **first-time readers are asked to read Section III next**. The Appendix contains the Enforcement Procedures for the Plan.

II. THE PLAN

A. Principles

The South Platte River System serves as a water supply and delivery system that results in streamflows different from natural streamflow regimes. This Plan was developed to take advantage of those differences and will be implemented within the principles stated here.

- Operate water supply facilities in ways that will not cause participating water users to lose or adversely impact existing or future water supply. All operations under this Plan are first subject to this principle being met.
- Operate water supply facilities in ways that maintain and in some cases enhance the trout fishery and whitewater recreation. Recognize that the Forest Service designated the trout fishery an “outstandingly remarkable value” on the mainstem and whitewater recreation an “outstandingly remarkable value” on the North Fork.
- Provide a dynamic plan that is refined and continued through time.
- Plan does not promote or restrict development of water systems but provide goals and commitments for operating water systems.
- There will occasionally be conflicts between the operating objectives and operators will need to choose among tradeoffs in making their operating decisions.
- Due to water rights constraints, government regulations, facility maintenance, emergencies, dam safety concerns, or special requests to alter streamflow outside the normal operations, it might not be possible at times to meet all the guidelines within this Plan.
- The Roberts Tunnel will continue to be operated solely for water supply purposes. The seasonal and annual volumes discharged from the Roberts Tunnel will not be changed by operations under this Plan.

B. Future Water Projects

In coming decades, water system improvements and future importation to the Upper South Platte Basin will alter the hydrologic basis of this Plan. The anticipated growth in Metro Denver is likely to bring more water through the South Platte River reaches of concern. No one can predict with certainty what the future holds for proposed projects or water rights. It is not the intent of this Plan to promote or restrict the development of

water system improvements, enlargements or the introduction of new water from future projects, but it is intended to provide goals for the protection of the existing trout fishery and whitewater recreation values present in the South Platte River.

The concern is that prolonged high flow periods due to new project water may require a larger stream channel to adequately protect fisheries habitat and populations, channel stability, and maintenance of the ecosystem. Future water projects, especially those that will significantly extend bank full stream conditions, will require an analysis by the project proponent of channel capacity related to these values.

The new project proponent is responsible for any necessary analysis and channel reconstruction. Changes to channel capacity should be accomplished by physically reconstructing the channel where necessary. These alterations should be achieved by means other than flow manipulation in order to maintain the ORVs in the river corridor. Proposals for flow and channel modification for new projects will be reviewed by participants of the annual operations meeting.

C. Stream Channel Maintenance and Improvement

The mainstem of the South Platte, prior to the Hayman fire, contained some of the finest fishery habitat in the state. Maintaining habitat is one of the main goals of the Plan. This section of the Plan addresses stream habitat concerns regarding river sedimentation and areas needing channel habitat improvement projects. These channel improvement projects will consist of in-stream improvements, as opposed to flow management. Stream habitat concerns regarding flow management, reservoir operations and channel maintenance flows are addressed in Section II, D-F.

The Hayman fire of 2002 is expected to significantly increase sedimentation of the river. The impact of this sedimentation is not known at this time. It is expected to affect the fisheries, river system, and reservoirs and the way in which they are managed.

In addition to the fire effects, there are several man-made disturbances (including roads) that contribute to sediment deposition in the river system. High amounts of sediment entering stream systems can change the chemical composition of a stream, and impact the ecology of the river. Sustained bankfull or higher flows alter erosion and sediment transportation rates within the river corridor contribute to erosion.

To help minimize sedimentation and bank erosion, under the lead of the USFS, CDOW, the water users, and any other interested participants will form a sediment group as needed to

- Develop, where appropriate, in-channel habitat improvement projects to improve stream channel habitat, including bank stabilization and erosion control
- Monitor the physical and biological response of the river to sedimentation and in-channel improvements

- Coordinate activities under this Plan with fire restoration efforts.

Funding for these activities may be provided by the governing Board of Trustees (see Attachment D Endowment Plan).

D. Trout Fisheries

1. Overview

Except for the uncertain future effects of the fires, this Plan offers an opportunity to maintain and in some cases enhance existing conditions for the high-quality trout populations in the river. Fishery management is a very complex science. Streamflow management is only one of many factors affecting trout population. Diseases, fishing pressure, stocking regulations, fire, etc., also have a dramatic effect on fish populations. CDOW fishery management goals of today will not necessarily be the same in the future, but the overall goal to maintain, protect and enhance the South Platte river system's aquatic resources will remain the same.

The Plan has four main reservoir operation goals for trout fishery management, which are listed by priority. The first goal is to maintain minimum streamflows below Spinney, Eleven Mile, and Cheesman Reservoirs. Streamflows below minimum levels deprive trout of habitat and may have serious impacts to trout populations. The second goal is to minimize streamflow fluctuation. Steady transitions from low streamflow to high streamflow, and vice versa, allow fish time to move into new habitats as water levels change. The third goal of the Plan is temperature moderation. Improving stream temperatures by mixing top and bottom reservoir releases will decrease physiological stress and susceptibility to disease in trout populations. The last goal is to manage peak streamflow. High streamflows, although naturally occurring, may negatively impact the recruitment of young fish into the population. However, high streamflows are also periodically necessary in order to maintain channel stability and capacity, and to transport fine sediment downstream. Due to limited storage space and water rights and other constraints, managing peak streamflows is the least attainable of the four fishery management goals. There are few opportunities to attenuate peak streamflows by reservoir operations. The extent to which Denver Water can pass peak flows is unknown at the present time. Denver Water and Aurora will strive to operate Spinney, Eleven Mile, and Cheesman reservoirs to attenuate peak streamflows recognizing the limited potential.

2. *Mainstem Plan*

Table 2: Desired Streamflow for Fishery Management

Location	Period	Minimum (cfs)	Optimum Range (cfs)
Spinney Release	Year round	20	50 to 150
Eleven Mile Release	Year-round	20	50 to 100
Cheesman Release	August-March	35	50 to 150
	April-July	40	100 to 225

These targets came from weighted area curves of fish habitat at different life stages (see Chadwick, Appendix B). They are not based on the native or historical streamflows and do not reflect the capability of the water facilities to manage streamflow.

a. Minimum Streamflows

Low streamflows result in low habitat levels available to trout. Natural streamflows in many Colorado streams can fall below levels necessary to maintain healthy trout streams. As experienced in 2002, natural streamflows are low during a drought. Also, since the majority of South Platte River streamflow comes from snowmelt, the streamflows are naturally very low in the wintertime. These natural streamflows can be lower than the habitat needs of trout. Importation of water into the basin and reservoirs provides opportunities to augment natural streamflows with streamflows more suitable for trout. The goal is to provide minimum levels of streamflow to maintain or enhance habitat for trout.

Spinney Mountain Reservoir

Background: Low streamflow (particularly less than 20 cfs) drastically reduces streamflow habitat for all trout life stages in the reach between Spinney and Eleven Mile. With the creation of the reservoir, streamflow in this river segment has improved, particularly the otherwise low winter flows. Spinney has a minimum release requirement of 32 cfs or native inflow whichever is less.

Target: The minimum desired release is 20 cfs with 50 to 150 cfs being optimum (Table 2). Future improvements (in-stream habitat structures and modifying or reducing width-to-depth ratios in areas that are currently wide and shallow) in stream geometry and habitat may allow for lower minimum streamflows needed to maintain or enhance trout population dynamics and structure.

Operations: Aurora has already committed to a minimum release of 32 cfs or the native inflow, whichever is less as designated in the 1980 agreement between Aurora and CDOW. Aurora will strive to keep the release above 50 cfs (optimum) recognizing this will not always be achieved.

Storage releases may be made to meet the desired 32 cfs minimum provided it can be recaptured without loss in Aurora's downstream reservoir and there are no impairments to water rights. When Aurora's downstream storage is full but there is space available in Cheesman Reservoir, reservoir operations will be coordinated between Aurora and Denver Water to allow water released from Spinney Mountain to be stored in Cheesman to meet the desired 32 cfs release.

☞ Eleven Mile Reservoir

Background: Low streamflows (particularly less than 20 cfs) drastically reduce habitat for all trout life stages in the reach from Eleven Mile canyon downstream through Happy Meadow campground. Maintaining adequate winter streamflow for adults is a priority for fisheries. Eleven Mile is normally full and bypassing the inflow.

Target: The minimum requested by the CDOW for Eleven Mile Reservoir outflow is 20 cfs with an optimum range of 50 to 100 cfs (see Table 2).

Operations: Denver Water commits to release a minimum outflow of 32 cfs or the 7-day running average of computed inflow, whichever is less.¹ Using a 7-day running average will help to reduce fluctuations in streamflows.

If computed inflow is less than 32 cfs, then a bottom release may be made to meet the desired 32 cfs outflow. Bottom releases will be made provided they can be recaptured without loss in Denver Water's downstream facilities, the resulting lost storage in Eleven Mile can be recovered in the next runoff, and there is no impairment of water rights. Bottom releases will not be made if it would cause the reservoir to stop spilling. Starting no later than May 1, bottom releases will be discontinued to allow the surcharge pool to fill and complete the cycle. However, while the surcharge pool is being filled the minimum streamflow will be maintained as described in this Plan. The limited volume of water available for supplemental bottom releases will first go towards maintaining minimum streamflows and be used secondarily for temperature moderation.

Future improvements (in-stream habitat structures and modification or reducing width-to-depth ratios in areas that are currently wide and shallow) in stream geometry and habitat may allow for lower minimum streamflows to maintain or enhance trout population dynamics and structure.

¹ Computed inflow is reservoir inflow minus reservoir evaporation. Computed inflow = change in storage + outflow.

☒ Cheesman Reservoir

Background. Releases from Cheesman Reservoir have been managed in more recent years such that winter streamflows are not a limiting factor for trout populations. Winter streamflows (November through March) below Cheesman have averaged 98 cfs in the 1985 - 1996 period, but 9% of that time the streamflow was less than 40 cfs.

Target: The minimum release desired is 35 cfs August through March with the optimum range of 50 to 150 cfs. For the period April through July the minimum desired release is 40 cfs with the optimum range of 100 to 225 cfs.

Operations: Denver Water commits to release a minimum of 35 cfs August through March and 40 cfs April through July or the computed inflow, whichever is less.² Denver Water expects releases in April through July to stay above 50 cfs the majority of the time. Denver Water will strive to keep releases above 50 cfs (optimum) in August through March and above 100 cfs (optimum) in April through July, realizing this will not always be achieved.

Storage releases may be made to meet the desired 35 and 40 cfs minimums, provided the water can be recaptured without loss in Denver Water's downstream facilities, the resulting lost storage in Cheesman can be recovered in the next runoff, and there is no impairment of water rights. Future improvements (in-stream habitat structures and modification or reducing width-to-depth ratios in areas that are currently wide and shallow) in stream geometry and habitat may allow for lower minimum in-streamflows to maintain or enhance trout population dynamics and structure.

b. Limit Streamflow Fluctuations

Providing stable streamflows is an important tool for enhancing fisheries. Steady transitions from low streamflow to high streamflow, and vice versa, allow fish time to move into new habitats as water levels change. Ideally streamflows would be adjusted to match the life stages of trout as described in the next section. Yet streamflow stability must be placed in the context of many considerations for the South Platte River. Some of these considerations include:

- ideal streamflow for rainbow and brown trout can be very different from natural South Platte streamflow;
- native South Platte streamflows alternate between high snowmelt runoff and low winter baseflow; and
- metro Denver's water use fluctuates from day to day and hour to hour as temperature, cloud cover, precipitation, humidity, and other conditions affect the level of use; and

² Computed inflow is reservoir inflow minus reservoir evaporation. Computed inflow = change in storage + outflow.

- the unpredictability of streamflows is exacerbated by the ability of downstream senior water users to "call" water past the upstream facilities at times that may or may not coincide with Denver area water use or weather patterns in the upper reaches of the South Platte basin; and
- there is no substantial storage to act as a buffer between Denver Water's supply (Cheesman) and customer water use downstream. The operating range of Denver's terminal reservoir (Strontia) provides a space of only about 1,500 acre-feet and is expected to be further reduced because of sedimentation from the fires.

Target: See optimum flow ranges in Table 2.

Operations: Denver Water commits to the guidelines in Table 3 for staging of outflow changes (bottom releases) at Eleven Mile and Cheesman reservoirs. During emergencies, maintenance projects, efforts to manage fire impacts, certain water rights constraints, and other conditions described in the Appendix on Enforcement Procedures it may not be possible to meet the guidelines. Denver Water and Aurora will strive to limit streamflow fluctuations below Spinney, Eleven Mile, and Cheesman reservoirs within the operational limits described above. Particular emphasis will be placed on limiting fluctuations that could adversely affect the various life stages of brown and rainbow trout. Annual operating plans described in Section E will reflect this emphasis. Eleven Mile Reservoir when full and spill provides damping of streamflow fluctuations.

Table 3: Outflow Ramping Schedule
Maximum Change per Hour - % of Existing Flow

<u>Flow Range (cfs)</u>	<u>Eleven Mile</u>	<u>Cheesman</u>	<u>Roberts Tunnel</u>
0-50	17	25	17
51-100	11	17	15
101-200	14.5	20	19
201-400	9.5	14	12
401-600	7	11	10
601-800	6	9	9
>800	5	8	--

c. Temperature Moderation

The opportunity to moderate stream temperature below a reservoir occurs when:

- water temperature varies with depth inside the reservoir, and
- water can be selectively withdrawn at various depths to blend temperature.

In reservoirs with only one outlet level, blending can only be done when the reservoir is full and also discharging over the top of the dam (spilling).

CDOW recommends stream temperatures below dams be maintained between 50° and 60° F from June 1 through September 30. This temperature range enhances rainbow and

brown trout growth and physiology. Rainbow and brown trout growth are maximized at temperatures ranging from 65° F to 68° F, but the incidence of physiological stress and susceptibility to disease and parasitic infections increases at these higher temperatures. Warmer water, greater than 60° F, may also enhance western white sucker hatching success, growth and physiology while negatively impacting sportfish management objectives. Maintaining colder temperatures during the summer and early fall period will give a margin of error during low streamflow periods and will hopefully extend the cooling enhancement farther downstream.

The other temperature effect is the increase and decrease in stream temperature as the reservoir spills and stops spilling. Without time for acclimation, this can result in temporary stress to the trout population. Although trout appear able to survive short-term temperature fluctuations of a couple of degrees (F) per hour, this may cause stress and may interrupt behaviors, such as spawning. Therefore, temperature fluctuations downstream of dams should be kept below a rate of 10° F per day. Where possible, the bottom releases would be adjusted during spills to acclimate the fish to temperature change. It is easier for trout to acclimate to temperature increases than to temperature decreases.

Target: The target stream temperature for dam discharge while spilling is 50 to 60°F from June 1 through September 30 with a desired maximum of 65°F. The target for temperature fluctuations while spilling is less than 10° F per day. However, this will demand the development of new operational guidelines which will take some time to perfect.

☒ **Spinney Mountain Reservoir**

The opportunities for temperature management at Spinney Mountain Reservoir are very limited. The dam does not have a multi-level outlet structure that would permit releases from a variety of elevations. The reservoir typically spills only in wet years, so blending releases from the spillway and outlet works is not feasible. For reasons of dam safety as well as water rights accounting, Aurora prefers to make releases through the outlet works rather than over the spillway when the reservoir is full.

☒ **Eleven Mile Reservoir**

Background: Except for the drawdown during the drought of 2002, Eleven Mile Reservoir is typically kept full and spills water over the spillway. Relatively warm surface water spilling from Eleven Mile Reservoir during the summer can result in warmer discharge temperatures than are desirable for rainbow and brown trout. Ideal operation for trout habitat would be continuous bottom releases from the dam. Since Eleven Mile is a drought reserve, the reservoir is typically full and spilling which results in storage of over 5,000 acre-feet of additional supply in the surcharge pool. The surcharge pool is important reservoir storage.

In 1988 and 1989, water temperature was measured directly below Eleven Mile Reservoir dam (Station 1), at the mouth of Eleven Mile Canyon (Station 2), and at the Happy Meadows campground area (Station 3). The water temperature exceeded 60° F from June 24 through September 9 at Station 1; from June 6 through August 26 at Station 2; and from June 6 through August 26 at Station 3 in 1988.

Tasks: Within 5 years of acceptance of this Plan by the Forest Service, Denver Water will install new outlet valves using stream temperature and minimum fish flow release criteria in the design of the valves. The existing outlet valves do not allow for sustained releases below approximately 100 cfs and cannot be used for temperature modification. Denver Water will also install temperature gages in the spillway and outflow gage. If possible, CDOW or USFS will install a temperature monitoring device about halfway down Eleven Mile Canyon.

Operations: When Denver Water has filled the surcharge pool at Eleven Mile, which typically occurs in July, bottom releases will be made when possible to meet the temperature target below the dam through September. It is expected to take some experience in blending spill and bottom releases before the target is consistently met. Through experience, Denver Water will develop a system for blending releases so as to minimize operational changes while meeting temperature targets. When possible, Denver Water will provide a temperature gradient of less than 10°F per day when making the transition into and out of bottom releases. In the future, bottom releases for moderating wintertime stream temperatures will be considered.

Bottom releases will be made provided they can be recaptured without loss in Denver Water's downstream facilities, the resulting lost storage in Eleven Mile can be recovered in the next runoff, and there is no impairment of water rights. During years of high streamflow, reservoirs downstream of Eleven Mile may be full. Under these circumstances, Denver Water may not be able to make bottom releases for temperature moderation. Bottom releases will not be made if it would cause the reservoir to stop spilling. Starting no later than October 1, bottom releases would be discontinued to allow the surcharge pool to fill and complete the cycle. However, while the surcharge pool is being filled the minimum streamflow will be maintained as described in this Plan. Implementation of these operations will be reviewed at the Annual Operations Meeting.

The limited water available for supplemental bottom releases will first go toward maintaining minimum streamflow and secondarily for temperature moderation.

Cheesman Reservoir

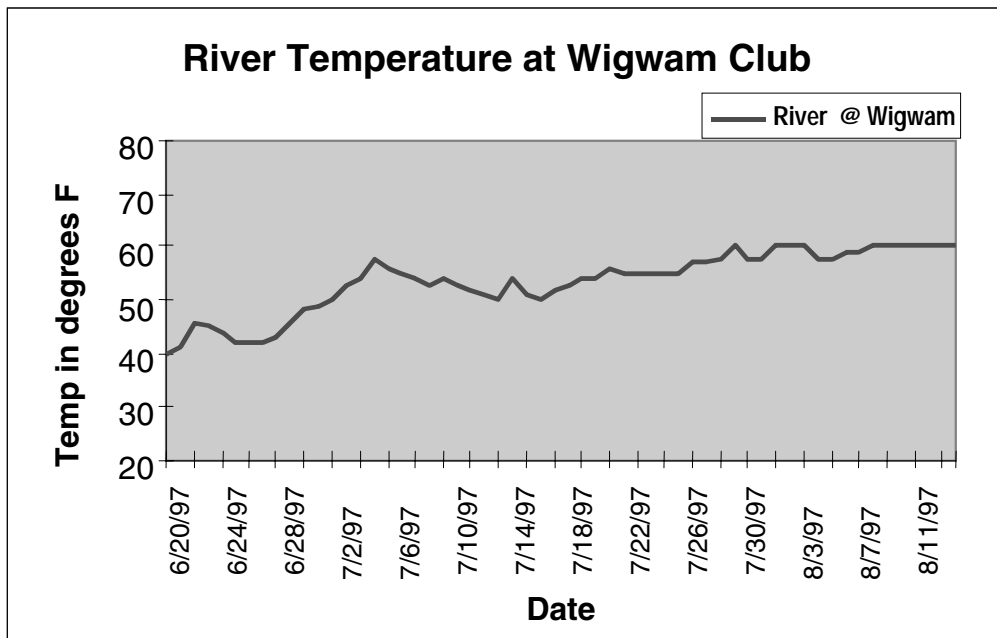
Cheesman Reservoir, as the workhorse of Denver Water's South Platte system, usually makes bottom releases except for a few months during wet years. During those spill events, downstream temperature could rise above 60° F.

An experiment was conducted in 1997 to test the reservoir operator's ability to manage temperature downstream of the reservoir during spill operations. Inflows were relatively low, which resulted in a relatively easy-to-manage situation. As a result, daily temperature changes were kept to within a few degrees. A year similar to 1995 presents a much greater challenge where the inflow during spring runoff essentially tripled within three days to a streamflow that nearly exceeded the capacity of the reservoir outlet works. Although managing temperature under such high streamflow is beyond the physical capabilities of the reservoir, temperature can be moderated at other times that the reservoir is spilling.

Tasks: Denver Water will install temperature gages in the spillway, the valve manifold, and the streamflow gage downstream of the dam.

Operations: When possible, Denver Water will adjust the proportion of spillway discharge and bottom releases to 1) keep the downstream temperature while spilling below 60° and 2) provide a temperature gradient of less than 10° F per day while making the transition into and out of spilling. When the outflow is 40 cfs or less, the goal is to keep the downstream temperature while spilling below 55° F.

Figure 2: River Temperature at Wigwam Club



d. Managing Peak Streamflows

Rainbow and brown trout are not native to the South Platte River and can have difficulty reproducing in the naturally low wintertime streamflows and high spring runoff. High streamflows, although naturally occurring, may negatively impact the recruitment of young fish into the population. High streamflows can also negatively impact rainbow

trout spawning and redd success rates if streamflows remain high during spawning activities (redd selection process) then decrease during post-spawning and leave redds dry. However, high streamflows are also periodically necessary in order to maintain channel stability and capacity, and to transport fine sediment downstream. Therefore, flows will be managed, when possible, to attenuate peak flows during some years to benefit fish recruitment, while some peak flows during other years will be passed, when possible, for channel maintenance. This will include, when practical, attempts to flush sediment caused by fires so long as it does not cause sedimentation, water quality, or other impacts to the downstream facilities of water users.

As part of the annual operating plan, the participants will determine whether to attempt to provide a channel maintenance flow during spring runoff or attempt to attenuate peak flows to enhance fishery recruitment. The goal will be to maintain successful year-class recruitment for brown and rainbow trout populations at least once every three years.

Spinney, Eleven Mile and Cheesman reservoirs are not designed, sized, or operated for flood control. Large amounts of additional storage would be necessary to manage the naturally high runoff in the South Platte. Typically at the start of runoff, Cheesman Reservoir has had approximately 10,000 to 30,000 acre-feet of space to fill. In wet years, such as 1995, the space is filled within a matter of a few days, without allowing an opportunity to reduce peak streamflows. Reservoirs naturally attenuate peak streamflows even when full due to the configuration of the reservoir and spillway. (See Figure 10 for an example.) It is understood that this goal of reducing peak streamflows is intended to apply to managing operations only and is to work within the existing storage capacity in the South Platte basin. Nothing in this Plan is intended to promote or prevent additional storage capacity in the watershed.

Natural streamflow exceeds desired maximums for trout even in dry years. The storage space in existing reservoirs available for flood control is insignificant. Another limitation is the inability to accurately forecast streamflow, river calls, and water demands. Such predictions are necessarily no better than the ability to forecast long-term weather. The Plan has purposely not set maximum streamflow levels because high streamflow events are difficult to predict and reduce with the existing water storage facilities. Obviously, the continued existence of healthy fisheries below Spinney, Eleven Mile, and Cheesman reservoirs indicates that the brown and rainbow trout populations are fairly resilient to high flow events in these tailwater areas.

Operations: Due to limited storage space and water rights constraints, reducing peak streamflows is the least attainable of the four fishery management goals. There are few opportunities to attenuate peak streamflows by reservoir operations. Denver Water and Aurora will strive to operate Spinney, Eleven Mile, and Cheesman Reservoirs to attenuate peak streamflows recognizing the limited potential.

3. *North Fork Plan*

For a description of North Fork water operations see Section III.C. For fishery resources, see Section III.A.5.

a. Ramping Flows

Denver Water commits to a gradual ramping schedule for flow changes from the Roberts Tunnel as shown in Table 3. This ramping schedule will help to minimize impacts to trout populations during flow changes. It may not be possible to meet the ramping guidelines during emergencies, maintenance projects, water rights constraints, and power plant upsets.

b. Winter Streamflow

Most winters the Roberts Tunnel discharges at about 75 to 100 cfs which provides important augmentation of fish habitat. Winter deliveries have also provided an important means of managing ice accumulation along the river. In wet years such as 1984 and 1995 the tunnel was not operated in the winter. Winter releases are expected to increase as more people move into Denver Water's service area.

c. Peak Streamflow

Flow easement agreements and channel capacity limit the Roberts Tunnel releases during high streamflows.

d. Channel Modifications

When doing channel work on the North Fork, Denver Water commits to maintaining or enhancing the structural habitat for trout. CDOW will be consulted on this work.

E. Whitewater Recreation

1. Overview

The portion of the South Platte River covered by this Plan is used by over 12,000 kayakers, rafters, and canoeists each year. It accommodates 70 percent of the whitewater boating in the Pike National Forest. It offers over 40 miles of Class I-V whitewater boating opportunities. The two forks of the South Platte are especially important because of late season supplemental streamflows for water supply and their close proximity to the Denver metro area.

2. Mainstem of the South Platte

This Plan recognizes that whitewater boating on the mainstem of the South Platte is an important recreational activity that should be considered along with other needs for

streamflow management. Where other objectives can be met and there is still flexibility to manage streamflows on the river, it is desirable to maintain and enhance streamflows for whitewater recreation. Some streamflow adjustments, such as timing and minor changes in volume to enhance whitewater recreation, within the limited flexibility of water supply demands, are encouraged by this Plan.

Desirable streamflows on the mainstem for whitewater recreation are generally 200 cfs or more from Lake George to Cheesman Reservoir and 300 cfs or more from Cheesman Reservoir to the confluence with the North Fork. It is recognized that peak spring flows are desirable for whitewater recreation and will continue to occur given the limited capability of the water supply system to control runoff.

3. *North Fork of the South Platte*

The North Fork of the South Platte is a prime whitewater recreation resource. Bailey Canyon, in particular, is a nationally recognized whitewater resource. Enhanced streamflows from the Roberts Tunnel for water supply offer extended season boating opportunities on the North Fork. It is recognized that this watercourse carries unnatural supplemental streamflows for water supply, and this will continue and is supported by this Plan. The Roberts Tunnel will continue to be operated solely for water supply purposes, but some attempt to manage flows, such as timing and minor changes in volume to enhance whitewater recreation, is also encouraged by the Plan. However, this Plan will not require changes to seasonal and annual volumes discharged from the Roberts Tunnel.

Many needs for fishery management are compatible with whitewater recreation, and adjustments for fish management will frequently benefit, or at least not adversely affect, whitewater recreation. Minimum flows are an example. However, high flows, which may be considered undesirable for fish habitat management and productivity, are desirable for whitewater recreation. Desirable streamflows for whitewater recreation on the North Fork at Bailey are over 200 cfs, with an optimum flow of 300-500 cfs.

F. Annual Operating Plans

This section identifies the general coordination and review procedures between Aurora, Denver Water, the Colorado Division of Wildlife, and any other interested groups such as Trout Unlimited, the Wigwam Club, and American Whitewater. Denver Water and Aurora will hold an operation meeting each spring to consult with participants in this Plan and other interested groups. Preliminary operating plans will be developed based on spring runoff forecasts. Denver Water will consult the attached Tailwater Trout Habitat handbook (Appendix B) and the goals for limiting fluctuations described in Section II.C.2.b. in preparation of its operating plans. Operating plans will be adjusted according to actual weather, streamflow, water use and demand, water rights calls, system constraints and other operating conditions.

The annual operating meeting will be a chance for the operators and other interested groups to learn from their experience of managing under this Plan. The annual meeting will include a discussion of how well the goals were met the previous year, and how operations can be improved in the future. The operations of stream temperature moderation below Eleven Mile will be reviewed. Also reviewed will be stream flow and stream temperature records (provided by Denver Water), fish population data (provided by CDOW), and the channel maintenance monitoring program (data to be provided by USFS). Impacts from fires and possible adaptation to this Plan will be reviewed. Adaptations to the Plan will be performed as described in the Appendix on Enforcement Procedures. The participants will also determine, based on snowpack and water supply conditions, whether to attempt to operate to attenuate peakflow or to provide a channel maintenance flow during spring runoff.

III. DESCRIPTION OF RESOURCES

A. Trout Fisheries

1. Resource Overview

The mainstem of the South Platte River represents one of the more important and heavily used fisheries in the state. Rainbow and brown trout comprise the vast majority of trout biomass in this reach. Rainbow and brown trout are imported sport game fish that are not naturally adapted to the streamflow and habitat in Colorado. Rainbow trout are most common below Cheesman Reservoir in the Cheesman Canyon segment of the river where they have, until recently, maintained self-sustaining populations with very high biomass. In fact, these areas are considered "world class" fisheries and are designated as Gold Medal waters. Unfortunately, the rainbow trout are declining in this area due to infection by whirling disease. Apparently this affects juvenile rainbow trout during the first year of their life. Recent data indicate that rainbow trout biomass in Cheesman Canyon is declining and that there has been little recruitment of the younger year classes over the past several years. There has been little impact on brown trout below Cheesman, and there have not been any reported whirling disease impacts to either rainbow or brown trout below Eleven Mile Reservoir.

In the past the area of interest has been stocked with rainbow trout, except for Cheesman and Wildcat canyons.

In rivers such as the South Platte, where fishing harvest is limited by special regulations, trout population fluctuations from year to year are related largely to habitat availability, changing environmental conditions, diseases, streamflow, and to a lesser extent, stream temperature. Streamflow related bottlenecks to trout populations generally occur during extreme streamflow conditions, either the high flow period during spring runoff or the low flow winter period.

Sedimentation and other impacts for the 2002 fires may reduce fish habitat and populations.

2. *Spinney Mountain to Eleven Mile Reservoir*

The primary sportfish species managed in this reach are brown and rainbow trout. Northern pike, snake river cutthroat trout and kokanee are periodically sampled in this reach, but these species are not used to sustain riverine fishery management goals. Non-sportfish species include western white and longnose suckers (native to South Platte drainage). Brown trout maintain a self-sustaining population in this reach. Rainbow trout natural recruitment has been severely restricted since 1991 primarily due to whirling disease factors. Fingerling size (4 to 5 inch) rainbow trout have been stocked in the fall since 1992 to increase rainbow trout abundance in this section.

Habitat characteristics in this reach range from a stream habitat improvement area completed by the CDOW research section in 1993, to long shallow glides, runs and riffles interspersed with deep pools usually on the outside river bends and an overall large width-to-depth ratio (that is, wide and shallow). The habitat improvement area directly downstream from Spinney Mountain Reservoir dam now has a decreased width-to-depth ratio, several constructed willow/gravel bars, rock vortex structures, better pool spacing along the stream, and improved bank stabilization. Future habitat improvement projects using similar techniques are scheduled for the remaining river areas downstream from the 1993 project site.

CDOW fishery management objectives include maintaining and enhancing wild brown trout and rainbow trout populations. Supplemental stocking with 4 to 5-inch rainbow trout in the fall to increase rainbow trout recruitment will continue as necessary. Management regulations include Gold Medal Water status, flies and lures only, catch and release for all fish species in this entire segment.

3. *Eleven Mile to Cheesman Reservoir*

The primary sportfish species managed in this reach are brown trout and rainbow trout. Northern pike, yellow perch, cutthroat trout, and kokanee salmon are periodically sampled downstream from Eleven Mile Reservoir (where they are part of the reservoir fishery management program); however, these species are not used to sustain riverine fishery management goals. Non-sportfish species include western white sucker, longnose sucker, and creek chub (all three are native to the South Platte drainage). Rainbow and brown trout are self-sustaining throughout the entire reach. Catchable-size rainbow trout (average length 10 inches) are supplementally stocked from Springer Gulch bridge downstream to the water diversion structure at the mouth of Eleven Mile Canyon and in the Happy Meadows campground stretch to support higher angling pressure typically found in these areas.

Habitat characteristics in Eleven Mile Canyon range from high gradient, boulder cascades and rapids to long shallow riffles, runs and glides. Erosion and depositional areas exist in

many of the low gradient areas, because of unconsolidated banks heavy recreational use and increased road use. Riverine habitat below the canyon mouth is channelized around Lake George, then it is primarily wide and shallow with little riparian cover downstream from Highway 24 to the Happy Meadows campground stretch. Riparian habitat characteristics improve through the Happy Meadows campground area downstream through Wildcat Canyon, although channel morphology tends to remain wide and shallow except where canyon geological features decrease width-to-depth ratios in some areas down to Cheesman Reservoir. Further details regarding riverine habitat characteristics can be found in the USFS Wild and Scenic River Study and Draft LEIS.

CDOW fishery management objectives include maintaining and enhancing the wild brown and rainbow trout populations from Eleven Mile Reservoir Dam downstream to Cheesman Reservoir, and supplemental catchable-size rainbow trout stocking in lower Eleven Mile Canyon and Happy Meadows campground reaches. Management regulations include artificial fly and lure only—2 trout 16 inches or longer bag and possession limit from Eleven Mile Canyon Dam downstream to Springer Gulch bridge in Eleven Mile Canyon, and standard daily bag and possession limits from Springer Gulch bridge downstream to Cheesman Reservoir. The Wildcat Canyon segment—from Beaver Creek downstream to Cheesman Reservoir—is a Wild Trout water, meaning no supplemental stocking occurs in this reach.

4. Cheesman Reservoir to Confluence with North Fork

At present, the highest trout biomass levels in the South Platte River occur in Cheesman Canyon. The fish populations benefit from the cooler summer and warmer winter bottom releases from Cheesman Reservoir immediately upstream. This "tailwater" allows for more stable, beneficial conditions that can occur downstream in the tailwaters of a reservoir, such as Cheesman Reservoir. The streamflow regime can, at times, be modified to reduce peak high streamflows and augment low streamflows to provide a more stable streamflow regime. In addition, tailwaters have substantially less sediment and turbidity along with elevated levels of nutrients. These conditions favor the overall productivity of the tailwater section of the river and lead to higher trout production. Trout biomass increased in Cheesman Canyon in the late 1970s when special fishing regulations were implemented in this section of the river. Another important factor was the presence of high-quality habitat for fish in this section. Lastly, the warmer water released from the bottom of Cheesman Reservoir in the wintertime allows for improved fish growth, keeps the river ice-free, and allows the food source to grow during the winter. (See Chadwick 1997 for further information on tailwater trout habitat.)

In 1976 a catch and release regulation was established by the CDOW for the Cheesman Canyon section of the South Platte River. Both rainbow and brown trout biomass increased dramatically during the late 1970s so that by 1979 trout biomass in Cheesman Canyon was the highest in the state. Cheesman Canyon is a Gold Medal fishery.

5. North Fork

The North Fork fishery is comprised primarily of brown trout, with rainbow trout constituting a small portion of the biomass. Longnose and white suckers are also found in the system from Grant to the confluence with the mainstem. Special fishing regulations are not in place on the North Fork because the fishery is not productive enough to warrant special regulations. Biomass estimates for the North Fork are approximately seven times lower than biomass estimates on the mainstem below Cheesman Reservoir. Brown trout are self-sustaining in this stream. The CDOW stocked catchable (approximately 10 inches) rainbow trout from Grant down to the confluence with the mainstem until 1997. Due to the whirling disease policy, the CDOW now stocks subcatchable (approximately 4 inches) rainbow trout from Grant to the mainstem to improve the rainbow fishery.

From previous data it is believed that the fishery in the North Fork is limited by acid mine drainage and water fluctuations, with cold water temperature being a potential limiting factor. The acid mine drainage limits growth and minimizes trout reproductive potential. As in the mainstem, water fluctuations can also limit productivity of a fishery by stranding fish when water drops suddenly and pushing them downstream if water flow increases quickly. More information is needed to determine if water temperature limits growth in the North Fork. Trout in the North Fork have not exceeded 13 inches at CDOW sampling stations.

B. Whitewater Recreation

Description of South Platte Whitewater Recreation

Mainstem

Lake George to Cheesman Reservoir

This is a segment of river previously considered unrunnable but which is seeing use by an increasing number of top end paddlers. It is a beautiful wilderness run falling into the category of adventure kayaking. It contains Class V+ rapids with numerous portages. There are some access problems in this stretch of the river.

Cheesman Dam to Deckers

This is a relatively short but very nice Class III to IV-wilderness-type run which is seldom used due to access difficulties at the put-in and through the Wigwam Club.

Deckers to Confluence with North Fork

This section of the South Platte is a very important Class II to III run for whitewater boaters. It is attractive to the paddling community due to periodic late season flows, its proximity to the Denver metro area, and good access along several segments. It offers very good beginner and training opportunities.

North Fork

Bailey to Pine

This section of the North Fork, known as Bailey Canyon, is an upper end Class IV-V whitewater run with a national reputation among whitewater paddlers. It passes through a remote canyon, with the most wild sections of the river in a real wilderness-like setting on National Forest lands. It is especially attractive because it offers rare late season Class V paddling in close proximity to the Denver metro area. There are some access problems in the upper end. Until recently there were also access difficulties in the lower end, but these were solved through the development of a new county park upstream of Pine.

Pine to Buffalo Creek

This is a short section that is seldom run due to the minimal whitewater found there and access problems with one of the area landowners.

Buffalo Creek to Confluence

This section, sometimes called the Foxton run, is a very important Class III-IV section of the North Fork. It offers many public access points and different length and difficulty of runs. It too is especially important to whitewater paddlers due to late season supplemental flows provided by transmountain diversion via the Roberts Tunnel and its close proximity to Denver.

C. Water Supply

1. Water Rights

In Colorado, water rights are established according to the Prior Appropriation Doctrine which can be summarized as “first in time, first in right.” Whoever can divert water for a beneficial use, and obtain a decree from State Water Court, is entitled to continue to divert the same amount of water for the same use. Water rights are prioritized or ranked within a basin according to court date and appropriation date, which is the date the water was first diverted and used. In general, the older the dates, the more firm the supply of water. A water right is real property, just as is the ownership of land. Water rights can be bought and sold separately from the land they originally served.

The use of a water right is limited to the beneficial uses included in the decree. For instance, Denver’s water rights are generally decreed for municipal uses. In some cases this might prohibit the use of Denver’s water to provide minimum fish flows unless those flows were also providing a decreed municipal use.

The three basic types of water rights are direct flow, storage and exchange. Direct flow water is usually used the same day that it is diverted. It is typically diverted for irrigation and potable uses. Storage rights are used to fill reservoirs. A storage right is typically limited to the volume of the reservoir. Water that is available for storage under a storage right, but which otherwise is bypassed by the reservoir owner, may be counted against the

volume of water available under the storage decree. This concept of “storable inflow” makes it difficult to reserve space in a reservoir with which to capture anticipated peak runoff. The reservoir operator takes a risk of not filling the reservoir in order to skim peak runoff. An exchange right allows a reservoir to continue to store water in a reservoir even after the storage right is out of priority. This is accomplished by supplying downstream senior rights with other water in trade for water stored in the reservoir.

The State Engineer and his network of Water Commissioners administer water rights, making sure they are diverted in priority. If a senior water right holder is not receiving their entitlement, they may place a call on the stream through the Water Commissioner, thereby limiting the diversion of upstream junior water rights. For instance, most senior water rights in the South Platte basin are irrigation rights on the eastern plains dating back to the 1860’s. The owners of those rights typically place their call on the river, forcing Denver Water and Aurora to pass all natural water through their reservoirs. Denver Water and Aurora are sometimes able to exchange or trade water with the senior water rights holder and thereby store water.

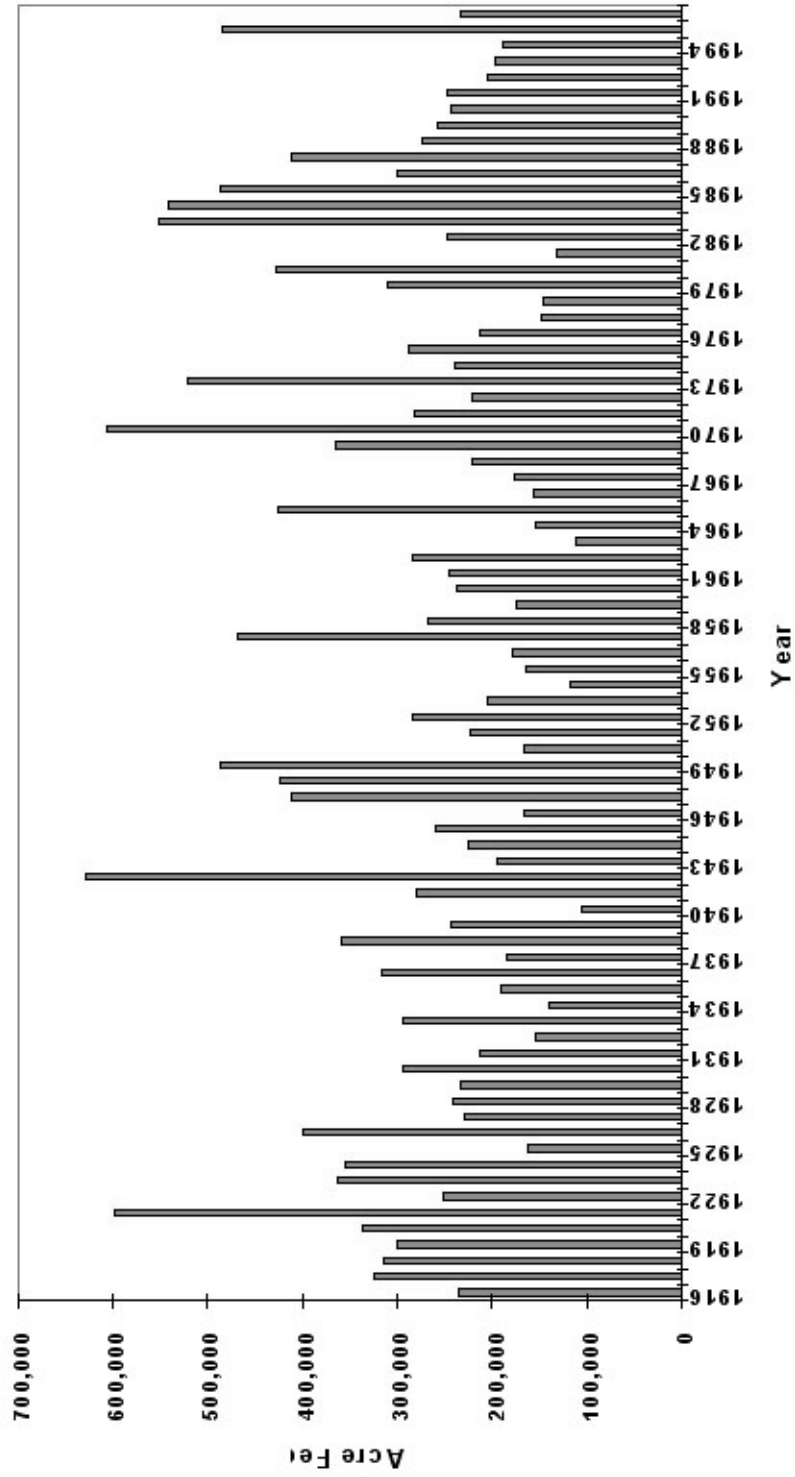
2. *Native Streamflows*

The operation of water supply systems is affected by native (natural) runoff of individual years and the cycles or groupings of years. Native streamflows are the surface water streamflows that would occur without the influence of humans. They reflect the hydrology that existed prior to the development of water supply systems or the hydrology that would exist if the effects of water supply systems were removed. Most streams and rivers in Colorado have their native streamflows altered by irrigation, municipal diversions, and reservoirs. As a result, there is little or no measured data of native streamflow for most streams in Colorado. However, a hydrologist can derive reasonably accurate native streamflow data from historical diversion data. Conceptually this is done by using historical non-native streamflow data and:

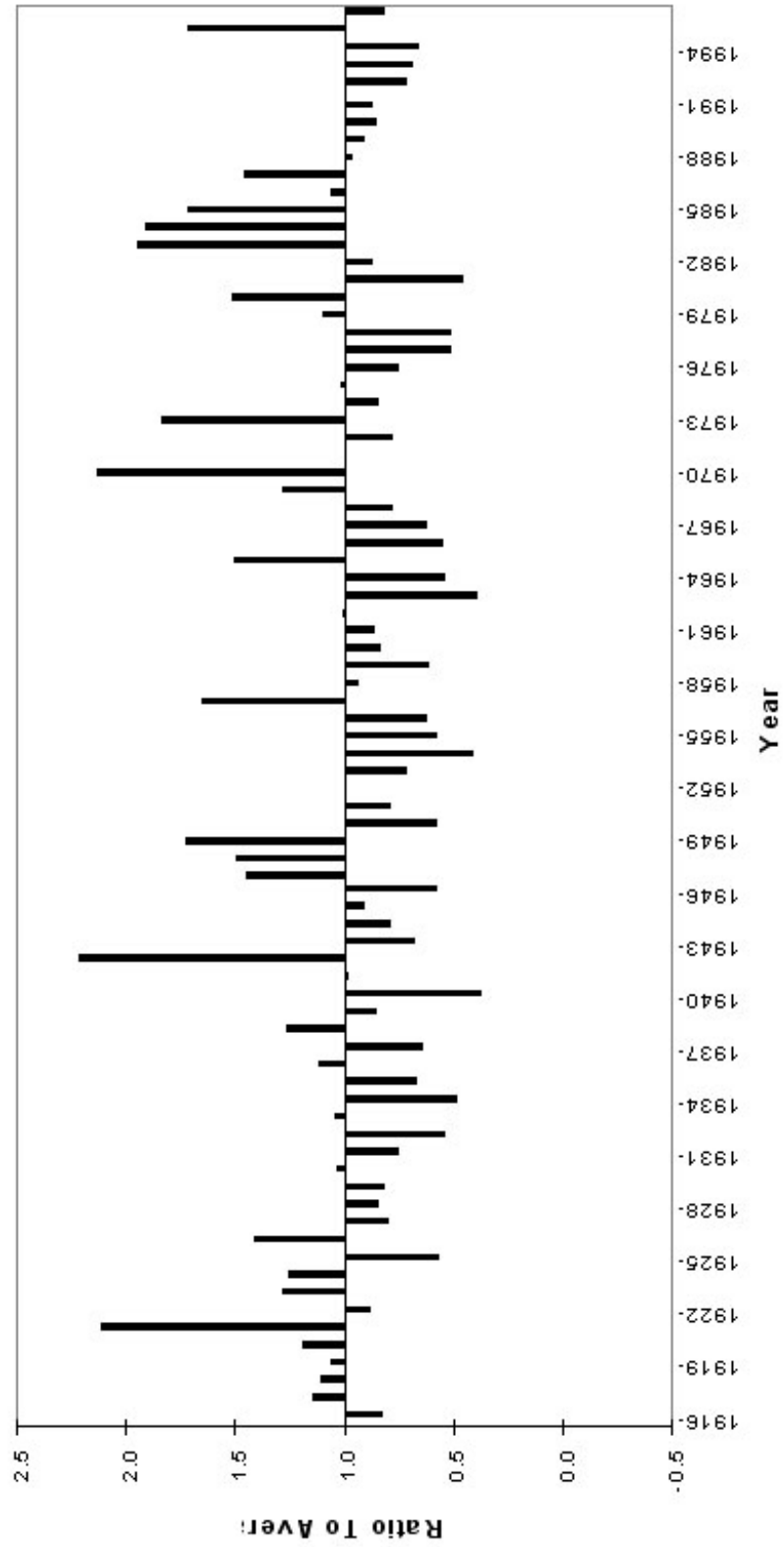
- subtracting out historical water importations (i.e., transmountain diversions)
- adding back in historical reservoir evaporation
- adding back in the historical diversions
- subtracting out historical irrigation and municipal return streamflows
- subtracting out storage releases from upstream reservoirs.

Figure 3 shows the annual native streamflows for the South Platte from 1916 through 1996. Using the same data, Figure 4 shows the ratio as compared to average annual native streamflows for the same time period. As these two figures show, there is substantial variation in native runoff. These variations occur from one year to the next along with substantial periods of consecutive wet years and dry years. The operation of water supply systems is not only dependent on these streamflows in the South Platte but also on the streamflows that occur in the various other basins from which entities such as Denver Water and Aurora obtain their water supply. The Streamflow Management Plan seeks to alter the naturally occurring streamflow fluctuations to benefit fisheries and whitewater recreation.

Figure 3: Native Flows, South Platte River at South Platte, 1916-1996



**Figure 4: Native Flows Ratio to Average,
South Platte River at South Platte,
1916-1996**



3. *Historic Streamflows*

In order to gain an understanding of historic streamflows, Table 3 shows seasonal historic outflows from Eleven Mile and Cheesman reservoirs for the time periods 1947 through 1996 and 1985 through 1996. The later 1985 - 1996 time period is more reflective of current operations, but does not include significant periods of successive dry years. The two seasons, April 1 - July 31 and August 1 - March 31, coincide with the periods of the target goal streamflows in the Plan (Table 2). As expected, the longer time period (1947–1996) contains more extreme events in terms of low and high streamflows. Also as shown, the daily data has more extreme values than the average monthly values.

Information from this table is displayed later in the Plan in reference to the streamflow goals.

Appendix A contains twenty figures that show historic mean daily outflow from Eleven Mile and Cheesman reservoirs. Figures A1–A10 display Eleven Mile Reservoir mean daily outflow for each year from 1987 through 1996. Figures A11–A20 display Cheesman Reservoir mean daily outflow from 1987 through 1996.

If you're not yet tired of looking at historic data hydrographs, Figures 5–8 are streamflow duration curves of mean daily outflow for Eleven Mile and Cheesman reservoirs for the April 1 through July 31 and August 1 through March 31 periods. The figures show the following conditions:

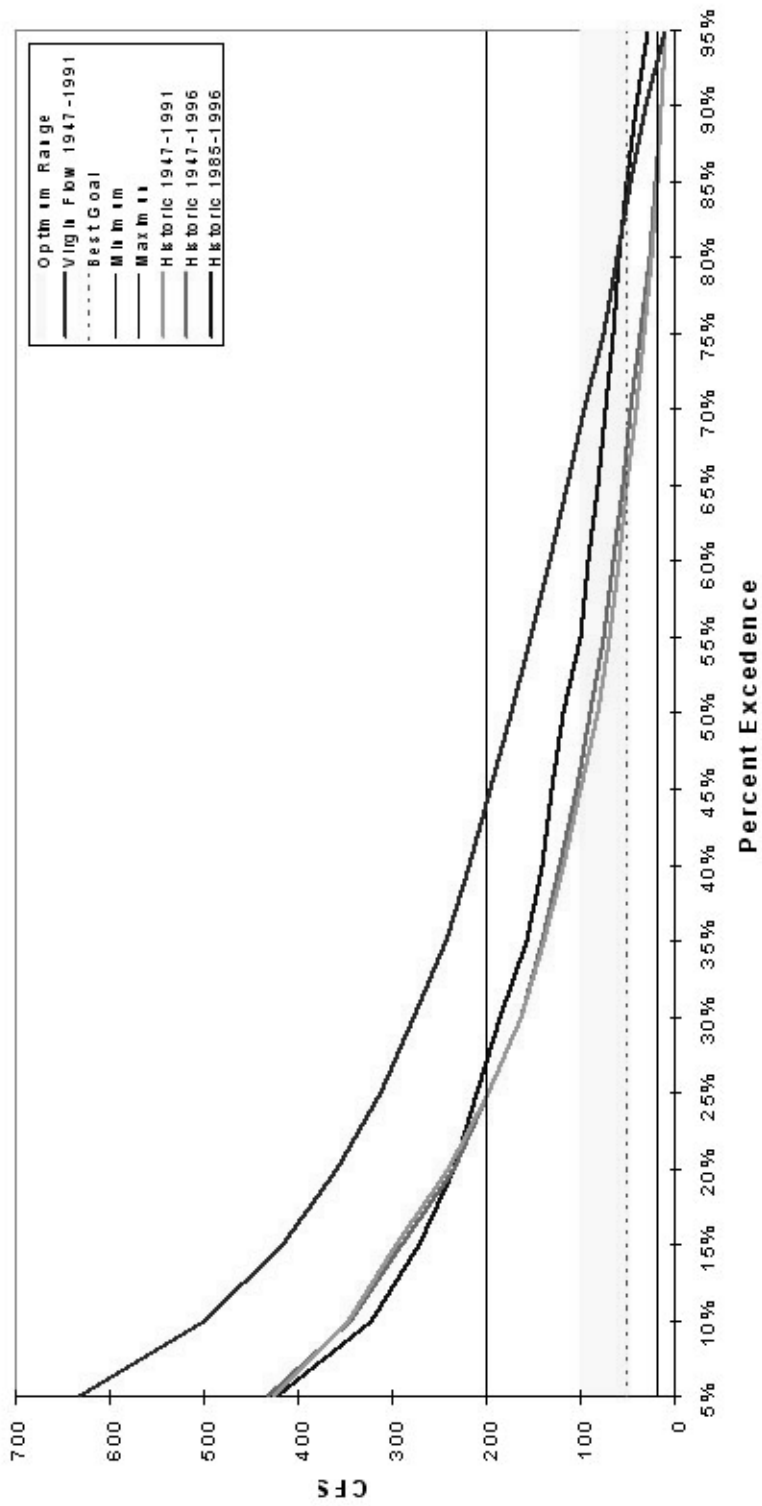
native streamflow	1947-1991
historic streamflow	1947-1991
historic streamflow	1947-1996
historic streamflow	1985-1996

Also shown on the figures are the minimum, maximum, and optimum streamflow goals that are described later in the Plan.

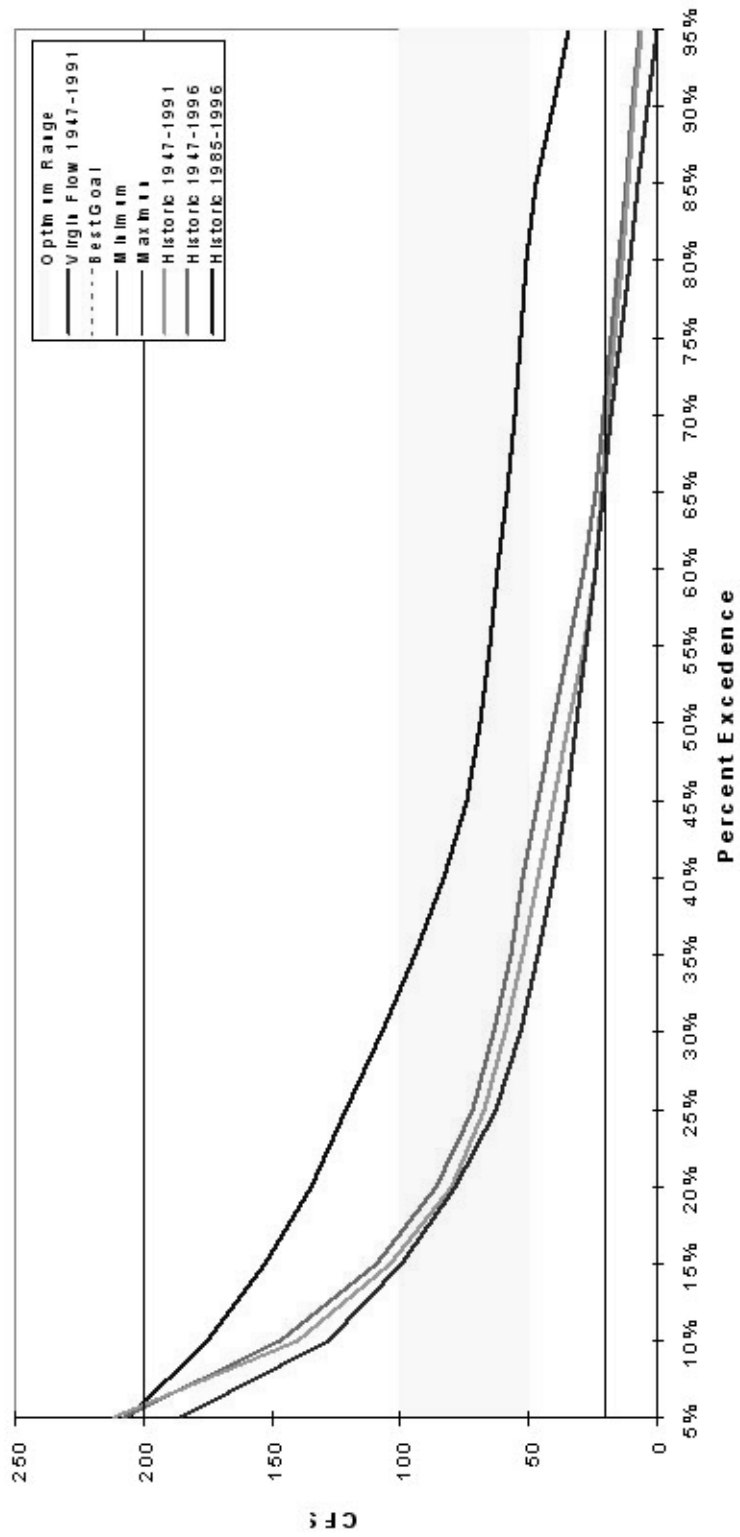
Figures 5–8 illustrate two facts about how water supply facilities affect South Platte streamflow. First, the naturally occurring low flows in winter are boosted by storage releases from reservoirs. Second, the naturally occurring high flows in spring and early summer are reduced by reservoirs capturing the water. These two characteristics of reservoir operations create tailwater conditions for high-quality trout populations in the river.

Figure 8 shows the peak mean daily inflows to Cheesman Reservoir that occurred each year from 1976 through 1996. As shown, these peak streamflows occurred as early as April and as late as August. The majority of peak streamflows occurred in June. Figure 9 shows the South Platte River streamflows routed from Spinney Mountain Reservoir to Cheesman Reservoir for June 1 to July 31, 1997. This figure shows how Eleven Mile Reservoir reduces peaks and fluctuations in streamflow. As shown, the inflow to Eleven Mile Reservoir fluctuates more widely than does the outflow.

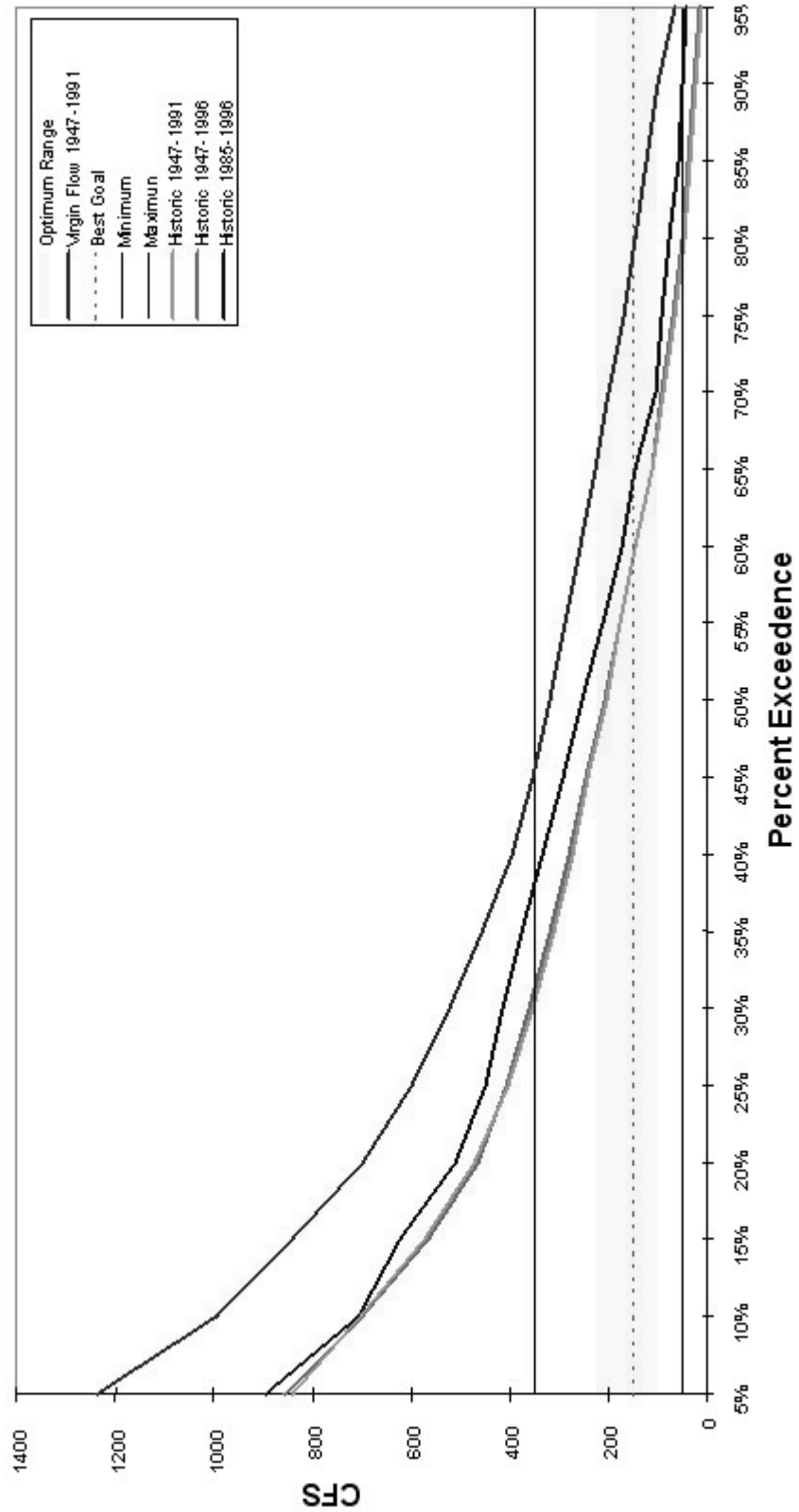
**Figure 5: Streamflow Duration Curve, Eleven Mile Reservoir
 April 1 through July 31,
 Daily Data**



**Figure 6: Streamflow Duration Curve, Eleven Mile Reservoir
August 1 through March 31
Daily Data**



**Figure 7: Streamflow Duration Curve, Cheesman Reservoir
April through July**



**Figure 8: Streamflow Duration Curve, Cheesman Reservoir
August 1 Through March 31,
Daily Data**

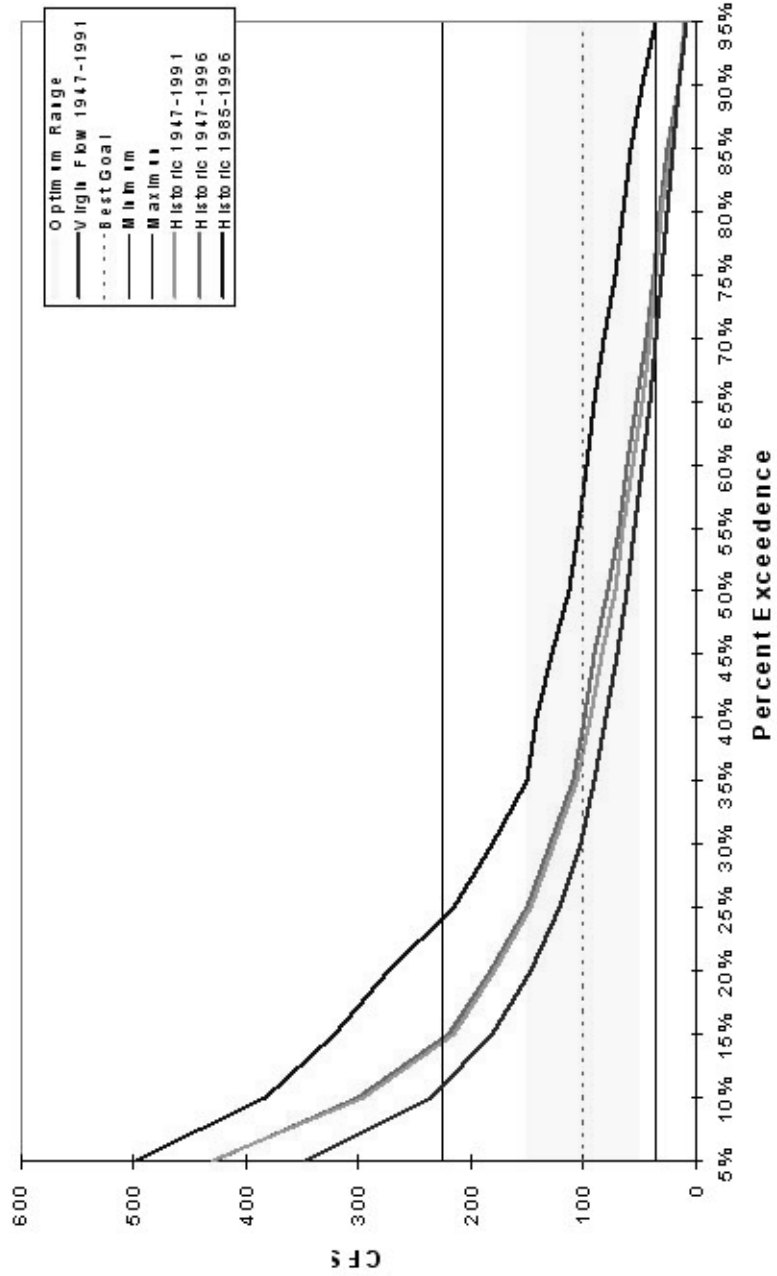
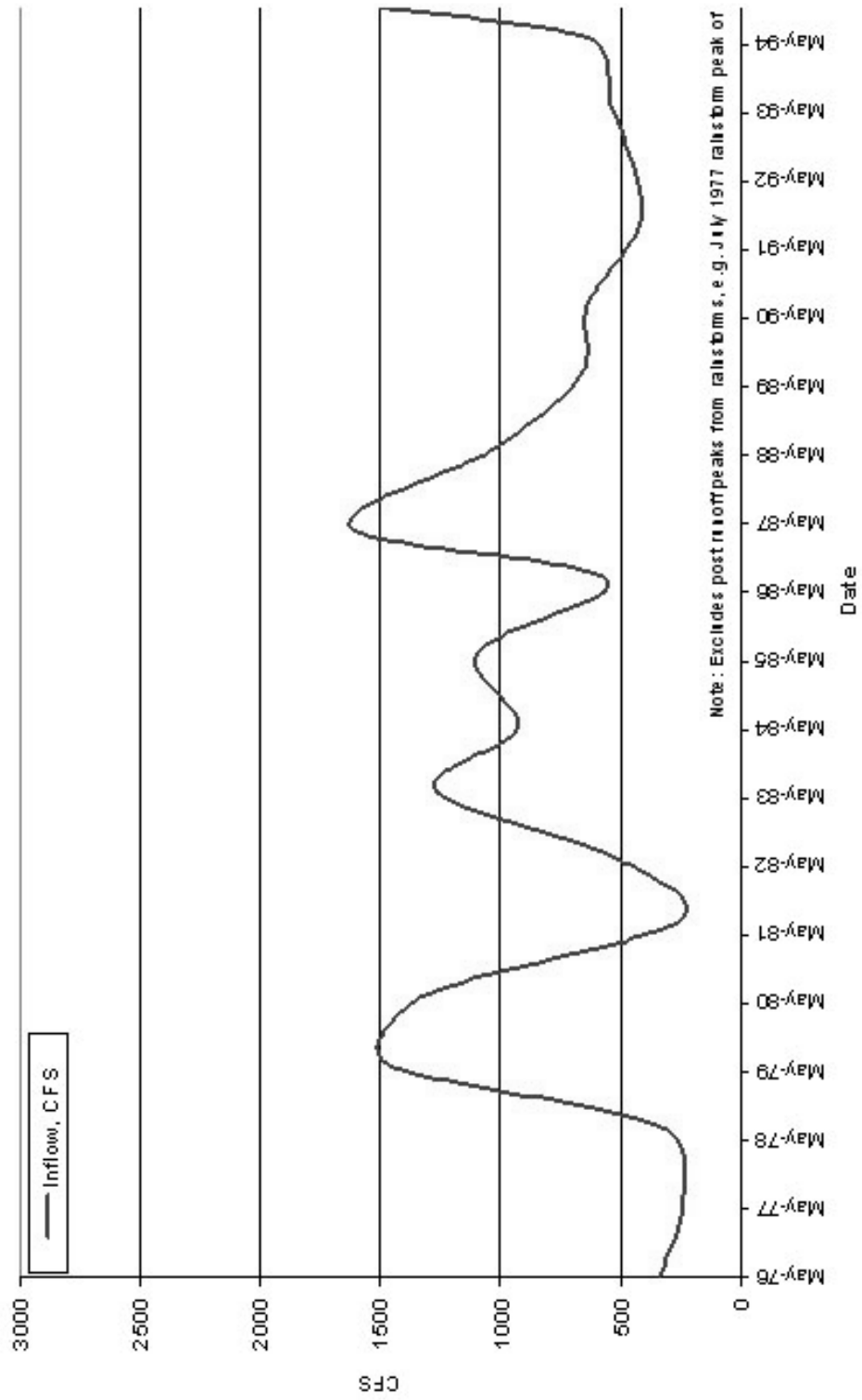
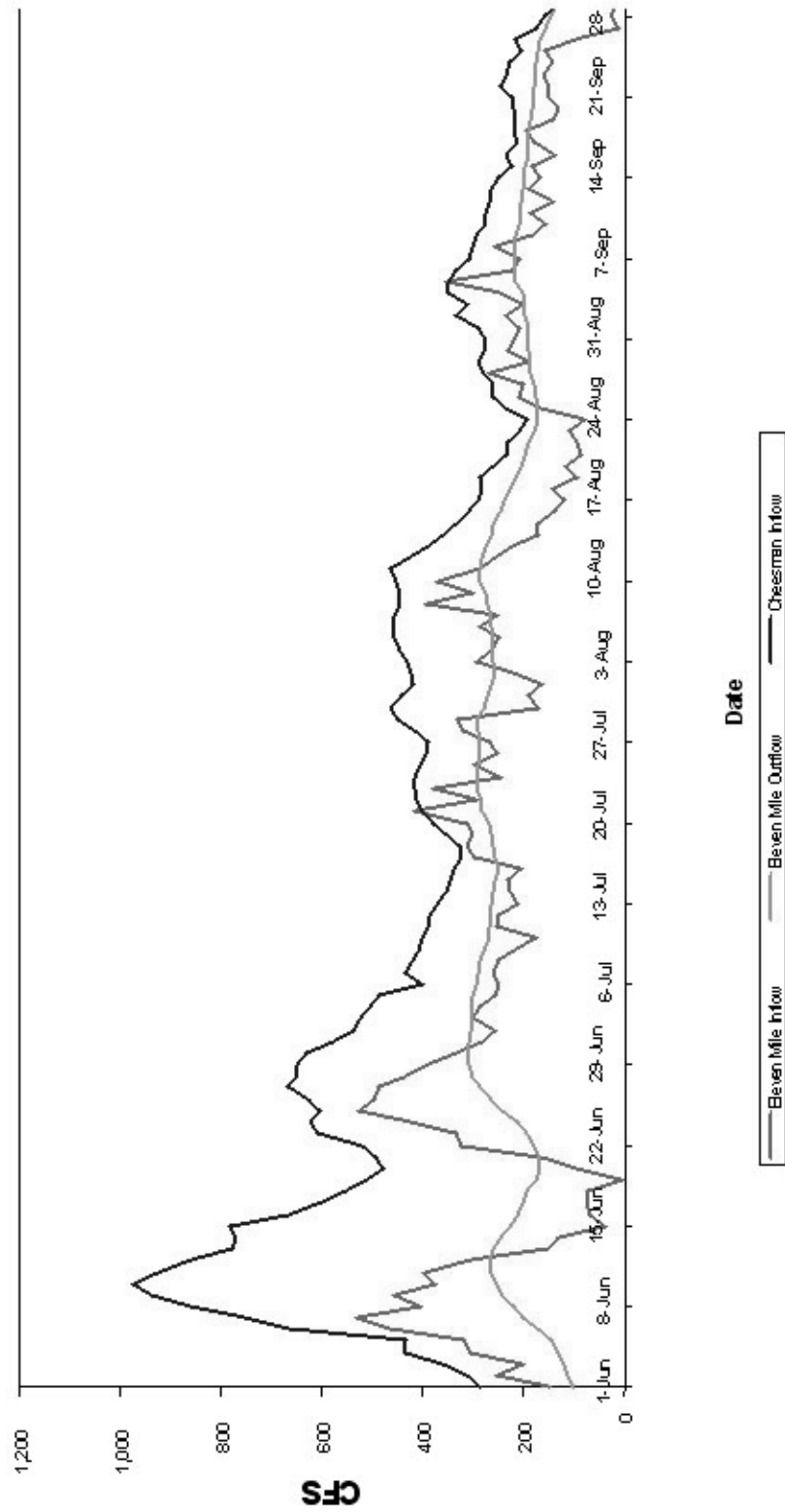


Figure 9: Chessman Reservoir Peak Daily Inflow, 1976 - 1996



**Figure 10: South Platte River Flows Routed from Spinney Mountain to Cheesman Reservoir
June - September 1997**



4. *Water Facilities*

The degree of streamflow management proposed in this Plan is based upon the utilization of native South Platte Basin streamflows, existing Upper South Platte Basin storage facilities, and existing and near-term importations into the Upper South Platte Basin.

The primary source of water for municipalities along the Front Range is from melting snow in the mountains. A limited “window of opportunity” from May to early July exists each year in which to capture enough water from the melting snow to maintain an adequate supply for the entire year. During the rest of the year, natural streamflow is generally inadequate to meet municipal needs. Snowmelt captured in reservoirs is also stored to be used in times of drought. To manage the supply from the snowmelt, water suppliers have built reservoirs to capture runoff and release it for later use.

The amount of water captured by the water supply system varies from year-to-year largely based on four factors:

- Amount and timing of runoff from the melting snow
- Water rights
- Physical constraints, such as reservoir capacity
- Customer use

Reservoirs have increased the naturally low winter streamflows and attenuated the naturally occurring peak streamflows within the constraints of these four factors. Table 4 lists in more detail the constraints on reservoir operations.

Table 4: Reservoir Operation Constraints

LEGAL (WATER RIGHTS)

- In Priority - "Storable" Inflow Rule
- Out of Priority – Bypass or Exchange

WATER SUPPLY AND DEMAND

- Meet Customer's Needs
- No Loss of Yield

FACILITIES

- Dam Safety
- Outlet Capacity
- Spillway Configuration

NATURE

- Daily Variation: Rainstorms
- Seasonal Variation: High Runoff, Low Winter Flow
- Year-to-Year Variation: Droughts and Floods

FORECASTING

- Can't Accurately Forecast Streamflow, Weather, Water Use, River Call, etc

Spinney Mountain, Eleven Mile, and Cheesman reservoirs and the Roberts Tunnel are the primary facilities managed under this Plan. However, to some extent this Plan will correspondingly affect the operation of other components of Denver Water and Aurora's water collection systems, including Antero, Strontia Springs, and Chatfield. These water facilities are needed to ensure that the residents of metropolitan Denver have an adequate supply of water throughout the year and during drought. However, there is flexibility in how these facilities are operated.

Spinney Mountain Reservoir, completed in 1981, with a capacity of 53,651 acre-feet serves as Aurora's primary East Slope storage facility. It stores Aurora's South Park water and Arkansas and Colorado River water imported into the basin through the Otero pump station. As stated in an August 12, 1980 Cooperative Agreement between Aurora and CDOW, "the City shall operate the Reservoir so as to provide a minimum streamflow downstream of the Dam equal to the native streamflow of the South Platte River, or 32 cfs, whichever is less, as measured by the Denver Water Board stream gaging station known as The South Platte River Gaging Station above Eleven Mile Canyon Reservoir near Hartsel. Native streamflows shall be defined as South Platte streamflow entering the Reservoir, less that portion of the streamflow attributable to Aurora's South Park water rights, which historically were not part of the streamflow..." Table 5 summarizes the historic outflow from Spinney Mountain Reservoir.

Eleven Mile Canyon Reservoir was completed in 1932 with a capacity of 97,779 acre-feet. The dam is a gravity arch with a height of 135 feet, making it the second largest storage facility in Denver Water's system and one of the largest bodies of water on Colorado's East Slope. It has a length of over six miles. It is a popular recreation spot managed by the Colorado Division of Parks. The reservoir is operated as a drought reservoir, meaning the reservoir is usually kept full and spilling inflow. However, it is subject to drawdown to meet Denver water needs during periods of drought. There are no formal minimum streamflow requirements below Eleven Mile reservoir.

Eleven Mile has three valve runs. Run No. 1 has a 42" cone valve for a guard valve and a 42" cone valve for regulating. Run No. 2 has a 42" cone guard valve and a 36" ring-jet regulating valve. Run No. 3 has a 30" cone guard valve and a 30" cone regulating valve. The valves have some operating restrictions, and Denver Water is currently considering replacing outlet valves.

With a surcharged reservoir, the spillway capacity is 2,140 cfs, the normal valve capacity is 425 cfs, and the emergency valve capacity is about 1,400 cfs.

Table 5: Spinney Mountain Reservoir Historic Outflow, 1982-1996
Spinney Mountain Reservoir Outflow

Historic Outflow
 1982 - 1996
 Average Daily CFS

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	MINIMUM	AVERAGE
1982	30	65	36	26	22	23	67	71	97	200	193	45	22	73
1983	48	49	76	22	43	40	141	85	160	131	238	70	22	92
1984	54	29	35	47	44	57	96	164	367	339	381	113	29	144
1985	191	68	28	38	57	50	103	260	415	293	142	127	28	148
1986	45	46	46	54	58	242	96	47	138	212	177	135	45	108
1987	125	82	58	52	60	60	104	332	355	174	181	122	52	142
1988	88	78	80	50	55	60	75	47	127	192	161	151	44	97
1989	98	75	57	49	44	110	89	73	96	284	211	125	44	109
1990	103	66	129	135	114	126	89	67	186	181	139	119	66	121
1991	97	78	67	58	39	45	80	40	39	141	138	119	39	78
1992	81	80	77	84	53	70	113	80	67	122	125	123	53	90
1993	90	61	52	50	49	62	68	60	120	166	184	77	49	86
1994	101	68	72	56	67	68	94	108	226	161	174	137	56	111
1995	75	47	51	62	52	60	126	63	348	697	365	208	47	179
1996	121	76	101	78	57	55	167	315	209	228	200	143	55	146
VERAGE:	90	64	64	57	54	75	100	121	197	235	200	121	44	115
MINIMUM:	30	29	28	22	22	23	67	40	39	122	125	45	22	73
MAXIMUM:	191	82	129	135	114	242	167	332	415	697	381	208	66	179

Data Sources: 1982 - 1995 USGS Gage South Platte River Above Elevenmile Canyon Reservoir. 1996 DWD Aurora Operation

Cheesman Reservoir, built in 1905, was the world's highest dam of its type at the time of construction and Denver Water's first mountain reservoir. It is designated a National Civil Engineering historic landmark. It has a gravity arch masonry dam capable of impounding 79,064 acre-feet of water. The reservoir is open to limited recreation. Cheesman is the "workhorse" of Denver Water's South Platte system which serves hundreds of thousands of customers in the Denver area. Cheesman Reservoir typically fills with the spring runoff. Water is released from storage to meet customer needs throughout the summer and winter with the reservoir typically reaching its lowest contents before spring runoff. Cheesman Reservoir provides water to Denver Water's Foothills and Marston Treatment Plant. Water can also be supplied to those plants with water from Dillon Reservoir via the Roberts Tunnel. Generally the Roberts Tunnel is operated to supplement Denver Water's South Platte supply (Figure 1). There are no formal minimum streamflow requirements below Cheesman Reservoir.

Cheesman has five valve runs, all built in 1971. They operate properly and are restricted to the normal openings between 20 percent and 80 percent.

Capacity: With a full reservoir, the spillway capacity at elevation 6850.91 is 22,370 cfs, the valve house capacity is 1,581 cfs, the Johnson valve capacity is 800 cfs.

There are three general factors affecting Cheesman's operation. 1) Cheesman is operated to fill, if possible, each spring. 2) Releases are made from storage lowering the reservoir as needed to meet customer water use throughout the year. Because there is limited downstream storage between Cheesman Reservoir and the water treatment plants to act as a buffer, releases from Cheesman Reservoir generally coincide with changes in water use. 3) Releases are also affected by water rights administration. (See the water rights section for more detail.) When Cheesman Reservoir is out of priority, it is required to bypass all of the natural inflow to the reservoir unless an exchange can be made using downstream water to replace the water that is stored in Cheesman Reservoir. Cheesman Reservoir has limited opportunities in the springtime to store water. Any water that can be stored, but is not, may be counted against Cheesman's water right by the State and is a potential loss of supply. In Section II.C.2., mainstem fishery, reservoir operations of making storage releases are mentioned provided those waters can be recovered. Under current operation of Denver Water's system, at times releases into Chatfield could not be recovered and for water quality management there may be times when level in Marston is held below full. **Strontia Springs Reservoir**, downstream of the confluence of the South Platte River mainstem and the North Fork, provides a small regulating facility for Denver Water and Aurora. The reservoir holds 7,700 acre-feet when full. It has 20 feet of elevation or about 2,000 acre-feet of operating range.

Roberts Tunnel:

Denver Water provides storage water from Cheesman Reservoir or Dillon Reservoir to its customers receiving water from its South Platte system. Dillon Reservoir water is released via the Roberts Tunnel into the upper reach of the North Fork at Grant. Traditionally, Dillon Reservoir water has been used to supplement Cheesman releases. As more people move into Denver Water's service area, more Dillon Reservoir water, via the Roberts Tunnel, may be used.

Dillon Reservoir is an important recreation facility for fishing and boating. Its operations also affect the fishery and whitewater recreation on the Blue River below the reservoir.

In order to safely transport Dillon Reservoir water, the carrying capacity of the North Fork has been increased from the Roberts Tunnel to Insmont. Flow easement agreements and channel capacity limits the use of the tunnel during high flow. Practice has been to not add flow if it would cause the Grant gage to exceed 680 cfs for extended periods. Recently the channel work has been designed to enhance structural fish habitat. No large diversions are made on the North Fork. Depending on weather and water supply conditions, Dillon Reservoir water is imported through the Roberts Tunnel all year, none of the year, or one month and not the next. Because it has traditionally been the supplemental supply, water imported from Dillon Reservoir can vary as lawn watering increases or decreases in Denver.

The Roberts Tunnel has a 5.5 megawatt power plant that produces an average annual revenue of \$500,000. In order to receive the capacity payment, a minimal amount of energy must be produced each month the generator is in operation. Where possible, water deliveries are scheduled in order to obtain the capacity payment.

IV. BIBLIOGRAPHY

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V. APPENDICES

- A. Mean Daily Outflow. Eleven Mile and Cheesman Reservoirs. 1987 to 1996.
- B. Tailwater Trout Habitat: A Handbook for the Operators of Denver Water Reservoirs. Don Conklin, Chadwick Ecological Services. May 1997.
- C. Enforcement Procedures for the South Platte Streamflow Management Plan.

APPENDIX A

- A1: Eleven Mile Reservoir Historic Mean Daily Outflow, 1987
- A2: Eleven Mile Reservoir Historic Mean Daily Outflow, 1988
- A3: Eleven Mile Reservoir Historic Mean Daily Outflow, 1989
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Appendix B

TAILWATER TROUT HABITAT:

A HANDBOOK FOR THE

OPERATORS OF DENVER WATER RESERVOIRS

Prepared for:

Denver Water

Denver, Colorado

April 1997

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INTRODUCTION

The purpose of this document is to serve as a handbook for Denver Water reservoir operators. This handbook was prepared at the request of the operators to better understand the effects of reservoir operations on tailwater trout fisheries when making decisions on the tradeoffs between water supply, hydropower generation, recreational benefits, flood control, fisheries, etc. Part I of the handbook discusses aquatic biological issues relative to operations of the Denver Water Collection System on the South Platte River Basin, with limited information on the Blue and Williams Fork rivers as well. Part II of the handbook provides more specific information on operational flow levels that can benefit trout fisheries. Part III is a collection of tables and graphs related to trout habitat and reservoir operations.

The analyses and recommendations in this handbook apply only to operational effects on trout fisheries. No attempt has been made to consider the effects on water supply, water rights, hydropower, recreation, flood control, etc. These other considerations have to be weighed along with the flow recommendations for trout. At times, these considerations will be in direct conflict. While the Denver Water System exists for the purpose of supplying water to its customers, there is some flexibility in operations to benefit trout fisheries and other considerations.

PART I: TROUT BIOLOGY

Instream Flows and Factors Limiting Trout Abundance

Seasonal differences in habitat availability related to changing environmental conditions, such as changes in streamflow, appear to be the limiting factor determining fish population size in many river systems. Such "bottleneck" effects can occur when habitat levels are low. Population size can be determined by these minimum habitat levels, rather than favorable or average conditions. Yearly average habitat or flow conditions are not appropriate parameters when evaluating conditions for trout populations, since they may mask critical low habitat levels over shorter time periods. These bottlenecks are the important time periods that limit trout population size and can occur within a yearly cycle as well as from year to year.

In Rocky Mountain streams, the bottlenecks to trout populations generally occur during extreme flow conditions, either the high-flow period during runoff in late spring or the low-flow period in winter. These are the two periods when flows cause the lowest habitat levels of the year for trout. The habitat (WUA) versus discharge relationships for rainbow and brown trout generally indicate that habitat levels peak at intermediate discharges, with lower levels of habitat at high and low flows. Depending upon the magnitude of peak flow and low flow, one of these conditions will generally be more stressful for trout than the other.

Reservoir operations can benefit trout populations in the section of river downstream of dams. The "tailwater effect" refers to the more stable, beneficial conditions that can occur downstream in the tailwaters of a dam. The flow regime can be modified to reduce peak high flows and augment low flows to provide a more stable flow regime. This also leads to less severe bottleneck habitat conditions. Downstream of dams the water can be free of sediment and turbidity and have elevated levels of nutrients. These conditions favor the overall biological productivity of the tailwater section of the river and lead to higher trout production. Also, water temperatures are moderated and fluctuate less on a day-to-day basis. The more stable flow, temperature, and sediment conditions can allow trout populations to expand to higher levels in tailwaters.

Downstream of reservoirs in the South Platte River system, the natural pattern of high and low flows is commonly disrupted by demands from the raw water supply system. Instead of gradual increases and decreases in flow that occur naturally, quick changes in flow may result from reservoir spilling, water rights priorities, needs for raw water, etc. Therefore, not only do trout need to adjust and survive the natural high and low flow periods, but they must also adapt to an unnatural flow pattern and flow fluctuations. These factors must be taken into account when operating the raw water system, if one's intent is to benefit trout populations.

General Trout Biology in the South Platte River

Brown trout are fall spawners. Spawning in the South Platte basin probably occurs in October and November, with earlier spawning at higher elevations (cooler temperatures). Eggs are laid in redds (nests) in areas of the river having gravel-cobble bottom at depths of approximately 6 to 18 inches deep. Eggs incubate over winter in the gravel on the stream bottom. Brown trout fry hatch in April and May. For rainbow and cutthroat trout, spawning

occurs in April through May. Because of warmer water temperatures during this period, rainbow and cutthroat trout eggs develop more quickly than do brown trout eggs. Hatching of rainbow and cutthroat trout eggs occurs after one to two months and fry are present in the river beginning in late May or early June.

As trout fry first hatch from the eggs, they remain in the gravels of the redd for several weeks, with brown trout remaining in the gravels for shorter periods than rainbow trout. This period of the year represents an important step for trout fry, as they are vulnerable to high flows. Work conducted in Cheesman Canyon by Barry Nehring and Rick Anderson of the Colorado Division of Wildlife indicates that flow and habitat levels during May, June, and July were critical in determining the number of brown and rainbow trout that survived.

After several months of growth, trout are considered to be juveniles. The juvenile life stages of trout are always present in the South Platte River, as it takes several years for these trout to mature to the adult state. Adult trout are always present in the river. Therefore, habitat versus flow relationships for these two life stages of trout need to be considered for the entire year when evaluating flows.

Rainbow trout are vulnerable to infection by whirling disease. Apparently this affects juvenile rainbow trout after the first summer of their life stage. Brown trout are apparently affected to a much less extent, if at all. At this time, the significance of whirling disease to the long-term status of trout populations in the South Platte River has not been determined. Assuming that the whirling disease problem will be solved at some point in the future, and assuming that the more resistant brown trout will still be present in the river, then the purpose of this document in outlining flow operations that may benefit trout populations is still valid.

The two periods of the year that are most critical to trout in natural river systems are usually the late winter period of lowest yearly flows and the spring runoff period of highest flows. Downstream of reservoirs there is the opportunity to dampen the effects of these natural extreme flow periods, but these two periods are still critical to trout in the South Platte system. During spring runoff fry are present in the river and are vulnerable to high flows, as noted above. Also, although juvenile and adult fry are less vulnerable than fry, they can be displaced downstream or out of optimal habitats by high flows. The detrimental effects of high flow on all

life stages of trout can be lessened by reducing the short-term (daily to weekly) peak high flows, and by gradually ramping changes in flows around the peak flow.

In winter, natural low flows produce low habitat levels for trout. Adult and juvenile trout are present at this time of year, as well as brown trout eggs incubating in the gravels. The winter period of the year is even more stressful to adult brown trout, as they have used energy reserves during fall spawning and also may have to recover from minor injuries suffered during spawning. The detrimental effects of low winter flows can be lessened by gradually decreasing flows in fall to winter levels, minimizing the differences in flows between fall spawning levels (October to November) and winter incubation levels to ensure that redds are not dewatered, choosing a winter base flow level that provides adequate habitat for trout, and minimizing day-to-day fluctuations in flow.

Trout Population Status

Rainbow and brown trout comprise the vast majority of the trout biomass in the rivers in the system. Brook and cutthroat trout are also present in low numbers, especially in the upper segments of the river. Brown trout, native to Europe, have established self-sustaining populations throughout the river from upstream of Antero Reservoir to the Denver metro area and in the North Fork. Rainbow trout, native to the northwestern U.S., are also widely distributed in the river. Rainbow trout are most common in the Cheesman Canyon segment of the river where they have, until recently, maintained self-sustaining populations with high biomass. In other sections of the river, both upstream of Cheesman Canyon into South Park and downstream of Cheesman Canyon into the Denver area, rainbow trout are present but in much lower numbers. Recently, whirling disease has spread into the South Platte River and apparently has reduced the biomass of rainbow trout, especially in the Cheesman Canyon section of the river.

In the discussions below, the various segments of the South Platte River, Blue River, and Williams Fork River are ranked according to their priority for managing flows and trout habitat. This ranking is based on our subjective interpretation of the recreational importance of the individual fisheries as well as our understanding of the relative feasibility of manipulating flow levels in each segment of river. These priority rankings are intended to provide a guide for

addressing conflicts between manipulating flow levels among the various river segments in the system.

The highest levels of trout biomass occur in Cheesman Canyon and Waterton Canyon (Table 1). The fish populations in these sections of the river benefit from the bottom release dams immediately upstream. These sections of the river contain both rainbow and brown trout, although the populations of rainbow trout apparently are declining due to whirling disease. Regardless, these two sections of the river still represent the most valuable fishery resources (Priority ranking 1 and 2) in the basin in terms of fish population quality and in terms of the high use by recreational anglers.

In the Blue River downstream of Dillon Reservoir, the rainbow and brown trout fishery has improved over the last decade as a result of special regulations by the CDOW and habitat improvements. This section of river receives high use by recreational anglers and has been given a priority ranking of three.

Downstream of Spinney and Eleven Mile Reservoirs, trout biomass is somewhat lower than in Cheesman Canyon. Also, the section of the river downstream of Spinney is short, and flows are not under the direct control of Denver Water. However, because of high recreational angling use, these two areas are next most important in priority (rank 4 and 5). Both have self-sustaining populations of brown and rainbow trout.

The Williams Fork River downstream of the dam is part of the Kemp-Breeze Units of the Hot Sulphur Springs State Wildlife area. This section of river now receives higher use by recreational anglers and has been given a priority ranking of six.

TABLE 1: Approximate trout biomass and priority ranking for sections of the Denver Water System.*

River Section	Trout Biomass (kg/ha)		Priority
	Rainbow	Brown	
South Platte River			
Downstream of Antero	1	25	7
Downstream of Spinney**	170	120	5
Downstream of Eleven Mile	40	40	4
Downstream of Cheesman	200	200	1
Downstream of Strontia Springs	30	250	2
Downstream of Chatfield	5	5	10
North Fork			
Downstream of Roberts Tunnel	5	30	8
Downstream of Buffalo Creek	5	50	9
Blue River			
Dillon to Green Mountain	25	75	3
Williams Fork			
Downstream of Williams Fork	40	40	6

* Approximate long-term average biomass based on CDOW data.

** Spinney Mountain Reservoir is owned and operated by the City of Aurora.

The section of stream between Antero and Spinney Reservoirs has substantial habitat problems. Habitat improvement projects have been initiated in this section. However, trout biomass has historically been low, and this has not improved much in the recent past. Flow manipulations could only marginally improve conditions for fish in this section and, therefore, this section has a priority ranking of only seven.

The North Fork of the South Platte River contains low biomass of brown and rainbow trout. Also, much of this section of river flows through private land, and there is no opportunity to store water in this river. Therefore, the two sections of the North Fork have a lower priority ranking (8 and 9, respectively) than most sections on the mainstem of the South Platte.

Downstream of Chatfield Reservoir, the South Platte River has changed in character from a mountain stream to a plains stream. The suitability of this section of the river for trout is low. Also, low flows, development, siltation, and other issues limit the value of this section of river as a trout fishery. Trout biomass consists of very low levels of brown and rainbow trout.

Cool water game fish, such as walleye, are also present, but in low numbers. This section of the river has the lowest priority (10).

Trout biomass changes substantially from year to year. Also, the effects of whirling disease on rainbow trout in the river are ongoing. Therefore, the trout biomass figures in Table 1 represent an estimate of current conditions for the purpose of ranking the river sections and weighing the effects of flows on brown and rainbow trout. The biomass data in Table 1 were estimated from past CDOW data; but in some cases, the data were collected up to a decade ago. However, we feel the data can be used to estimate current conditions for the purposes stated above.

Rainbow trout are stocked in several sections of the South Platte River. In most instances, these fish inevitably are caught, die, or disperse into other sections of the river and do not represent a significant contribution to the trout biomass. Until 1996, the main goal of stocking rainbow trout was to provide fish for anglers, not to establish resident populations. However, since whirling disease has decreased rainbow trout populations in the river, especially in Cheesman Canyon, the stocking of rainbow trout to augment or restore populations may be conducted in the near future.

In the South Platte River, stocking of catchable sized rainbow trout occurs annually in the section of the river from Eleven Mile Reservoir downstream to Cheesman Reservoir, from Scraggy View Campground downstream to Strontia Springs Reservoir, and in Waterton Canyon. Sporadic stocking of juvenile rainbow trout has been done in many sections of the river, including the section between the Middle Fork and Spinney Mountain Reservoir, between Spinney and Eleven Mile Reservoirs, and between Strontia Springs and Chatfield Reservoirs. In the North Fork of the South Platte, annual stocking of catchable rainbow trout occurs at many locations.

Potential Resource Conflicts

During the day-to-day operation of the South Platte River raw water system, decisions must be made on river flow levels and reservoir water levels. The chosen flows will affect the conflicting needs of the various species and life-stages of fish in the river and reservoirs as well as the conflicting needs of recreational users of the system. In order to minimize the potential

negative effects of these decisions, the conflicts should be identified and understood. Some of the more important conflicts that are anticipated to occur in the South Platte system are identified and discussed below.

One conflict that has been identified is between releasing warm water over the spillway of a full reservoir or releasing cool water from the bottom release valves. Trout can easily tolerate water temperatures up to 70F and can survive temperatures of 75F for short periods. Given the temperatures and altitudes of streams and reservoirs in the South Platte system, lethal high temperatures for trout probably never occur upstream of Chatfield Reservoir. However, trout can be stressed by short-term fluctuations in temperature, such as when a reservoir first becomes full and suddenly shifts from releasing cool bottom water to warm surface water. This conflict can be resolved by anticipating reservoir spills in the short-term, gradually changing the mix of bottom and surface water releases and keeping temperatures in the optimal target for trout. Both rainbow and brown trout prefer water temperatures between 55 to 65F.

Adjusting flows downstream from a reservoir will usually affect the water levels in the reservoir itself. Reservoir populations of trout are sensitive to fluctuating water levels as river trout populations are sensitive to fluctuating flow levels. However, depth and velocity conditions in a river are much more sensitive to changes in flow than reservoir levels, especially at low flow periods of the year, such as winter. For example, a release of water over the winter of an additional 10-20 cfs for river trout populations will probably have a much greater positive effect on the trout in the river than the negative effect of releasing this volume of water will have on reservoir trout due to reduced reservoir levels. Also, as a general rule, it is probably much more beneficial to draw down a reservoir in early spring and allow it to fill during runoff in order to decrease the resulting peak flow downstream of the reservoir. The reservoir trout can easily migrate to deeper portions of the lake during water level changes, whereas river trout have less opportunity to find suitable habitat during extreme high (or low) flows.

When adjusting flow levels downstream of a reservoir, there are two points to consider in order to minimize the negative effects to trout. The first is to adjust flows gradually over a period of days or weeks. This allows trout to seek the appropriate depth and velocity conditions without being forced into unfavorable habitat conditions with abrupt changes in flow. [Reference DWD Fluctuation Table]. The second point to consider is the relative levels of flow between the time of spawning and egg incubation. Trout spawning occurs at depths of approximately 6 inches to 18 inches. Eggs in the gravel must be kept wet and free of ice to survive. Therefore, as a general rule, a change in water depth of 6 inches or less between spawning and egg incubation should have no detrimental effect on the eggs. Decreases in flow

between the spawning period and the egg incubation period that change the stage over the eggs by less than 6 inches, and that still prevent ice from freezing to the river bottom, should be acceptable.

A final conflict concerns competition between suckers and trout. Although it is generally assumed that high densities of suckers in a stream are detrimental to trout, the literature on this topic is not conclusive. However, there is at least the impression that the Eleven Mile Canyon section of the South Platte has a sucker problem. The consensus is that suckers are favored in this section of the river by warm temperatures spilling from Eleven Mile Reservoir. Suckers prefer temperatures in a range similar to trout, although suckers may prefer temperatures up to 70F or so, while trout are starting to become stressed at 70F. The actual temperatures of water spilling from Eleven Mile should probably be documented prior to any future action. However, if warm temperatures are favoring suckers in this section, a solution would be to release (cooler) water from the valves on the dam.

PART II: RESERVOIR OPERATIONS

Flow Recommendations for Trout Habitat

Part II of this handbook provides specific recommendations for reservoir operations to benefit stream fisheries. **These recommendations are based on trout habitat and flow information and are not intended to represent an obtainable flow regime within the water supply operations of the Denver System. These flows represent recommended levels that could benefit fisheries if other operational factors such as water supply, water rights, hydropower, flood control, etc., allow flexibility in flow releases.** The general principles behind these recommended flows are to benefit trout habitat. The recommended flows should be considered with the following goals:

- 1) Provide suitable winter flow releases from reservoirs;
- 2) Control high-peak flows during spring runoff;
- 3) Minimize spills at reservoirs to improve temperature conditions for trout;

- 4) Operate to produce consistent streamflow conditions from day to day, and provide gradual transitions between major seasonal flow adjustments and during daily operations;
- 5) Protect specific life stage requirements of stream and reservoir fisheries;
- 6) Maintain the desired balance between a flow regime downstream of a reservoir to benefit stream fisheries and the maintenance of reservoir levels for the benefit of reservoir fisheries and recreation;
- 7) Concentrate flow management efforts on the portions of the system which have the greatest physical potential to produce fishery benefits;

Specific Operational Outline

The operational plans are divided into four periods of the year. These four periods of the year were chosen to represent critical stages in the requirements of river trout populations as well as the seasonal hydrologic cycle in the basin. The first period is the brown trout spawning season, from October through November. This is the time of the year when brown trout build nests and lay eggs. Flow considerations during this time of the year are to provide adequate spawning habitat, and to provide suitable flow levels relative to the decreased flows expected over winter. Although a reduction in flows from fall spawning to winter incubation periods is acceptable, the goal is to not leave the incubating brown trout eggs susceptible to drying or freezing.

The second period of the year is the critical winter period. The goals during this period should be flows that are relatively stable and high enough to allow adults and juveniles of both rainbow and brown trout to survive. This period includes the months of December through March, and includes the lowest flow period of the year.

The third period extends from April through June. This period includes the stressful high flow period for trout. Not only are all four life stages of both species present during part or all of this period (adult, juvenile, fry, eggs), but rainbow trout are also spawning. The goal is lower peak flows to allow all four life stages to survive, and also allow rainbow trout to successfully spawn. In most sections of the river, this period of the year probably represents the

critical limiting period (bottleneck). In general, lower peak flows will benefit all life stages and lead to more healthy and numerous trout.

The fourth and final period is the summer growth period for trout. Adult, juvenile, and fry of both species are reaching maximum growth rates and storing energy for the winter. This period extends from July to the end of September. During this period, decisions on flow levels are probably simplified (from a fishery point of view) because flows are intermediate between peak high and low flows. The goal when managing flows during the summer period is to gradually ramp flows up and down as the water needs of the system change.

In general terms, there are three basic techniques for operating reservoirs for the benefit of tailwater trout habitat:

- dampen peak high flows,
- augment the lowest flows,
- and avoid large scale flow fluctuations.

The flow goals in the following table should be used as a guideline when choosing reservoir releases. These flow goals were developed from the habitat versus flow curves, and are not intended to represent an example flow regime for the river.

Downstream of each reservoir, the flow regime can be modified in a similar pattern, as outlined below:

- 1) October 1 to November 30: Attempt to release flows for spawning brown trout. Anticipate winter low flow to attempt to avoid large reduction between fall spawning season and winter egg incubation season for brown trout.
- 2) December 1 to March 31: Attempt to meet winter flow goals.
- 3) April 1 to June 30: Attempt to change flow gradually up to peak runoff flow. Try to dampen peak runoff.
- 4) July 1 to September 30: Attempt to gradually decrease flow from runoff peak. Try to avoid large fluctuations in flow on a daily basis.

TABLE 2: Flow goals intended to benefit trout habitat. These goals are not intended to represent a yearly flow regime. These goals do not consider water supply, water rights, hydropower, recreation, or other flow values which can compete with flow values for trout.

Flow Period	Most Beneficial	More Beneficial	Least Beneficial
<u>Antero Reservoir</u>			
October 1 to November 30	30-150	20-30	<20
December 1 to March 31	30-150	20-30	<20
April 1 to June 30	30-150	20-30, 150-250	<20, >250
July 1 to September 30	20-75	10-20, 75-250	<10, >250
<u>Spinney Mountain Reservoir</u>			
October 1 to November 30	30-100	20-30, 100-300	<20, >300
December 1 to March 31	40-150	30-40, 150-250	<30
April 1 to June 30	40-200	20-40, 200-300	<20, >300
July 1 to September 30	40-200	20-40, 200-300	<20, >300
<u>Eleven Mile Reservoir</u>			
October 1 to November 30	40-75	20-40, 75-200	<20, >200
December 1 to March 31	50-200	20-50	<20
April 1 to June 30	30-200	20-30, 200-400	<20, >400
July 1 to September 30	30-250	20-30	<20
<u>Cheesman Reservoir</u>			
October 1 to November 30	50-150	20-50, 150-250	<20
December 1 to March 31	35-250	20-35	<20
April 1 to June 30	30-200	20-30, 200-500	<20, >500
July 1 to September 30	30-200	20-30, 200-500	<35, >500
<u>Strontia Springs Reservoir</u>			
October 1 to November 30	30-300	20-30	<20
December 1 to March 31	30-250	20-30	<20
April 1 to June 30	30-250	20-30, 250-450	<20, >450
July 1 to September 30	30-300	20-30, 300-450	<20, >450
<u>Chatfield Reservoir</u>			
October 1 to November 30	80-300	35-80, 300-500	<35, >500
December 1 to March 31	60-200	20-60	<20
April 1 to June 30	60-300	20-60, 300-750	<20, >750
July 1 to September 30	60-300	20-60, 300-750	<20, >750

Flow Period	Most Beneficial	More Beneficial	Least Beneficial
Roberts Tunnel			
October 1 to November 30	50-100	25-50, 100-200	<25, >200
December 1 to March 31	25-100	10-25, 100-250	<10, >250
April 1 to June 30	50-150	10-50, 150-300	<10, >300
July 1 to September 30	50-200	10-50, 200-300	<10, >300
Blue River			
October 1 to November 30	75-100	50-75, 100-200	<50, >200
December 1 to March 31	50-100	30-50, 100-200	<30, >200
April 1 to June 30	40-200	30-40, 200-400	<30, >400
July 1 to September 30	50-150	30-50, 150-300	<30, >300
Williams Fork			
October 1 to November 30	75-150	20-75, 150-250	<20, >250
December 1 to March 31	50-150	20-50, 150-250	<20, >250
April 1 to June 30	50-150	20-50, 150-250	<20, >250
July 1 to September 30	50-250	20-50, 150-250	<20, >250

PART III: ATTACHMENTS

Part III is a collection of tables and graphs related to trout habitat and reservoir operations. The first attachment is a series of graphs prepared by Chadwick Ecological Consultants showing trout habitat at each life stage versus streamflow in tailwaters below Denver Water reservoirs. There are graphs for both rainbow and brown trout. Next is a table showing the effects of streamflow fluctuations on the life stages of rainbow and brown trout. This table was prepared by Denver Water with information provided by the Colorado Division of Wildlife. Finally, there are two tables showing the goals for limiting fluctuation in releases at Antero, Elevenmile, and Cheesman reservoirs. These goals have been in use for many years and were prepared by a fisheries consultant to Denver Water.

Appendix A, Attachment B, Appendix C

Enforcement Procedures for the South Platte Streamflow Management Plan

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1) Background and Purpose

In 1998, the USFS was presented with the A-2 Plan (SPPP) alternative to Wild and Scenic designation of the South Platte River, which included the Streamflow Management Plan. In 1999, the Streamflow Plan was revised at the request of the USFS and appeared in the Supplemental DLEIS issued by the USFS in 2000. The USFS and other interest groups that developed the local alternative plan to federal designation (now called the South Platte Protection Plan or SPPP) requested that the Streamflow Plan component be further modified to add Enforcement Procedures for the *commitments* described in the Streamflow Plan. The purpose of these Enforcement Procedures is to provide a process to monitor whether commitments are met and provide remedies should the commitments not be met. Details clarifying the conditions under which the commitments apply have also been added. These Enforcement Procedures are a modification of the Streamflow Plan. Where a conflict occurs between these Procedures and the Plan, the Procedures control.

In the spring of 2003 some modifications were made to these Procedures because of the drought and fires experienced in 2002. As described in the Streamflow Plan, the impacts of the fires are unknown at this time.

2) Minimum Streamflow

The minimum streamflow commitments are expected to be attained with few exceptions.

Drought Clause:

To provide relief from severe drought conditions, when there are opportunities to store water in Spinney Mountain, Eleven Mile, and Cheesman reservoirs, the outflow commitments from those reservoirs will be modified as follows:

When Denver Water's customers are on mandatory water use restrictions and the combined contents of Denver Water's major storage reservoirs are less than 50 percent full, the minimum outflow requirement at , Eleven Mile and Cheesman reservoirs) will be 20 cfs or the reservoir inflow (as defined in the Streamflow Plan), whichever is less.

When Aurora's customers are on mandatory water use restrictions and the combined contents of Aurora's reservoirs are less than 40 percent full, the minimum outflow from Spinney Mountain reservoir will be 20 cfs or the reservoir inflow (as defined in the Streamflow Plan), whichever is less.

Denver Water and Aurora will provide the Colorado Division of Wildlife and the U.S. Forest Service with 24-hour advance notice prior to enacting the minimum flow drought clause.

Note: For purposes of these procedures, Denver Water's major storage reservoirs are Antero, Eleven Mile, Cheesman, Gross, and Dillon. (Terminal and replacement reservoirs are excluded.) The 20 cfs for Eleven Mile and Cheesman is based on trout habit curves from *Tailwater Trout Habitat: A Handbook for the Operator of Denver Water Reservoirs* by Chadwick Ecological Consultants, April 1997.

Monitoring:

The minimum streamflow will be measured at the streamflow gage directly below the reservoirs. Aurora's and Denver's operating streamflow records (kept as part of the official water rights accounting required by the Colorado State Engineer) will be the official record of the reservoir and tunnel releases for the Streamflow Plan. These records will be available upon request. It is recognized that from time to time, there will be some variation between Aurora's, Denver's, the State's or other's streamflow records. One source of variation is the time at which the gage shift corrections are applied; another is the use of different measuring and recording equipment. Table A at the end of this appendix shows an example of a variation.

Daily and Hourly Minimums:

Denver's releases for minimum streamflows will be calculated by averaging the 24 "top-of-the-hour" readings 8:00 a.m. one-day through 7:00 a.m. the next day. All top-of-the-hour gage readings must be no less than 80 percent of the minimum streamflow.

Exemptions: Because it is difficult to precisely and completely control the outflow when a reservoir is spilling, the hourly minimum does not apply when reservoirs are spilling. (The daily minimum still applies.) Reservoir outflows may be reduced below the hourly minimum to for up to 2 hours to rate, clean and maintain the streamflow gaging stations below the reservoirs.

Reporting:

Any known failure to meet the minimum streamflow commitment will be reported to the USFS and the Colorado Division of Wildlife within one week of occurrence.

Penalties:

Any daily or hourly minimum streamflow violations that are not covered by the exemptions listed above will result in a penalty of \$10,000 per violation, at each reservoir. Denver or Aurora, as appropriate, will pay the \$10,000 penalties to the Endowment Fund. Minimum streamflow violations that are due to emergencies where public safety or dam safety is concerned will be reported to the USFS. Minimum streamflow violations due to public safety or dam safety emergencies will not be subject to penalty fees. The maximum penalty per daily period (for hourly and daily violations combined) is \$10,000 per reservoir. The penalty will be indexed to the Consumer Price Index and adjusted each year at the annual operating meeting.

Note on Eleven Mile Reservoir: New outlet valves capable of regulating low flows are needed at Eleven Mile to meet the minimum flow commitment. These valves are required under the "Equipment" portion of these Enforcement Procedures. The commitment for minimum outflow from Eleven Mile Reservoir flow does not take effect until 1) the valves are installed, or 2) five years after the USFS's acceptance of the SPPP alternative to designation, whichever occurs first.

3) Streamflow Ramping

The ramping guidelines described in the Streamflow Plan are expected to be met most of the time. However, it is difficult to precisely hit a ramping target, and streamflow ramping guidelines need to allow for a 20 percent margin for hourly changes. Ramping reservoir outflows is done by adjusting relatively small amounts of water through very large valves. To ramp a flow change, the reservoir operators increase or decrease the flow with the large outflow valves, then go to the measuring device downstream of the reservoir to check their adjustments. If the flow change is too high or low, then the operator goes back to the valve house to adjust the valve again. This continues until the

correct adjustment is made. Over time the caretakers have developed a system of roughly correlating changes in outflow with revolutions of the wheels operating the outflow valves. But this method is not precise, and variation occurs due to reservoir elevation and other factors. The 20 percent margin is needed due to the inexact nature of reservoir outflow changes.

Exemptions:

The ramping guidelines do not apply during emergencies, maintenance project requirements, mechanical failures, water rights constrained operations, electrical power system upsets, State Engineer, federal, or other governmental authority controlling operations, special requests for streamflow accommodations, efforts to manage floods, forest fire impacts, river ice, and water quality, and the period that the Roberts Tunnel powerplant is transitioning on-line and off-line.

Table 3 of the Streamflow Plan (found in Section IID2 (b) is modified for the Roberts Tunnel to be:

a maximum change per hour of 35 cfs for existing flows less than 100 cfs, 50 cfs for existing flow between 100 and 200 cfs, 75 cfs for existing flows greater than 200 cfs and less than 500 cfs, and 100 cfs for existing flows of 500 cfs and greater. The Grant streamflow gage on the North Fork below the Roberts Tunnel discharge will be used to measure the existing flow. The Roberts Tunnel gage will be used to measure the hourly change in tunnel discharge. (Notes: The Grant gage measures both Roberts Tunnel discharge and natural streamflow. Changes in the natural streamflow component of the Grant flow gage are not subject to the ramping guidelines and cannot cause a violation of the guidelines.)

Monitoring and Corrective Actions:

The streamflow records used to monitor achievement of the guidelines will be the same as those described in the minimum streamflow section (official water rights accounting records). Denver Water does not review its archival hourly ramping records. Any guideline failures known by Denver Water, the USFS, or others will be reported at the annual operating meeting and investigated by Denver Water. A guideline failure is defined as an outflow valve change that exceeds the ramping guidelines by more than the 20 percent margin described above. Should a chronic problem of guideline failures (not covered by the exemptions described above) occur, Denver Water will submit a correction plan to better meet the guidelines or propose adjustments to the guidelines to meet operating needs. The correction plan will be presented for review and acceptance at the annual operating meeting.

4) North Fork Channel Improvements

Page B-15, Section D3(d) of the Streamflow Plan is modified to read:

When doing channel work on the North Fork, the entity doing the work commits to maintaining or enhancing the structural habitat for trout. CDOW will be consulted when doing this work.

Should the entity doing channel work fail to consult with the Colorado Division of Wildlife for channel improvements on the North Fork of the South Platte River, the Colorado Division of Wildlife will instruct that entity on appropriate modifications as needed to improvements on that section of the channel. Entities will report on North Fork channel improvements at the annual meeting.

5) New Equipment

Denver Water commits to installing new equipment to meet the commitments as described in the Streamflow Plan. This includes low flow valves and stream temperature monitors at Eleven Mile Reservoir and stream temperature monitors at Cheesman Reservoir and SNOTEL gages in the South Platte watershed. As originally proposed in the Streamflow Plan, the SNOTEL gages have been installed and are being operated by the National Resource Conservation Service. Investigations of improved forecasting have been completed as well.

Further evaluation of water temperature gages shows that two gages rather than three gages per reservoir are needed. Denver Water shall install the two temperature gages at Eleven Mile and Cheesman reservoirs within two years of the USFS's acceptance of the SPPP alternative to designation.

The minimum outflow from Eleven Mile takes effect after the new valves for Eleven Mile Reservoir as described in the Streamflow Plan have been installed. Failure to install equipment as described in the Streamflow Plan will be subject to specific performance remedies by the USFS.

6) No Loss of Yield

As described in the Streamflow Plan, all commitments are first subject to the principle that no water supply yield is lost from Denver and Aurora's water system as a result of operations under the Streamflow Plan. This was the basis under which the operating goals and commitments were developed.

If future yield analysis shows that an aspect of the streamflow plan is causing a loss of system yield, Denver Water will call a meeting of the USFS and other interested parties to examine modifying the plan according to procedures set forth in the MOU. Denver Water must demonstrate the loss of water supply yield through detailed analysis. Upon demonstration, the Streamflow Plan will be revised accordingly to eliminate the loss of yield consistent with carrying out the Principles of the Streamflow Plan where practical.

7) Annual Operating Meetings

As described in Section II F of the Plan, water facility operations are reviewed and coordinated at the annual operating meeting. These meetings will be open to the public, and Aurora, Denver Water, the Colorado Division of Wildlife, the USFS, Trout Unlimited, the Wigwam Club, and American Whitewater are expected to participate in the meetings. Should there be a coordination group set up under the MOA to monitor the success of the South Platte Protection Plan, the coordination group will participate in the annual operating meetings.

8) Adaptations

The Streamflow Plan is not meant to be all encompassing or to anticipate all circumstances. It is expected that adjustments to the Plan will be needed in the future. The Plan may be modified as needed to carry out its Principles depending on operating experience and adaptive management. Any necessary modifications will be cooperatively developed at the annual operating meeting, taking into account the Principles. A written report of the modifications to the Streamflow Plan will be submitted to the participants of the annual meeting (including the Colorado Division of Wildlife, the USFS, and the coordination group described above) and the South Platte Enhancement Board. Modifications to the commitments described in these Enforcement Procedures, excluding modification described above for ramping guideline failures and loss of yield, require written approval of the MOA signatories. Such approval shall not be unreasonably withheld.

9) Plan Goals

The Streamflow Plan has a number of goals (which are separate from the commitments described above). The attainability of these goals varies with a number of circumstances. Denver and Aurora will strive to attain the goals described in the Streamflow Plan. Failure to achieve goals is not part of the Enforcement Procedures. As described in more detail in the Streamflow Plan, the annual operating meeting will include a discussion of how well the goals were met the previous year, and how operations can be improved in the future.

10) Contacts

Denver Water: Manager of Raw Water Supply
Denver Water
1600 West 12th Avenue
Denver, CO 80204-3412
Phone: 303-628-6510
Fax: 303-628-6852

Aurora: Manager of Water Resources
City of Aurora
15151 East Alameda Parkway
Aurora, CO 80012
Phone: 303-739-7370
Fax: 303-739-7491

Attachment C

RECREATION, WILDLIFE AND SCENIC VALUES

A. INTRODUCTION

This section of the Alternative A2, South Platte Protection Plan, addresses the outstanding values of recreation, wildlife and scenery on the mainstem of the South Platte from Elevenmile to the confluence and the area on the North Fork between the confluence and Insmont. The following text was drafted by the recreation, wildlife and scenic values work group in order to identify thoughts coming from one or more members of the work group. The items listed below do not reflect a full consensus by the work group. Rather, they are being presented as information to be provided to the Forest Service for potential future action. Such future action might include Forest Plan amendments. It is also possible that the Colorado State Parks will be involved through creation of a State Park and thereafter utilize this information to develop a management plan. The actual involvement between State Parks and the Forest Service will be further developed over time and is discussed in the management section below as well as in the overview to this Plan. However, given the current economy and the budget shortfall of the state of Colorado State Parks, the involvement of State Parks in the foreseeable future appears unlikely.

Alternative A2 calls for the Forest Service to review this information, conduct further analysis, and then initiate plan amendments as called for given the information set forth in this initial planning review. Furthermore, if State Parks becomes involved in a management role, this information should be used by State Parks in its new role. This effort calls for coordinating Forest Service planning with state and local land planning. The coordination will move forward with assistance from Denver Water, the Wild and Scenic Task Force, and others, should the Forest Service select Alternative A2 and choose to not recommend designation.

B. VISION STATEMENT AND MANAGEMENT GOALS

Vision Statement

The purpose and goal of the recreation, wildlife and scenery work group is to help develop the framework, foundation and goals for a more detailed management plan to be developed for the South Platte River between Elevenmile Reservoir and the confluence of the North Fork of the South Platte River and the North Fork from the confluence to Insmont. It seeks to balance the legitimate demands on the river for water supply, while providing stream flow and habitat necessary to sustain fisheries, recreation and scenic qualities.

The following goals begin to define in a broad manner actions, decisions and relationships necessary to implement future detailed management plans or management strategies.

Management Goals

- Manage uses along the river corridor to improve the quality of the recreational experience while preserving the unique character of the river corridor.
- Provide resource and ecological protection or restoration for wildlife and plant species.
- Recommend methods to implement the management plans and objectives.
- Provide education to the user concerning ethical conduct, safety consciousness, water quality and the importance of the river as a resource.
- Promote cooperative public safety and emergency services.
- Seek adequate funding of projects- through cooperative efforts.
- Seek governmental agreements to implement and enforce the plan.
- Recognize and evaluate unique qualities with each of the stream segments.
-

C. MANAGEMENT SCENARIOS

The recreation work group recognized that unified planning and coordinated management of the South Platte River corridor recreation area would bring some potentially desirable benefits. The geographic area being considered runs from Elevenmile Canyon to the confluence and on the north fork from the confluence to Insmont. This is a large area, which currently is managed for recreation purposes by a wide variety of entities. Given the many different governments and property owners involved, creating coordinated planning and management is a challenge, which will take time. The best way to implement this coordinated planning and management has not been determined. The process to make this decision, however, should be initiated in order to bring the best benefits to this area and its users.

Four different management scenarios are discussed below. These should be further evaluated in a process, which should include participation from the Forest Service, Colorado State Parks, Denver Water, the Wild and Scenic Task Force and other interested users. Denver Water and the Task Force are willing to continue working with these entities to further explore and develop a decision on a management approach while the Forest Service has its wild and scenic decision making process underway.

The area currently includes substantial Forest Service property, managed by the Forest Service, property managed on the North Fork by Jefferson County, provision of road maintenance and safety services by Douglas and Jefferson County, property owned and managed by Denver Water and numerous other private property owners. A coordinated planning and management process would address these different ownerships and authorities held by the different owners. In evaluating and making the final determination on appropriate management for the area, various factors should be considered including:

- a) Jurisdiction of potential management agencies
- b) Management structure that would be applied by the management agencies
- c) Process for decision making on management
- d) Some financing considerations. (This particularly includes evaluation of the amount of money that would be available through charging user fees. It is recognized that this can be a challenge in this particular area given its length and the many different areas of access now used.)

Four management scenarios were considered. They are:

1. A partnership, an intergovernmental agreement (IGA) or other legal arrangement lead by the United States Forest Service and another qualified recreation management agency.

A coordinated effort may be developed between the U.S. Forest Service (USFS) and a qualified agency as the principal recreation managers for these properties. One coordinated plan could be developed between USFS and the partner to address recreation needs. It is believed that this would establish as responsible entities those most capable of achieving the necessary resource management, recreation planning, enforcement, operations and maintenance within the South Platte recreation area. The IGA would also serve as an effective tool to address property boundaries and constraints related to different types of ownership.

This would be implemented on Forest Service property as well as property the partner gains authority to manage. This would not include any interference with private property rights. Denver Water owns substantial property along the geographic area included here. This property could be made available to the partner to manage. Furthermore, Jefferson County manages property on the North Fork, including Pine Valley Ranch. The management of this area could also be brought into the coordinated effort as a part of this IGA. Jefferson, Douglas and Park Counties could be involved in the IGA together with Denver Water with regard to issues of managing roads and safety matters. This effort could include the partner managing Cheesman Reservoir for Denver Water. The IGA would address legal and statutory issues. In evaluating this option, significant consideration must be given to the ability to obtain sufficient revenue to ensure long-term operations and maintenance. To the extent subsidies will be needed, identifying where they can be obtained will be an important part of the consideration. It should be noted that the original concept was for Colorado

State Parks to play the role of partner with the USFS. However, under the current economic conditions and the budget shortfall of State Parks, this appears unlikely for the foreseeable future.

2. Concessionaire

The U.S. Forest Service and Denver Water, as well as potentially others, would contract with private sector concession operators under this option. A recreation management and implementation plan should be generally agreed to between USFS and Denver Water, as well as others prior to concession contracts being entered into. The purpose would be to ensure that the visions and goals of this A2 alternative would be met.

USFS and other potential contractors have experience with this approach and could reasonably expect to succeed. Other interested parties could participate in a variety of the opportunities available in this option. Campgrounds, access fees, picnicking day use areas, commercial interests would be managed and maintained in this scenario. Enforcement and some infrastructure issues would need additional consideration with this primarily private sector option.

A key challenge to this effort is the dispersed recreation use in the area. Rather than one key highway linking the whole area, there are many diverse access points. Furthermore, there is limited, if any, private company uses on the river. For example, there are no significant commercial boating uses. Thus, licensing is not an available or at least a major strategy, for funding. Other concerns related to this strategy could include the ability to coordinate between the diverse management entities and adding another layer to that concern with a private concessionaire being brought in.

3. Non Profit Foundation

This option calls for following the successful approach used by entities such as the Greenway Foundation and South Suburban Foundation. However, the multi-agency responsibilities and geographic extent of the South Platte River recreation area makes the potential success of this option low. Issues related to authority for funding sources and enforcement issues would be considerable. The long term operations and maintenance responsibilities and costs would be considerable. This is likely to result in a piecemealing of responsibilities, a significant challenge which can lead to less satisfactory results than the other options.

4. Cooperative Management

This option calls for cooperative management between the Forest Service, Denver Water, Aurora, Jefferson, Douglas and Park Counties, perhaps through an intergovernmental agreement. Each entity would use its respective authorities to manage the area under the umbrella of guidelines developed through the intergovernmental agreement and/or management plan. A board or committee could be formed to regularly meet to coordinate management of the area, discuss current management issues and make decisions on issues that will impact the area as a whole.

This may be used as an interim measure while one of the first three management scenarios is being developed.

D. REVIEW OF EACH SEGMENT – COMMON ELEMENTS

While each segment will be reviewed individually, some common elements prevail and should be considered as appropriate under each of the eight segments. These include the importance of providing education and ethical understanding regarding use and protection of the environment. Strategies could include providing education via TV, radio, signage and other elements. Other common elements include flow management being addressed through all reaches on the mainstem, from Elevenmile to the confluence, segments A through E; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination.

E. ANALYSIS BY SECTION¹

SEGMENT A: 8.7 miles from Elevenmile Dam (downstream from the fence on Denver’s special use area) to Lake George.

The committee decided to address A and B separately. A largely takes recognition of the recent Forest Service Elevenmile Canyon Ecosystem Management Project, South Park Ranger District, Pike National Forest. May 1995. The plan was based on a user survey. Where there was a dispute, such as where the campsite would be located, the Forest Service made the final decision. This park can be compared to Mueller State Park. There is a higher level of use here than on any other eligible segment. The plan took from 1992 to 1995 to develop. It is estimated that implementation will take about \$3.5 million in 1995 money. The common thread running through the plan was emphasizing river day use.

CURRENT USES/VALUES:

- Diversity of vegetation (meadows aspen, willows, Douglas fir, Ponderosa pine) providing low elevation habitat for wildlife.
- Diverse aquatic habitat.
- Entire canyon classified “Class A – Distinctive” with granite rock formations, steep forested canyon, several waterfalls.
- River day use for recreation.

¹ The comments for each segment are intended to reflect interests or concerns from various participants in the process but do not necessarily reflect unanimous agreement.

OPPORTUNITIES:

Gather public/private support as money, in-kind and volunteer efforts to implement the Forest Service Elevenmile Canyon Recreation Plan.

CHALLENGES:

Concerns in developing the plan included better day use and access. A decision to have no overnight camping along the river and to maintain two access points to the one campground that will exist. One access point is by 4-wheel drive. Additionally, the decision was to enhance fisheries habitat through erosion and sediment control and to, enhance riparian habitat including recognition of the impacts of social use along the riparian zones. Another goal was to provide modern recreational facilities. Other challenges include:

- Accessibility/parking to serve the facilities as well as to protect the environment.
- Availability of construction funds (will public/private money be available?)
- There is a potential of land exchange with the Boy Scouts, a partnership effort is under way. This is approximately one mile on the river.
- Enforcement challenge to prevent hunting within 1/4 mile of either side of the river. Safety concerns regarding hunting in river corridor.
- Preventing outfitters on pack animals from crossing the river.
- The question of whether or not to pave is a difficult challenge. This includes concerns around the desire to control vehicle speed and how to pay for paving.
- There is a need to develop many forms of partnership including management options and recognizing in-kind and volunteer contributions.
- Wildlife considerations include the presence of wild turkey and the desire to introduce bighorn sheep.
- Flow management, fish habitat and safety management are all concerns.
- Whether to close part of the road and pave the rest.
- Considerations in developing the Forest Service plan included how to enhance the use of the area while protecting the environment. This included: fishing decisions; the desire to provide some recreation opportunities for everyone; the desire to make campers happy as well as staying off private land and minimizing conflicts; addressing the presence of climbers regarding ethics of proper climbing, safety and safety concerns related to road watchers; identifying and communicating volunteer opportunities including signage, and re-vegetating the old campgrounds when the area is moved.
- Avoid conflicts among users.

COMMON CHALLENGES/OPPORTUNITIES:

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

CAPACITIES:

Current use is high. Within the study area, Segment A should be managed for high recreational use while protecting the resources.

SEGMENT B: 7.7 miles from Lake George downstream to Beaver Creek (northernmost boundary of private land).

CURRENT USES/VALUES:

- This 7.7 miles is approximately half public land and half private land. There is one campground with six sites. There is tubing on the South Platte in the vicinity of Happy Meadows campground. There is fishing in the area and there are public access limitations. There are no special regulations. This area includes the subdivision which is known as Sportsmen's paradise. There is a hiking trail around the subdivision that connects back to the South Platte River.
- Low elevation habitat.
- Diverse aquatic habitat.

OPPORTUNITIES:

- The desire for flow management.
- Habitat improvement.
- Increased fishing access in cooperation with willing landowners.
- Sportsman's Paradise subdivision and the County can potentially protect aquatic and riparian habitat values if development addresses the riparian corridor, sedimentation, and general water quality.
- Hiking trail - while remaining low use and non-motorized, providing access to wild canyon downstream.

CHALLENGES:

- There are sedimentation problems primarily caused by the road and by the June 2002 Hayman fire.
- There is a possibility of additional private development.

- Noxious weeds.
- Funding (cooperate with Park County on the road).
- Enforcement concerns.
- Emergency service provision by the County.
- Fire and safety coordination.

COMMON CHALLENGES/OPPORTUNITIES:

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

CAPACITIES:

The current use is low. Within the study area, Segment B should be managed for moderate recreational use while protecting the resources.

SEGMENT C: 10.4 miles. From Beaver Creek downstream to the high water line of Cheesman Reservoir (upstream of the stream gauge).

NOTE: As a result of the Hayman fire, June 2002, this section of the river is closed to motorized use currently and will remain closed to this activity pending a roads analysis by the U.S. Forest Service.

CURRENT USES/VALUES:

- Hiking and backpacking on foot trails.
- Hunting.
- Fishing and guided fishing activities.
- Horseback riding on trails.
- Mountain biking on trails, motorized trails, and low standard roads.
- 4WD vehicle driving on low standard roads. High clearance vehicle greater than 50 inches in width.
- ATV (All Terrain Vehicle) driving on motorized trails and low standard roads. Three or four-wheeled vehicle less than 50 inches in width.
- Motorcycle riding on motorized trails and low standard roads.
- Dispersed camping.
- Wild trout fishery.
- Wide range of vegetation types, including mature ponderosa pine, which provides low elevation habitat for several Region 2 sensitive species of birds, amphibians and mammals, nesting and foraging habitat for raptors, winter range

for deer and elk, and habitat for the Pawnee montane skipper with known populations in the vicinity of Corral Creek.

- Provides connecting landscape linkages for potential wildlife movement corridors to Lost Creek Wilderness and nearby low road density areas of Cheesman watershed, Sheep Rock, Thunder Butte, Green Mountain and Gunbarrel roadless areas.
- A variety of landforms, granite outcrops, topography and river gradients provides outstanding scenic and geologic values.
- Challenging 4WD roads not represented within a one-hour drive of this area. Solitude and scenery for motorized recreationists.

OPPORTUNITIES:

- The present Forest Service designated 4WD roads and motorized trails along Corral Creek, Longwater Gulch and Hackett Gulch are closed currently to motorized use pending a roads analysis subsequent to the Hayman fire. This closure is in effect due to the potential for increased erosion and sedimentation. .
- Enter into volunteer agreements with interested 4WD clubs, motorcycle and ATV clubs.
- Manage flow to protect fisheries.
- Maintain wild character for undisturbed wildlife habitat, high water quality, wild trout fisheries and semi-primitive motorized recreation on Longwater Gulch, Hackett Gulch and Corral Creek connection between them, and non-motorized back country recreation in the rest of this segment.

CHALLENGES:

- Maintain a broad landscape to sustain biodiversity by providing summer and winter range for larger mammals and reproductive and dispersal areas for a variety of other animal species.
- The outstanding values identified by the Forest Service, of scenery, geology, fisheries and wildlife should not be compromised by the current, or future recreation use.
- General protection of water quality and watershed integrity.
- Maintaining the present Forest Service designated 4WD roads and motorized trails while protecting the environment and the wild, challenge character of the area is a high priority. It calls for maintaining the Longwater Gulch 4WD road (FDR#221), including the South Platte River ford allowing connection to the Corral Creek road. Maintaining the Corral Creek 4WD road (FDR#540) including the Tarryall Creek ford allowing connection to the Hackett Gulch road. Maintaining the Hackett Creek 4WD road (FDR#220, 220.A, 220.B), including the South Platte River ford allowing connection to the Corral Creek road. This

will protect the present investment of volunteer work by 4WD clubs of the Colorado Association of 4WD Clubs to maintain access on these roads.

- Establish volunteer agreements between the Forest Service and 4WD clubs, motorcycle and ATV clubs. Define the maintenance level on each 4WD road and motorized trail to protect the motorized challenge and to perpetuate the present low use of this section.
- Develop strategies to address motorized recreation off designated 4WD roads and motorized trails. Include such educational actions as informational maps and signage, travel management posters describing allowed uses on all 4WD roads, motorized trails and foot trails, immediate non designated route rehabilitation, and law enforcement presence.
- Segment C is designated as a Wild Trout water by the Colorado Division of Wildlife (CDOW). Wild Trout waters are not stocked with fish and the resident fish populations are self-sustaining. However, when disasters (natural or man-made) eliminate or severely reduce the existing fish populations or preclude the ability of the fish to maintain self-sustaining populations, the CDOW has the authority to re-stock the stream or river with suitable numbers, species and sizes of fish to re-build the fish community. The CDOW will continue to monitor the fishery over time and may discontinue stocking when self-sustaining fish populations are re-established and/or the in-stream habitat conditions improve.
- Funding to maintain the 4WD roads, motorized trails, and foot trails to control erosion, sedimentation, and impact to the riparian zones.
- Develop a plan to address human sanitation concerns.

COMMON CHALLENGES/OPPORTUNITIES:

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

CAPACITIES:

The current use is low. The desired used is low. Within the study area, Segment C should be managed for low recreational use while protecting the resources.

SEGMENT D – South Platte: 3.1 miles. From Cheesman Dam (downstream of the stream gauge weir) downstream to the Wigwam property (southern end).

CURRENT USES/VALUES:

- Fishing: gold medal and wild trout.
- Hiking-scenic,
- Wildlife viewing.

- Habitat for a number of Region 2 sensitive species, limited habitat for the Pawnee montane skipper, and good habitat for raptors and wintering bald eagles.
- Is part of the connecting landscape linkages from the corridor above Cheesman to the Gunbarrel and Green Mountain and Thunder Butte roadless/low density road areas?

OPPORTUNITIES:

- Trail management
- Public education
- Aquatic/recreation education

CHALLENGES:

- Flows
- Maintain water quality from sediment and ash from burn areas above canyon
- Enforcement
- Retaining wild qualities
- Improve/relocate parking
- Renovate Wigwam trail head parking
- Close old Gill trailhead and parking turnouts on Highway 126. (Jeffco)
- Maintain/enhance aquatic habitat while balancing water supply needs
- Safety/security enhancements
- Continue funding for restoration and new construction to complete a sustainable Gill trail from the Wigwam trail parking area to the Cheesman Reservoir parking area.

COMMON CHALLENGES/OPPORTUNITIES-

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

CAPACITIES:

The current use is moderate use except high for fly-fishing. The desired use is to reduce commercial permits. There may need to be limited use to preserve

outstanding values. Within the study area, Segment D should be managed for moderate recreational use while protecting the resources.

SEGMENT E – South Platte: 19 miles. From the Wigwam property downstream to the high water line of Strontia Springs Reservoir (6029 foot contour)

CURRENT USES/VALUES:

- Colorado trail: biking/hiking
- Angling
- World renowned mountain biking trails
- Water play
- Kayaking/canoeing
- Scenic driving
- Along with the North Fork, this segment has the largest concentration of Pawnee montane skipper habitat
- Eagle/raptors/ospreys
- Wildlife viewing
- Camping
- Picnicking
- Private property residences
- Climbing
- Wildlife habitat corridor
- Deer/elk winter range
- Gold panning by hand (as a hobby)
- Waterton Canyon bighorn sheep herd

OPPORTUNITIES:

- Colorado trail access across river
- Education
- Increase developed camping
- Improved quality of facilities
- Paved roads - for better water and air quality
- Road access improvements at Kennedy Gulch and Night Hawk
- River bank stabilization
- Aquatic habitat improvements

- Flow enhancement
- Increased public access
- Fire prevention
- Revegetation
- Re-assess road and trail density on west side of river
- Do not rebuild Top of the World campground
- Do not reopen Trail 695
- Create well defined foot trails to stream segment
- Water storage²

CHALLENGES:

- Raw sewage from septic/residences and recreation use.
- Minimize human impacts caused by recreation activities
- Looking at a large campground near Trumbull. Number of sites will replace those lost in the Hayman fire. A recreational EA will be developed by the Hayman Restoration Team.
- Jefferson and Douglas county concerns - balance services and cost of law enforcement, trash removal, emergency services, zoning, land use: public v. private, maintain or expand access, open space, resolution of conflicts among various recreation user groups, question capacity of riparian area, angler impact during critical periods, cooperative management plan.
- Preserve integrity of Gunbarrel area (the RARE II area between the South Platte/Highway 126 and from Deckers to the North Platte) as wildlife habitat, landscape linkages to the south and west (Green Mountain and Lost Creek Wilderness) and as a laboratory for understanding stand replacing fire in ponderosa pine and associated ecosystems.
- Reconcile differences of opinion among stakeholders on treatment of the Right-Of-Way ("ROW").

COMMON CHALLENGES/OPPORTUNITIES:

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

² There is a disagreement about this item.

CAPACITIES:

Current use is high. Desired use is high. Within the study area, Segment E should be managed for high recreational use while protecting the resources.

SEGMENT H – North Fork: 22.9 miles, Insmont downstream to within ½ mile of the confluence with the South Platte River.

CURRENT USES/VALUES:

-
- One of the premier kayaking waters within the region, with Class IV and V whitewater rapids, as well as excellent stretches for more novice kayakers to practice their skills.
- Suitable habitat for mule deer, elk, bighorn sheep, raptors and a number of Region 11 sensitive species.
- Peregrine falcon aerie at Cathedral Spires whose protected habitat overlaps the study corridor.
- Pawnee montane skipper populations and, along with Segment E, major habitat.
- The Estabrook and Pine Historic Districts, as well as several other sites which are considered regionally significant.
- An important link to maintain connectivity with the Gunbarrel “Rare II” roadless area which it borders, and other roadless areas to the south and west including Lost Creek Wilderness.
- Timber/firewood resources
- Water conveyance channel
- Mountain biking
- Private residents/property
- Jefferson County Open Space/Parks - Pine Valley, Cathedral Spires
- Fishing
- Hunting
- Rock climbing
- Scientific studies - educational opportunities related to fire.

OPPORTUNITIES:

- Water quality - fishery enhancement.
- Open space increase/expand,
- Wildlife habitats enhance,
- Sediment studies/fire,

- Water storage.³
- Enhance and preserve important historical sites.
- Maintain integrity of undisturbed portions of landscape south of the North Fork and west of the South Platte.
- Although not technically "wild" this segment has many wild qualities which can be enhanced by maintaining day use only, providing appropriate pull outs for anglers and suitably placed toilets.

CHALLENGES:

- Pawnee montane skipper/peregrine falcon recovery plan issues.⁴
- Water quality - mines, sewage.
- Coordinate on access - leave some closed to human use; balance for habitat.
- North Fork flow management within the water supply and water rights constraints associated with the Roberts Tunnel.
- Aquatic habitat related to flows.
- Legal access.
- Sedimentation from adjacent pond. (needs clarification as to location.)
- Preserve integrity of Gunbarrel area as wildlife habitat, landscape linkages to the south and west and as a laboratory for understanding stand replacing fire in ponderosa pine and associated ecosystems.
- Reduce road density in north end of Gunbarrel while maintaining Colorado Trail and mountain biking areas.
- Trail Connection from Reynolds Park to Colorado Trail.
- Maintain 'day use only' in face of mounting recreation pressure.

COMMON CHALLENGES/OPPORTUNITIES:

Education; flow management; addressing noxious weeds; enforcement concerns; provision of emergency services; road maintenance; and fire and safety coordination. Promote common sense conservation and land resource stewardship.

CAPACITIES:

Current use is moderate. Desired use is high. Within the study area, Segment H should be managed for high recreational use while protecting the resources.

³ Again there is disagreement about this item.

⁴ There is also disagreement about this item.

Attachment D

SOUTH PLATTE PROTECTION PLAN ENHANCEMENT BOARD

The Enhancement Board is established to support projects that enhance and preserve the values (otherwise referred to as Resource Values, (“RVs”)) within portions of the South Platte River and the North Fork of the South Platte River (the “Eligible Area”). Among other functions, the Enhancement Board will determine distributions from an endowment fund which will be under the day-to-day management of an independent trustee. Funds contributed to the endowment are restricted as per the provisions of this document and may only revert to the donor upon designation of any or all of the Eligible Area as Wild & Scenic. The endowment fund contributions from members of the Enhancement Board will total at least one million dollars over three years, beginning six months after the Forest Service has taken a final agency action deciding not to recommend designation of the areas which it has identified as eligible along the South Platte and North Fork.

Endowment Fund Management

The Enhancement Board will appoint a trustee for the endowment fund. The trustee shall have all necessary powers within the law to invest, maintain and manage the endowment fund. These powers shall include accepting any and all donations, applying for grants, bequests, loans, or any other financial transactions to maintain or enhance the endowment fund. Powers also include contracting with banks or other depositories for the funds, and lawfully depositing and withdrawing money from the fund. In addition, the trustee shall be responsible for ensuring that all distributions are in accordance with the restrictions placed on endowment contributions. The Board shall adopt a Statement of Investment Policy and Objectives in order that there be a clear understanding on the part of the Board and the trustee of the investment objectives and guidelines for the endowment fund. The Statement will also provide the Board a basis for evaluation of the trustee’s performance.

The Statement shall state that the primary investment goal is the preservation of the principal after taking into account inflation. The secondary objective to be set forth in the Statement is that the investments should be configured as to earn the highest possible rate of return consistent with prudent standards for preservation of capital.

Endowment Fund Spending.

The Enhancement Board may allocate funds to projects which, in its view, will further the preservation, protection, or enhancement of the RVs. The Enhancement Board may instruct the trustee to contract with any receiving entity for the completion of such projects, including requirements for escrows, inspection, bonding, collateral, or other guarantees of project completion. Projects may require the Trust to hire staff, purchase or rent facilities, equipment, or other property, and contract for goods and services necessary to further its purposes.

The purpose of the endowment fund is to provide supplemental resources to enhance and protect the RVs in the Eligible Area. Funding is limited to the RVs identified in that study. The RVs are:

- fisheries
- geologic
- historic cultural resources
- recreational
- scenic
- wildlife

Vegetation and ecological values are eligible for funding if they are directly related to the above categories (e.g. wildlife).

The Eligible Area is: (1) From Elevenmile Dam (downstream from the fence on Denver Water's special use area on the South Platte River) downstream to the high water line of Strontia Springs Reservoir; and (2) the South Platte River upstream to Insmont, from the North Fork from its confluence.. These two river segments total 72.3 linear miles of stream. Lands adjacent to the South Platte and the North Fork that the Enhancement Board determines have values of sufficient association to the river segments.

The following provisions limit the Enhancement Board's use and allocation of the endowment funds:

- The Enhancement Board shall control all use of the funds, and all restrictions herein apply to the Enhancement Board.
- The Enhancement Board shall at all times endeavor to maintain the corpus of the endowment. However, it is recognized that opportunities may arise, both during the initial three year funding period and thereafter, where the benefits of utilizing some portion of the corpus significantly outweigh its diminishment. Specifically, where the opportunity to match in-kind or financial contributions on a one-to-one or greater basis for a project or program meeting the allocation guidelines, the Board shall be empowered to authorize expenditure of no more than 15% of the corpus during any fiscal year. Such expenditure shall require a 2/3 vote of all members then active. Any funds expended under this provision shall be credited towards the one million dollar endowment contribution requirements.
- Grants, loans or other disbursements shall be made only for the enhancement, preservation and public access to the RVs within the Eligible Area.
- No more than 15% of expenditures within any calendar year shall be used for administrative costs. This limitation does not apply to non-discretionary expenses such as responding to IRS audits or litigation, financing, repairs or reimbursements caused by accident, unanticipated damage and acts of God.

- No funds shall be used for any political purpose, including but not limited to contribution to political parties or causes, contributions to or promotion of candidates for public office, publication or contribution to flyers, brochures or other printed materials supporting issues or candidates, lobbying or contributing to materials to be used for lobbying.
- No funds shall be used to challenge or oppose water development or water operations.
- The Enhancement Board shall generally restrict its expenditures to projects that further the protection and enhancement of the RVs within the Eligible Area. Generally, expenditures should not be made for ongoing operations and maintenance of such projects.
- When considering a project, the Enhancement Board shall weigh the harms and benefits to all RVs. Funds shall not be used for a project that would unduly harm one RV to benefit another.
- The Enhancement Board shall grant funding only in meetings open to the public. Notice of public meetings must be reasonably provided.
- The Enhancement Board shall grant funding only for projects that are accessible to and/or benefit the public. No funds shall create improvements on private property that would significantly enhance the value of the property unless the property is leased to a public entity and the improvement serves the public purpose of that entity.

Members.

The Enhancement Board shall consist of seventeen (17) Members who are selected by the following entities to represent each entity's interests:

- Three (3) people interested in and knowledgeable about regional fish, wildlife, and ecosystem values
- One (1) representative of motorized recreation users
- One (1) representative of non-motorized, on-land recreation users
- One (1) representative of water recreation users
- One (1) representative from Park County
- One (1) representative from Jefferson County
- One (1) representative from Douglas County
- One (1) representative from Denver Water
- Two (2) representatives of suburban Denver water providers
- One (1) representative who is a private property owner within the Eligible Area
- One (1) representative of the grazing industry
- One (1) representative of the timber or silvicultural industry
- Two (2) at-large Members

Terms.

Enhancement Board Members will serve three (3)-year terms. If a Member is appointed to fill a vacant position, the Member will serve the remainder of that position's term and be eligible for reappointment to two additional three-year terms. Members will serve as unpaid volunteers, although actual expenses may be reimbursed from the Endowment Fund.

Staggered Terms.

Members of the Enhancement Board shall have staggered 3-year terms. Therefore, only the composition of the initial Membership shall be established according to the following:

- Each of the following entities will initially have one Member appointed for a one-year term, a two-year term, or a three-year term, according to the term limit in the parentheses. After that term has expired, all subsequently appointed (or re-appointed) Members shall serve the full three-year term.
 - fish, wildlife, and ecosystem representatives (1-year, 2-year and 3-year initial terms)
 - motorized recreation user (1-year initial term)
 - non-motorized, on-land recreation user (2-year initial term)
 - water recreation user (3-year initial term)
 - Park County representative (1-year initial term)
 - Jefferson County representative (2-year initial term)
 - Douglas County representative (3-year initial term)
 - Denver Water representative (1-year initial term)
 - Suburban Denver water provider representatives (2-year and 3-year initial terms)
 - Private property owner (1-year initial term)
 - Grazing industry representative (2-year initial term)
 - Timber or silviculture industry (3-year initial term)
 - At-large Members (2-year and 3-year initial terms)

Reappointment.

No Member shall be eligible to serve more than two consecutive full three-year terms.

Initial Appointments and Re-Appointments.

The initial Members of the Enhancement Board shall be appointed within four months of a final agency action by the USFS deciding that the Eligible Area will not be recommended for designation under the Wild and Scenic Rivers Act. The initial appointments shall be made as follows:

- The three representatives of fish, wildlife and ecosystem values shall be appointed by the Colorado Environmental Coalition (CEC) upon its consultation with other local environmental organizations. CEC will continue to make future appointments and re-

appointments for these representatives unless CEC gives an alternative organization the power of appointment. Other organizations that CEC could elect to appoint these representatives are: Environmental Defense, Colorado Mountain Club, Sierra Club Rocky Mountain Chapter, Colorado Chapter of the National Audubon Society, Colorado Wildlife Federation, or Colorado Public Interest Research Group.

- The representative of motorized recreation users shall be appointed by the Colorado Off-Hiway Vehicle Association.
- The representatives of non-motorized, on-land recreation users and water recreation users shall be appointed by a joint decision between the following organizations: Trout Unlimited, Colorado Mountain Club, United Sportsmen, and Colorado White Water Association.
- The County Commissioners of Park, Jefferson, and Douglas Counties shall each appoint one representative for the interest of their respective counties.
- The representative of Denver Water shall be appointed by the Denver Board of Water Commissioners.
- The two suburban Denver water supplier representatives shall be appointed by the Wild and Scenic Task Force or its successor organization.
- The representative of private property owners in the Eligible Area, the grazing industry, and the timber or silvicultural industry shall be appointed by a joint decision between the Douglas and Jefferson County Boards of Commissioners.
- The two at-large Members shall be selected by majority vote at the initial Enhancement Board meeting by the other Members. Enhancement Board Members will continue to appoint these Members during annual meetings in the years in which the at-large Members' terms have expired.

Vacancies lasting six months and dissolution of appointing authority.

Members of the Enhancement Board may change the appointing authorities for any of the above categories by majority vote in which a vacancy has existed for more than six months or in which an appointing authority has ceased to exist.

Changes by 2/3 Vote.

Members of the Enhancement Board, by a two-thirds vote, change the appointing authority for any category in which one of the appointing authority indicates that the authorities in that category are unable to work together, or in any other situation in which the Enhancement Board Members determine a change is necessary to maintain good working order for the purposes of Enhancement Board.

Removal by 2/3 Vote.

The Enhancement Board may remove Members by a two-thirds majority vote for cause on the following grounds:

- Unexcused absence from meetings for four months or three consecutive meetings, whichever is greater
- Actions or assumptions of authority in violation of the Bylaws or adopted investment policies
- An action that endangers the independent status of the Enhancement Board
- Criminal prosecution and conviction

Removal by Judicial Proceeding.

A Member may be removed by judicial proceeding for engaging in fraudulent or dishonest conduct, gross abuse of authority or discretion, or for violating a duty.

Removal by appointing authority.

An appointing authority may remove a Member it selected with or without cause. Only the appointing authority may participate in the vote to remove a Member it selected. Removal by the appointing authority must be determined through the same process as appointments.

Notice of Removal.

The authority removing a Member shall give written notice of the removal to the Member and to the Enhancement Board

When Effective.

Removal is effective when notice is received by both the Member to be removed and the Enhancement Board, unless the notice specifies a future effective date.

Members of the Enhancement Board shall not be personally liable to the Enhancement Board for monetary damages for breach of fiduciary duty as a member. However, Members will be personally liable to the Enhancement Board for monetary damages for any breach of the Member's duty of loyalty to the organization or to its members, for acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law, for unlawful distributions, or for any transaction from which the Member directly or indirectly derived an improper personal benefit.

Annual Meetings.

The Enhancement Board shall have an annual meeting that shall occur within the same month each year, as determined by the Members.

Regular Meetings.

Regular meetings of the Enhancement Board shall be held bi-monthly unless otherwise determined by the Members. Annual and bi-monthly meetings shall be open to the public. Reasonable notice of meetings shall be given to the public, providing the date, time, and location of the meeting. Public participation may include State and Federal agency representatives who are *ex-officio* Members. The day, time, and location of the next regular meeting shall be scheduled during each regular meeting.

Special Meetings.

Special meetings may be called by written request including the signatures of five Members. Members shall be notified at least 3 days prior to a special meeting. Notice of special meetings shall state the purpose of the meeting, time, date and place.

Attendance by Telephone.

Members may participate in a meeting of the Enhancement Board by means of conference telephone by which all persons participating in the meeting can hear each other at the same time. Such participation shall constitute presence in person at the meeting.

Quorum.

A quorum for action by the Enhancement Board consists of a majority of the number of appointed Members positions filled at the time a meeting begins.

Voting.

A majority of the Members present shall prevail in all votes unless otherwise provided in these Bylaws. Each Member is entitled to one vote, which must be cast in person. The Members may elect to conduct a telephone vote where immediate action is necessary. For any action by telephone vote, however, a majority of the Membership positions filled at the time is required.

Officers.

The Enhancement Board shall designate Members for the positions of President, Secretary and Treasurer, and such other Officers as may be designated by the Members. Each Officer shall have the authority and perform the duties prescribed with respect to such Office by the Members, except that the Secretary shall be responsible for preparing and maintaining minutes of the meetings and other records and information required to be kept by the Enhancement Board and for authenticating records of the organization.

Resignation and Removal of Officers.

An Officer may resign at any time by giving written notice of resignation to the Enhancement Board. The Members may remove an Officer at any time with or without cause.

The Members may make provisions for the removal of Officers by other Officers or by the majority vote of the Members.

Members of the Enhancement Board may designate one or more committees, each of which shall consist of two or more Members. No such committee shall have the authority of the Enhancement Board regarding: amending, restating or repealing the Bylaws; appointing or removing any Member; amending, altering, or repealing any resolution of the Enhancement Board; or taking any other action which may hereafter be prohibited to committees by law. The designation and appointment of any such committee and the delegation thereto of authority shall not operate to relieve the organization or any individual Member of any responsibility of that Member by law. Subject to the foregoing, the Enhancement Board may provide by resolution such powers, limitations, and procedures for such committees as the Members deem advisable.

The Enhancement Board shall keep correct and complete minutes of the proceedings.

The fiscal year of the Enhancement Board shall be January 1 through December 31 of each year.

Persons Who Are Entitled to Indemnity.

The following persons (Covered Persons) shall be entitled to seek indemnity from the Enhancement Board:

- Any person who is now serving or who has served as a Member the Enhancement Board and who was or is a party or is threatened to be made a party to any threatened, pending, or completed action or suit by reason of such service, whether civil, criminal, administrative or investigative (including, without limitation, an action by or on behalf of the Enhancement Board); and
- Any person who is now serving at the request of the Enhancement Board or who has served at the request of the Enhancement Board as a fiduciary, employee or agent of a corporation, joint venture, trust, political subdivision, body politic, state agency, or other entity or enterprise and who was or is a party or is threatened to be made a party to any threatened, pending, or completed action or suit by reason of such service, whether civil, criminal, administrative, or investigative (including, without limitation, an action by or on behalf of the Enhancement Board).

Scope and Conditions of Indemnity.

The Enhancement Board shall indemnify a Covered Person against costs arising out of a claim described in Section 1 of this Article, including such person's expenses in defending such claims (including but not limited to reasonable attorneys' fees), judgments, fines, and amounts paid in settlement actually and reasonable incurred by such person in connection with such action; provided, however, that indemnification pursuant to this provision shall not be permitted with respect to any acts or omissions which constitute willful or intentional malfeasance, gross negligence or criminal acts. The Enhancement Board shall indemnify a covered person if such

person acted in good faith and in a manner such person believed to be in or not opposed to the best interests of the Enhancement Board. The termination of any civil action, suit or proceeding by judgment, order, settlement, or its equivalent, shall not of itself create a presumption that any act or omission which was the subject of the action, suit or proceeding constituted willful or intentional malfeasance or gross negligence, or was not in the best interest of the Enhancement Board.

Attachment E

Upper South Platte River Watershed

UPPER SOUTH PLATTE RIVER WATERSHED

Watershed Management

As the South Platte River flows eastward across central Colorado, it provides water for agricultural irrigation, recreation, as well as community and industrial uses. The river provides important habitat for fish and wildlife and is of fundamental value to the communities it flows through. The South Platte River watershed has been significantly transformed over the last century. In addition to water withdrawal for mining operations and agricultural activities, dams along the river have influenced the volume and variability of water flows. Water from other basins has also impacted the watershed. Literally, water from the South Platte River provides water to over one-half of Colorado citizens.

For decades, efforts to protect this watershed have been inhibited by controversies over the proper uses of its resources together with jurisdictional, financial and technical obstacles. Agricultural, urban and environmental interests have frequently clashed on dispute over water allocation and resource uses. The US Forest Service has worked in the middle of the watershed to analyze stressors on and resulting ecological effects on the watershed in order to promote community awareness of the outstanding natural resource values on these portions. These efforts coupled with a strong interest to protect remarkable resource values existing along a middle section of the South Platte River led to the Forest Services initiative to designate a portion of the South Platte River as federal wild and scenic. The A2 alternative to the federal wild and scenic designation was developed to protect the values of the South Platte while retaining strong local government participation and control. As part of, but yet parallel to all other aspects of the A2 alternative to wild and scenic, is the Upper South Platte River Watershed Management program. The Watershed Management program is driven by a larger perspective on water quality throughout the Upper South Platte River watershed, addressing issues beyond jurisdictional boundaries. Even without the proposal for federal designation, this effort was developing to identify a better approach to protect water quality through a locally developed program with local solutions.

The Upper South Platte Watershed Management Program is designed to protect the ecological health of the South Platte River and the water quality for all water uses by balancing watershed land and water use activities. Through a cooperative effort of watershed stakeholders, the program will develop water quality protection strategies that address community values, and economic sustainability for communities and water uses in the watershed as well as concerns of the regulatory agencies.

The Upper South Platte Watershed Management Program will address water quality throughout the Upper South Platte Watershed. Water quality aspects for the corridor protected by the A2 alternative include addressing point sources such as permitted discharges from wastewater treatment plants and septic systems, as well as nonpoint sources, such as erosion, grazing, mining and transportation corridors. In addition, the A2 alternative will coordinate with the Upper South Platte Watershed Management Program and ongoing water quality protection programs that are applicable to the portion of the South Platte River that is subject to the wild and scenic study. Examples of ongoing local water quality monitoring and protection programs include *River Watch* and *Embrace-a-Stream*. Applicable to the A2 corridor, the Upper South Platte Watershed Management program will conduct primary activities, such as:

- **Develop a strong public involvement program** -- The public will be involved throughout the planning and implementation process.
- **Develop an understanding of the watershed** -- This understanding will be achieved by identifying pollutant sources and constituents of concern related to beneficial uses of the river and their implications within the river corridor.
- **Prioritize water quality concerns** -- Prioritizing water quality concerns will focus protection strategies and achieve the most benefit at the lowest cost (both economic and societal costs).
- **Identify and recommend implementation of effective management strategies to protect water quality** -- Management strategies may include structural and nonstructural best management practices, adaptive management strategies, and strategies that consider objectives of regulations including the Clean Water Act, Source Water Assessment and Protection program, Total Maximum Daily Loads, etc.
- **Coordinate long-term water quality monitoring** -- Long-term monitoring will coordinate with existing monitoring efforts and identify additional targeted monitoring to evaluate the effectiveness of Watershed Management program strategies.

The Upper South Platte Watershed Management Program, although distinctly separate from the A2 process will parallel the A2 effort within the corridor and support all appropriate water quality objectives. The program will facilitate coordination among government and private entities and stakeholders to produce more effective solutions for water quality protection, because they will consider the entire watershed and stakeholders.

Steering Committee Membership

The Upper South Platte Watershed Management Program will be guided by a Steering Committee. The Steering Committee will include a total of 12 members with one representative from each of the following entities.

Steering Committee Members

C	Douglas County	C	Upper S. Platte Water Conservancy Dist.
C	Jefferson County	C	Center of Colo. Water Conservancy District
C	Park County	C	BLM
C	Teller County	C	USFS
C	Denver Water	C	Soil Conservation Districts
C	Aurora	C	State Land Board

Organization

The Steering Committee will have primary supervision of the Watershed Management Program and each Steering Committee member will have one vote. Officers of the Steering Committee will consist of Chair, Vice-Chair, Secretary/Treasurer. New officers will be elected during the first month of each calendar year. Officers will be nominated through a nominating committee and confirmed by a majority vote of the Steering Committee.

Participation from other watershed stakeholders is encouraged and the Steering Committee may solicit feedback and be assisted by other groups such as a Watershed Advisory Group (WAG). The members of a WAG may participate in the program for all purposes except voting. WAG members may assist Steering Committee members by soliciting input from various watershed constituents to ensure that all interests are heard and considered in decisions (e.g., private land owners, communities, and special interest groups). The WAG may include, but is not limited to representatives from the following entities. Additional participants may be identified and included throughout the planning process.

Watershed Advisory Group

C	CDPHE -- WQCD	C	Pikes Peak Area COG
C	US EPA	C	Platte Canyon Outdoor Resources Council
C	DOW	C	South Park Heritage Resource Project
C	CDOT	C	Trout Unlimited
C	NRCS	C	Private Landowners
C	USGS	C	Representatives from Agriculture, Environmental, Mining & Recreation Interests
C	Park Co. Water Preservation Coalition	C	Nature Conservancy
C	DRCOG		
C	Northwest COG		

ATTACHMENT F

Principles Regarding Water Development

Basic Principles Regarding Water Development

1. The Plan is neither intended to waive nor approve in advance any permit required by law now or in the future. Any proposal for water development in the Protected Area (as more precisely defined on Page 1 of the Proposed Forest Service Plan Amendment, also attached hereto) would be subject to the normal permit process.
2. The Plan is not a designation under the Wild & Scenic Rivers Act, and therefore no permit application should be denied on the basis of that Act. Any proposal for water development within the Protected Area should be considered on its merits, including its impacts on the values protected under the Plan, unless the proposed development is specifically precluded by the Plan.
3. Because the Two Forks Reservoir proposal is unique to the protected area in that it is larger than any other concept and has an existing federal right-of-way, this Plan contains one set of principles that applies to Two Forks and another set of principles that applies to any other water development proposal.
4. The drinking water plans of Front Range water suppliers place a priority on reducing demand through end-use water efficiency and replacing the need for new water supply by reusing water currently available to the system through non-potable applications. These techniques are useful to defer the need for further water storage.

Principles Regarding Two Forks

Right-of-Way Background. The Denver Water Board was issued a permanent right-of-way in 1931 that is administered by the U.S. Forest Service. It allows Denver Water, subject to obtaining other necessary approvals, to construct a dam at a specified location below the confluence of the South Platte River and the North Fork for a reservoir of approximately 345,000 acre-feet of capacity. That capacity, in turn, would result in a firm annual yield of about 60,000 acre-feet ("Two Forks Water"), utilizing much of Denver Water's conditional water rights in the South Platte, Williams Fork, Fraser, South Boulder Creek and Blue Rivers.

Proposal Concept. The Right-of-Way is an issue of foremost concern to many of the parties that have participated in development of the South Platte Protection Plan. Many recreation users and residents want the Right-of-Way abolished to remove the specter of future inundation of a portion of the river corridor. Denver Water cannot afford to relinquish the Right-of-Way in the absence of viable alternatives that would supply an equivalent yield. Through this Plan, Denver Water will establish a planning process that can result in alternative means of developing the Two Forks Water, which would allow Denver Water to relinquish its Right-of-Way. Denver Water will pursue alternative storage or utilization of the Two Forks Water that would allow it to achieve its yield without the use of the Right-of-Way.

Right-of-Way Moratorium. As a demonstration of good faith in pursuing those options, Denver Water voluntarily imposes a moratorium on applications for development of the Two Forks Right-of-Way for a period of twenty years from the date of a Memorandum of Agreement (MOA) to be negotiated between the Forest Service and local government participants [assumes the MOA will be completed within eighteen months of the submittal of the proposal]. Denver Water may extend this moratorium on permit applications if it determines, in the discretion of its Board, that viable alternative projects are still available that would keep its reliable supply comfortably ahead of demand projections, including a safety factor commensurate with responsible utility planning.

Right-of-Way Relinquishment. Denver Water will relinquish the 1931 South Platte Right-of-Way when development of the Right-of-Way becomes impractical because alternative development of the Two Forks waters has reduced the economic value of the Right-of-Way below meaningful value. Denver Water may perform a residual value assessment of the Right-of-Way at any time, in the discretion of its Board, after some of the Two Forks Water has been developed using alternative means. Denver Water will consider the recommendations of the Denver Water Planning Task Force in making a determination of the timeliness of a residual value assessment.

Denver Water Planning Task Force. Denver Water will form a Denver Water Planning Task Force that will meet periodically to perform the duties described below. The Task Force will include the following members:

- Denver Water's Director of Planning
- Denver Water's Director of Engineering
- Citizens' Advisory Committee (CAC) environmental representative
- one CAC Denver citizen representative
- four representatives from Colorado environmental interest groups or recreation groups involved in activities within the South Platte Protection Plan
- four suburban water providers

Task Force Duties. The Task Force will serve in an advisory capacity to the Denver Board of Water Commissioners. The Task Force will consider projects or proposals as possible candidates to be added to or deleted from the list of alternatives for development of the Two Forks Water. The Task Force may also recommend that Denver Water extend its moratorium on development of the ROW or that Denver Water undertake a residual value assessment to determine if the ROW should be relinquished. Denver Water will consider the input of the Denver Water Planning Task Force in making a determination of the timeliness of a residual value assessment.

To encourage the Task Force to operate by consensus, any recommendations by the Task Force must be approved by a vote of three-fourths of a quorum. Membership on the Task Force can be changed by a consensus of all participating members. The Task Force will meet as often as necessary but at least annually.

List of Alternatives. A complete list of alternative plans for storing or developing Two Forks Water cannot be identified today. Such a list might include alternative storage at other points on the mainstem of the South Platte, along the North Fork of the South Platte, off-channel storage on tributaries along those rivers, and off-channel storage on the high plains east of the mountains. Projects that have been discussed and included in Denver's Integrated Resource Planning Report and related documents, include the following:

Project Description	Estimated Maximum Yield*
Southern Metro Area Conjunctive Use	30,000 acre-feet
Enlargement of Elevenmile Reservoir	5,000 acre-feet
Enlargement of Antero Reservoir	10,000 acre-feet
Enlargement of Gross Reservoir or construction of Leyden Gulch Reservoir	20,000 acre-feet

* The estimated maximum yield is not necessarily all derived from Two Forks Water.

With the exception of conjunctive use, Antero and Leyden Gulch, none of the above projects take into account potential plans of suburban providers in the greater metropolitan Denver area. The list of projects is provided here only because it is instructive of the nature of alternatives that could produce yield from Two Forks Water.

Principles Regarding Other Water Development

Water Development Precluded by the Plan. By agreement of those water users who submitted the Plan (“Water Users”), the following water development would not be permitted under the Plan:

Water Users will not apply for permits for any water storage or diversion facility located in Elevenmile Canyon or Cheesman Canyon. These restrictions are not intended to preclude repair, enlargement or replacement of Elevenmile or Cheesman Dams or their related structures.

Denver Water and other Water Users will consent to dismissal of the large junior Two Forks water rights filings (780,000 acre-feet in 1984) for conditional storage rights.

Future Water Development in the Protected Area. Water development within the Protected Area would need to demonstrate, after mitigation, the lack of significant long-term adverse effects on the resource values identified and protected by the Plan.

Examples of Possible Future Water Development. As area water demands increase and as water providers develop their systems to meet that demand, a variety of activities may occur that could affect the Protected Area. Some water development activities will definitely occur, although it is impossible to predict with any accuracy the frequency or magnitude of these activities. For example, water development activities could involve physical work in or near the river channel or could affect flows. While these potential activities are not expected to

have significant adverse effects on the "Values" within the Protected Area, detailed assessments of those effects will be made as a part of any required permit procedure.

The following is a list of potential water development activities that, depending on how they are constructed and operated, could affect the Protected Area. This list contains activities that have already received some analysis or attention, but it cannot be exclusive since we do not know what new circumstances, ideas or options may occur in the future. It is unlikely that all of these activities would occur, but some certainly will.

Investigation of and potential development of water storage alternatives for yield that would have been realized if Two Forks Reservoir had been constructed (Two Forks Water):

- Some sites investigated could be within or tributary to the Protected Area (e.g., Estabrook, off-channel tributaries).
- Possible diversion structures to move water to off-channel reservoirs.
- Investigatory sampling and monitoring both in and along the river.

Expansion of upstream reservoirs

- Possible expansion of Eleven Mile Reservoir.
- Possible expansion of Antero Reservoir.

New water sources introduced into the mainstem of the South Platte

- Colorado River rights (Homestake, Eagle River, Ruedi, etc.)
- Other Arkansas River rights.
- Water from other basins.

New water sources introduced into the North Fork

- New West Slope diversions transported through Roberts Tunnel.
- May require additional channel work.

Future projects in South Park

- May be coupled with additional diversions into the South Platte basin.
- May affect the duration of higher flows in the mainstem.

Examples of Activities Not Considered New Water Development. As existing water systems age, they will require extensive maintenance and rehabilitation.

New conditions such as increased sedimentation from forest fires will require modifications to maintain the functioning of existing system. As water demands increase, the use of existing water systems will increase. The operations of Denver's and Aurora's existing water systems will continue to be subject to compliance with the Streamflow Plan during these activities and may require permits depending on the law at the time. However these activities will not be considered new water development pursuant to this agreement. The following lists some examples of these activities.

Sediment management

- Efforts to reduce erosion
- Efforts to capture or impound sediment including check dams and in-channel structures
- Efforts to remove sediment from the river, upstream drainages, and reservoirs.

Rehabilitation of existing reservoirs and other water facilities

- All reservoirs and dams need maintenance and rehabilitation from time to time.
- Safety considerations should dictate changes in reservoirs and reservoir facilities.
- Valve replacement at Eleven Mile Reservoir is a requirement of the Streamflow Plan.
- Maintenance on transbasin conduits and valves that release water into the South Platte basin.

Channel improvement or bank stabilization on the mainstem or tributaries

- Part of the South Platte Protection Plan.

Exchanges of water

- Water flowing in the North Fork is exchanged into mainstem reservoirs to operate system efficiently.
- Water is exchanged to upstream reservoirs.
- Exchanges are subject to the Streamflow Plan including minimum flow commitments.
- Possible purchase of South Park agricultural rights for conversion to municipal and industrial use.

Increased deliveries of water from the Roberts Tunnel

- Water supplied from increased use of existing facilities.
- Increased magnitude of flow rate and possibly increased duration of high flow.
- May require additional channel work.
- These activities are covered by the Streamflow Plan.

Attachment G

Proposed Forest Service Plan Amendment South Platte River Protection Management Area

Background. Over a period of several years, a group of environmental interests, local governments, water users, and other interested parties have collaborated in developing the “South Platte Protection Plan” (SPPP) as a vehicle for protecting the South Platte River corridor in the general area from Elevenmile Reservoir to Strontia Springs Reservoir and the North Fork of the South Platte below Insmont (as identified in Table 1-1 of the June 29, 2000 *Supplemental Wild and Scenic River Study Report and Draft Legislative Environmental Impact Statement excluding the creeks flowing into Cheesman Reservoir*). The SPPP offers an alternative to designation under the Wild and Scenic Rivers Act. The SPPP contains numerous commitments from water users and local governments, but does not discuss the role of the U.S. Forest Service in protecting and enhancing the resource values identified in the SPPP. Environmental interests also had significant concerns about enforcement of the SPPP. Accordingly, a working group has prepared these proposed amendments to the Land and Resources Management Plan (Forest Plan) for the Pike and San Isabel National Forests. The amendment, if adopted through the Forest Service’s public process, will provide enforceable direction to the Forest Service for management of lands along the South Platte River corridor. This amendment is intended to be consistent with, and not supercede, the goals and specific content of the SPPP. We anticipate that the concepts of this Amendment, if adopted, would also be carried into the Forest Plan revision as it proceeds.

The proposed Plan Amendment language is intended to fit under a new management area designation in the Forest Plan, “River Corridor Protection”. The working group is still in the process of finalizing its recommendation for what sections of the National Forest should be part of this new management area. Generally, the designation would apply to National Forest lands within ¼ mile of the South Platte River or the North Fork below Insmont. In Elevenmile Canyon, the corridor would be ¼ mile or to the top of the canyon, whichever is larger. In Wildcat Canyon, the corridor would be significantly wider, including the entire “viewshed” from the bank of the river. Collectively, these areas are referred to as the South Platte Corridor Management Area (SPCMA).

In some cases, the working group has attempted to put its recommendations into the standard language of forest planning. In others, we have simply identified the concept we propose – hopefully with sufficient detail to allow the Forest Service to develop Forest Plan language that would reflect the group’s intent. Our recommendations have been grouped into general categories: river protection; fish, wildlife, and riparian; vegetation management; special uses (including water development); recreation; travel management and watershed; historic/cultural/archaeological resources; and scenic protection. There is some overlap among the proposed standards and guidelines for these topics. The working group recognizes this duplication, but has chosen to retain it in order to highlight issues of concern as they relate to the different topics.

Segment-specific direction appears in both the recreation and scenic sections. The identified segments are the same as those used in the Wild and Scenic Rivers study for the South Platte River. Direction in the other sections where segments are not specified is intended to apply over the entire SPCMA. The Forest Service's Wild and Scenic eligibility determination for the North Fork of the South Platte and the South Platte rivers identified Outstandingly Remarkable Values for each section of the river studied. For the purposes of the SPPP the Outstandingly Remarkable Values (as well as some values not recognized in the eligibility study) are referred to as "resource values."

River Protection

Background. The purpose of the SPPP is to protect and enhance the resource values of the area on the local level without federal designation or operation under the Wild and Scenic River Act, while preserving the critical role of the river in water supply and maintaining sufficient flexibility in management of the river to accommodate change over time. Accordingly the Forest Service should do the same in its management activities.

The parties recognized that the Forest Service will retain the ability to reopen consideration of a Wild and Scenic River designation if the SPPP fails and cannot be fixed. Prior to such consideration, the Forest Service shall identify the cause of any problems or failures of the SPPP, and shall work in cooperation with the SPPP partners to fix such problems or failures. Some problems may be beyond the capability of the Forest Service or any of the other SPPP partners to address. For example, whirling disease has reduced the quality of the rainbow trout fishery in the South Platte River – but should not serve as a basis for determining the SPPP to have failed and reopen the Wild and Scenic Study. Similarly, the Hayman Fire has caused and may continue to cause significant impacts to the resource values identified in the SPPP. However, the impacts resulting from this or other fires should not serve as a basis for the Forest Service determining the SPPP to have failed and reopen the Wild and Scenic Study.

Where problems can be defined and acted upon, the Forest Service should work with the Friends of the South Platte and the parties to the SPPP to address the cause through management changes, restoration projects, and/or amendments to the SPPP (with approval of SPPP partners). We anticipate that any problems can be resolved through this process. However, if such cooperative efforts fail and the resource values of the river corridor are at significant risk, the Forest Service may at its own discretion reinstate its Wild and Scenic Study. Should the Forest Service recommend designation based on the renewed study, the obligations of parties under the SPPP would become void.

Goals:

Study River Protection. Protect and enhance the resource values of the South Platte and North Fork of the South Platte as identified in the SPPP.

Standards:

Study River Protection. Management actions, proposed new uses or new facilities on National Forest System lands will not be allowed if they have, after mitigation, significant long-term

adverse effects on the resource values identified and protected by the SPPP. A description of allowable water development projects is included in attachment F of the SPPP and in the Water and Utility Development portion of this submittal.

It is the understanding of those involved in the SPPP that the South Platte river was found to be free-flowing and therefore eligible for Wild and Scenic designation in several segments despite the existence of some water development activity in those segments, such as diversions. Therefore we expect that the water development allowed under the SPPP – would not render the river ineligible for designation in the future. Accordingly, the intent of this standard is not to preclude such water development, but rather to ensure that the South Platte remains eligible for consideration as a Wild and Scenic River in the future should the SPPP fail or its participants withdraw their commitments.

Mineral withdrawal. The Forest Service will file a request with BLM that Federal lands within the special interest area be withdrawn from appropriation and entry under the mining laws, in order to protect the ORVs.

Reopener. When the resource values of the South Platte are found to decline, or when significant action may impact the river's eligibility and resource values, the Forest Service and participating parties should cooperate to address the threat to the values. The Forest Service should first assess the threat/decline and attempt to identify the causes. In cooperation with the participating parties and Friends of the South Platte, the Forest Service will then work to address those causes through cooperative efforts that may include management changes, restoration projects, and modifications to the SPPP (with approval of SPPP partners). Re-initiation of the Wild and Scenic Study may be undertaken if the Forest Service determines that cooperative approaches, such as those listed here, do not protect the river's values or that there have been sufficient violations of the SPPP agreements to undermine confidence in continued protection of the resource values. If the Forest Service recommends designation based on the renewed study, the obligations of parties under the SPPP would become void.

Fish, Wildlife, and Riparian

Many wildlife habitat issues are also covered in sections such as recreation, travel management and watershed, or vegetation management. Accordingly, discussion here focuses on standards directly relating to fish & wildlife and riparian habitat, including guidance for individual species of concern thought to be present in the study area. By no means does this indicate that factors such as sedimentation, erosion, fragmentation, or disruption, are of little or no concern for fish and wildlife and that they should not be considered in prescribing management plans. Habitat modification techniques such as burning, mowing, thinning, or replanting will be allowed to occur provided there is sufficient evidence that the prescribed practices will benefit wildlife habitat.

Goals:

Viability. Maintain habitat for viable populations of native and desired non-native vertebrate wildlife species.

Maintain habitat needed to support viable populations of all management indicator species found in the South Platte Corridor Management Area (SPCMA).

Manage habitats capable of supporting self-sustaining fish populations to provide for maintenance of those populations.

Riparian protection. In riparian areas, manage for native species composition, age structure, and pattern of vegetation distribution that approach expected conditions under natural disturbance regimes.

Manage riparian areas to maintain their health and function as firebreaks.

Construction and maintenance activities including NFS roads will be conducted to minimize sediment discharge into streams, lakes, and wetlands.

Objectives:

Fishery habitat. Manage fish habitat that provides a fishery at or near its potential, to maintain the quality of that habitat. Manage fish habitat to improve habitat conditions that may be limiting.

Standards:

Riparian protection. Allow new activities and uses within 300 feet or the top of the inner gorge (whichever is greater) of perennial and intermittent streams, wetlands and lakes (over one acre) only if onsite analysis shows that, after mitigation, there is no significant long-term adverse effects on hydrologic function, channel stability, riparian condition, and stream health. Existing use and occupancy activities within this zone, found to be causing degradation (as identified in the monitoring/water quality plan), will be scheduled for closure or mitigation.

Protect aquatic and riparian habitats on tributary streams within the SPCMA as needed to maintain the resource values identified in the SPPP.

Travelways and other disturbed sites will be constructed to avoid riparian areas to the maximum extent possible and to minimize and mitigate adverse effects on riparian habitat where it cannot be avoided.

Instream structures. Design and construct all new stream crossing and other instream structures to provide for passage of flow, withstand expected flood flows, and allow free movement of aquatic and terrestrial life (except where the structure is intended to provide a barrier to migration of non-native aquatic species and to temporarily collect sediment resulting from the Hayman Fire).

Guidelines:

Waterway protection. Where travelway crossings of riparian corridors are needed, they should be constructed so as to bisect perpendicular to the corridor.

Species Specific Management Standards:

MAMMALS

Mule Deer, Elk, Big Horn Sheep: Areas indicated by Division of Wildlife Resource Information Source (WRIS) maps as being severe winter range, winter concentration areas, production areas, summer concentration areas, or migration corridors will have minimal development of trails or roads.

Beaver: Beaver activity will be allowed to occur in a natural manner. Dams will not be removed unless there is a threat to life or property.

Black Bear: Areas indicated by Division of Wildlife WRIS maps as being summer and fall concentration areas will be minimally encroached upon by roads, trails and other development.

Preble's Meadow Jumping Mouse: As this is a federally listed species, areas indicated by U.S. Fish and Wildlife Service as being suitable habitat for PMJM will not be adversely impacted by human development, as governed by the Endangered Species Act. Currently, best habitat for PMJM is believed to include lush, vegetation along watercourses or in herbaceous understories in wooded areas up to 7600' in elevation. They are primarily associated with riparian corridors of small intermittent streams where riparian herbaceous and riparian shrub (primarily willow) dominate.

BIRDS

Peregrine Falcon, Bald and Golden Eagle, Goshawk, Osprey, and other raptors: Active nesting areas will not have trails or roads built within ½ mile of the nest site. A ½ mile buffer will be made off-limits to recreation during the breeding season associated with each of the species. Roost sites will also be buffered by ½ mile.

Peregrine Falcon: No human encroachment should occur within ½ mile of nest site from March 15th to July 31st. No surface occupancy beyond that which historically occurred in the area should occur within ¼ mile radius of the nest site. (Surface occupancy means non-human habitation. Examples include oil and gas wells, roads, trails, etc.)

Bald Eagle: No human encroachment should occur within ½ mile of nest site from November 15th to July 31st. All on-the-ground work of any kind (except for emergency situations) within a ¼ mile area of the communal roost perimeter during November 1st through March 15th tie period will be pre-approved by the U.S. Fish and Wildlife Service and conducted between the hours of 10 a.m. and 3 p.m. to minimize any potential inadvertent disturbance to roosting eagles.

Golden Eagle: No surface occupancy beyond that which historically occurred in the area should occur within ¼ mile radius of the nest site. Seasonal restrictions to human encroachment should be established within ½ mile of the nest and alternate nests from February 1 to July 15th.

Osprey: No surface occupancy beyond that which historically occurred in the area should occur within ¼ mile radius of the nest site. Seasonal restrictions to human encroachment should be established within ½ mile of the nest and alternate nests from April 1st to August 31st.

Merriam's Turkey: Areas indicated by Division of Wildlife as being winter range, and winter concentration areas will have limited, if any development of trails or roads. Further, human activity will be restricted from production areas from March 15th to August 15th.

Mexican Spotted Owl. As this is a federally listed species, critical habitat designated by the U.S. Fish and Wildlife Service may not be adversely impacted by human development, as required under the Endangered Species Act.

AMPHIBIANS

Boreal Toad: A 200 meter buffer zone of undisturbed habitat should be left around each wetland or pond that has been found suitable as boreal toad habitat. This buffer zone should not be left as an isolated island, but should be connected to the forest by (at least) fingers of trees. This will provide 80-90% protection for most boreal toads, which use the forested area for winter habitat.

- Work that will cause disturbance to the area should be conducted between October 1 and May 1; this is the inactive time for most herptiles.
- Avoid sedimentation to wetlands at all times. Documented losses of toads have occurred at individual ponds due to heavy sedimentation by roads and trails.
- Protect hydrologic systems around the wetland. More water is not always better in the case of herptiles – more water may lower temperature, which will increase the tadpole stage of a herptile. This will not allow metamorphosis of the tadpole to the juvenile state in time to allow winter survival.

INSECTS

Pawnee Montane Skipper. As this is a federally listed species, suitable habitat for the skipper must not be adversely impacted by human development (taking into consideration mitigation measures), as governed by the Endangered Species Act.

Recreation

Recreation will be managed to protect and enhance the resource values of the South Platte Corridor Management Area (SPCMA) Using Forest Service Recreation Opportunity Spectrum (ROS) definitions for prescriptions 1, *Rural*, and 2, *Roaded Natural*, developed recreation areas will conform to the pastoral nature of the area, and will be oriented at providing a minimally risky and comfortable experience. Camping will be in developed sites and motorized travel will be restricted to designated routes.

Using ROS definitions for prescriptions 3, *Semi-primitive Motorized*, and 4, *Semi-primitive non-motorized*, recreational experiences in dispersed areas will be backcountry experiences aimed at providing a rustic and somewhat adventurous experience. Camping will be prohibited in some locations and dispersed in others. Visitors should feel as if they are in a wild river canyon far from the sights and sounds of urban environment.

Throughout this section, references to roads, routes, or travelways apply to National Forest System routes. The standards do not apply to the existing county roads within the corridor.

Area-Wide Direction

Standards:

Special Use Permits. SUPs will be based on capacity study; no additional SUPs will be issued when capacity levels are met.

Signage. Signs will be posted at all trailheads that inform visitors about the type of travel permitted on the route and any restrictions that apply.

Scenic integrity. Recreation will be managed to maintain the prescribed scenic integrity levels for the area. Recreation development and management will strive to protect the scenic qualities of the area.

Maps. Designated travelways and travel restrictions will be displayed in an easy-to-understand format on the Forest Visitor Map.

Travel. Motorized or mechanized travel is allowed only on designated routes when the routes are signed open to each type of use. Illegally created routes (non-system routes) shall either be closed, obliterated, revegetated, and sloped to drain as soon as possible, or integrated into the official travel system through a public process and after an environmental analysis.

Guidelines:

Restrictions. Manage road or trail use by seasonal closure if:

- Use causes unacceptable damage to soil and water resources due to weather or seasonal conditions.
- Use causes unacceptable wildlife conflict or habitat degradation.
- Use results in unsafe conditions due to weather conditions.
- The road or trail serves a seasonal public or administrative need.
- The area accessed has seasonal need for protection or non-use.

Separation of use. Trails may be dedicated to a single use where clearly necessary to resolve conflicts.

Management Prescription 1, Rural:

(Applies to Segments H1 – North Fork Insmont to Estabrook, H3 – North Fork Cliffdale to confluence, B – South Platte from Lake George to Beaver Creek, and E – South Platte from Wigwam Club to Strontia Springs)

Opportunity to observe and affiliate with other users is important, as is convenience of locations. Self-reliance on outdoor skills is of little importance. Naturally environment is culturally modified yet attractive. Interactions between users may be high as is evidence of other users.

Standards:

Appropriateness of facility development. Design, construct, and manage developed recreation sites according to the adopted ROS class and scenic integrity objective.

Design, construct, and manage developed recreation sites in such a way that they do not impair the resource values of the SPCMA and are consistent with the recreational, ecological, and scenic setting.

Close, rehabilitate, or otherwise mitigate developed recreation sites when one or more of the following exist: considerable environmental damage is occurring including excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Waterway protection. Design, construct, and manage developed recreation sites so that riparian health including channel bed and bank integrity is maintained, and threatened, endangered, and sensitive species habitat is protected. Maintain a 100-foot buffer from waterways when siting any new campgrounds.

Guidelines

Facility development. Design recreational facilities to blend with the elements found in the natural landscape.

Strive to construct facilities that require low maintenance, are cost effective, sustainable, and include universal design concepts.

Close facilities if adequate public safety or sanitation cannot be provided.

Campgrounds. When campground occupancy is less than 20% during normal operating season, conduct an analysis to decide future management of the campground.

Ensure that adequate bathroom and garbage collection facilities exist at all campgrounds.

Vegetation management and landscape management in developed areas. Vegetation should be managed so that natural ecological functions prevail unless such functions present health and safety hazards. Water drainage and disturbed areas should be managed so that excessive erosion does not occur.

Capacity. Recreation will be managed to stay within the capacity allowed for the prescribed ROS objective.

Consistency across boundaries. Work to integrate trail systems with other government entities and partners.

Management Prescription 2, Roaded Natural:

(Applies to Segment A – South Platte from Elevenmile Dam to Lake George)

Opportunity exists to affiliate with other users in developed sites but with some chance of privacy. Self-reliance on outdoor skill is of only moderate importance. Little challenge and risk. Mostly natural appearing environment as viewed from roads and trails. Access and travel is limited to conventional motorized vehicles on designated roads (e.g., cars). Vegetative alterations done to maintain desired visual and recreational characteristics.

Standards:

Appropriateness of facility development. Design, construct, and manage developed recreation sites according to the adopted ROS class and scenic integrity objective.

Design, construct, and manage developed recreation sites in such a way that they do not impair the resource values of the SPCMA and are consistent with the recreational, ecological, and scenic setting.

Close, rehabilitate, or otherwise mitigate developed recreation sites when one or more of the following exist: considerable environmental damage is occurring including excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Waterway protection. Design, construct, and manage developed recreation sites so that riparian health including channel bed and bank integrity is maintained, and threatened, endangered, and sensitive species habitat is protected. Maintain a 100-foot buffer from waterways when siting any new campgrounds.

Quiet. Recreation will be managed to maintain a prescribed level of quiet in the following areas:

- Identified trout fishing areas
- Non-motorized trails
- Identified wildlife areas

NOTE: this issue is flagged for USFS consideration; the working group was unsure of the best way to address this objective. The goal is to avoid user conflicts and conflicts with wildlife resulting from excessive noise.

Guidelines:

Facility development. Design recreational facilities to blend with the elements found in the natural landscape.

Strive to construct facilities that require low maintenance, are cost effective, sustainable, and include universal design concepts.

Close facilities if adequate public safety or sanitation cannot be provided.

Campgrounds. When campground occupancy is less than 20% during normal operating season, conduct an analysis to decide future management of the campground.

Insure that adequate bathroom and garbage collection facilities exist at all campgrounds.

Vegetation management and landscape management in developed areas. Vegetation should be managed so that natural ecological functions prevail unless such functions present health and safety hazards. Water drainage and disturbed areas should be managed so that excessive erosion does not occur.

Capacity. Recreation will be managed to stay within the capacity allowed for the prescribed ROS objective.

Management Prescription 3, Semi-primitive Motorized:

(Applies to Segment C2 – South Platte from ¼ miles upstream of Hackett Gulch to ¼ mile downstream of Corral Creek)

Moderate probability of experiencing solitude, closeness to nature, tranquility. High degree of self-reliance, challenge, and risk in using motorized equipment. Predominantly natural appearing environment. Low concentration of users but often evidence of others on trails. Minimum on site controls on site but subtle. Vegetative alterations may be small in size in number, widely dispersed, and visually subordinate.

Standards:

Waterway protection. Disallow camping within 200 feet of a shoreline or wetlands unless otherwise designated.

Facility Management. Facilities provided at trailheads shall be consistent with the recreation setting and provide for parking, trail information, and appropriate sanitation facilities.

Close, rehabilitate, or otherwise mitigate dispersed sites when on or more of the following exist: considerable environmental damage is occurring including excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Dispersed camping and recreation activities may be restricted or prohibited if considerable environmental damage is occurring including but not limited to excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Capacity. Recreation will be managed to stay within the capacity allowed for the prescribed ROS objective.

Travel. Motorized or mechanized travel is allowed only on designated routes when the routes are signed open to each type of use.

Forest Service non-system routes. Illegally created routes (non-system routes) shall either be closed, obliterated, revegetated, and sloped to drain as soon as possible, or integrated into the official travel system through a public process and after an environmental analysis.

Quiet. Recreation will be managed to maintain a prescribed level of quiet in the following areas:

- Identified trout fishing areas
- Non-motorized trails
- Identified wildlife areas

NOTE: this issue is flagged for USFS consideration; the working group was unsure of the best way to address this objective. The goal is to avoid user conflicts and conflicts with wildlife resulting from excessive noise.

Guidelines:

Developed backcountry recreation. In high use areas, consider designating backcountry sites and restricting camping to those sites.

Diverse opportunities. Provide an array of trail opportunities.

Management Prescription 4, Semi-primitive Non-motorized:

(Applies to Segments H2 – North Fork from Estabrook to Cliffdale, D – South Platte from Cheesman Dam to Wigwam Club, C1 – South Platte from Beaver Creek to ¼ mile upstream of Hackett Gulch, C3 – South Platte from ¼ mile downstream of Corral Creek to Cheesman Reservoir)

High probability of experiencing solitude, closeness to nature, tranquility, self-reliance, challenge and risk. Natural appearing environment. Low interaction between users. Some evidence of other users. Minimal on site controls. Access and travel is non-motorized on trails or is of a cross-country nature. Any vegetative alterations will be very small in size and number, widely dispersed, and visually subordinate.

Standards:

Waterway protection. Disallow camping within 200 feet of a shoreline or wetlands unless otherwise designated.

Facility Management. Facilities provided at trailheads shall be consistent with the recreation setting and provide for parking, trail information, and appropriate sanitation facilities.

Close, rehabilitate, or otherwise mitigate dispersed sites when on or more of the following exist: considerable environmental damage is occurring including excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Dispersed camping and recreation activities may be restricted or prohibited if considerable environmental damage is occurring including but not limited to excessive erosion, soil, or vegetative damage, effects of site occupancy exceeds the adopted scenic integrity objective, or social use conflicts exist.

Capacity. Recreation will be managed to stay within the capacity allowed for the prescribed ROS objective.

Forest Service non-system routes. Illegally created routes (non-system routes) shall either be closed, obliterated, revegetated, and sloped to drain as soon as possible, or integrated into the official travel system through a public process and after an environmental analysis.

Quiet. Recreation will be managed to maintain the natural level and quality of noise 98% of the time in all areas (e.g., ambient natural sounds). NOTE: this issue is flagged for USFS consideration; the working group was unsure of the best way to address this objective. The goal is to avoid user conflicts and conflicts with wildlife resulting from excessive noise.

Guidelines:

Developed backcountry recreation. In high use areas, consider designating backcountry sites and restricting camping to those sites.

Diverse opportunities. Provide an array of trail opportunities.

Consistency across boundaries. Work to integrate trail systems with other government entities and partners.

Scenic

In discussing scenic objectives for different segments, the working group used the Forest Service's Visual Quality Objectives (VQO) system as a set of measurable goals for the management of the Forest's visual resources. The stated goals are: preservation, retention, partial retention, modification, and maximum modification – corresponding to designation as scenic integrity objectives of very high, high, moderate, low, and very low, respectively. Except for preservation/very high, each goal describes a different degree of acceptable human-induced alterations of the natural-appearing landscape based on the importance of aesthetics (as listed in the Arapaho-Roosevelt Revised Forest Plan):

Very high / Preservation: There are no management activities in areas with this VQO; it is applied to classified Wilderness, Wild Rivers and any administratively designated natural area where only ecological change is allowed. Such minor, localized features as trails and campsites are allowed.

High / Retention: Management activities are not evident; they blend well with the natural landscape and are barely discernible. Timber harvest and roading may occur in areas with a VQO of retention, but they must be designed to appear natural and unnoticeable. This VQO is generally applied to areas in the foreground of sensitive viewing areas.

Moderate / Partial Retention: Alteration to the natural landscape may be apparent, but they are visually subordinate to natural features. Management activities such as timber harvest and roading may occur, but must be designed so they blend into the natural landscape.

Low / Modification: Management activities may be visually dominant. They must be harmonious with features of the natural landscape, in their size, form, and linear characteristics. Recreation developments, timber harvest units, and roads are examples of elements that may be found in a landscape that meets this VQO. Alterations to the landscape may not be in glaring contrast to natural forms.

Very low / Maximum Modification: Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

The proposed scenic integrity objectives for each river segment are:

Segment A – South Platte from Elevenmile Dam to Lake George
Moderate

Segment B – South Platte from Lake George to Beaver Creek
Moderate (note: this goal is only for NFS lands, recognizing that private lands may have a greater level of development)

Segment C1 – South Platte from Beaver Creek to ¼ mile upstream of Hackett Gulch
Very High

Segment C2 – South Platte from ¼ miles upstream of Hackett Gulch to ¼ mile downstream of Corral Creek
Moderate

Segment C3 – South Platte from ¼ mile downstream of Corral Creek to Cheesman Reservoir
Very High

Segment D – South Platte from Cheesman Dam to Wigwam Club
High

Segment E – South Platte from Wigwam Club to Strontia Springs
Moderate (note: this goal is only for NFS lands, recognizing that private lands may have a greater level of development)

Segment H1 – North Fork Insmont to Estabrook
Low

Segment H2 – North Fork from Estabrook to Cliffdale
Very High

Segment H3 – North Fork Cliffdale to confluence
Low

Water & Utility Development

Through the SPPP, limitations have been set on water development in the river corridor, with different levels of protection applying to Cheesman and Elevenmile Canyons and to the remainder of the South Platte Corridor Management Area (SPCMA). There is also an existing South Platte right-of-way. The Denver Water Board was issued a permanent right-of-way in 1931 that is administered by the U.S. Forest Service (South Platte ROW). It allows Denver Water, subject to obtaining other necessary approvals, to construct a dam at a specified location below the confluence of the South Platte River and the North Fork for a reservoir of approximately 345,000 acre-feet of capacity. As described in the SPPP, Denver Water will establish a planning process that can result in alternative means of developing the water yield from the South Platte ROW, which would allow Denver Water to relinquish the right-of-way. Denver Water will pursue alternative storage or utilization of the South Platte ROW that would allow it to achieve its yield without the use of the ROW. Denver Water voluntarily agrees to a moratorium on applications for development of the South Platte ROW for a period of twenty years from the date of a Memorandum of Agreement (MOA) for the SPPP to be negotiated between the Forest Service and local government participants.

Standards:

Water Development: Do not approve permit applications for any new water storage or diversion facilities in Cheesman and Elevenmile Canyons.

Do not approve permit applications for new water developments that demonstrate, after mitigation, significant, long-term adverse effects of the resource values identified and protected in the SPPP.

Utilities: Do not plan utility corridors or approve permit applications for gas, electric, or communication utilities in Cheesman and Elevenmile Canyons.

Do not approve permit applications for new gas and electric utility lines that demonstrate, after mitigation, significant, long-term adverse effects on the resource values identified and protected in the SPPP. Where facilities are installed, restrict new facilities to existing corridors.

Guidelines:

Water Development. Any proposal for new water development, other than in the Elevenmile or Cheesman canyon areas, would be subject to the normal permit process. Any proposal for new water development should be considered on its merits, including its impacts on the values protected under the SPPP, unless the proposed development is specifically precluded by the SPPP. Maintenance and repair of existing water structures, stream channel maintenance and bank stabilization, changes in operation of existing structures, and sediment removal, are not considered new water development.

Utilities. Consolidate occupancy of transportation and utility corridors wherever possible and compatible.

Overhead powerlines should be routed in a manner as to minimize visual impacts and conform to designated corridors. Design and construct such powerlines to minimize the risk of raptor electrocution.

To the extent possible, manage activities within linear corridors to be compatible with the goals of the surrounding management area prescriptions.

Vegetation Management

There is little vegetation management taking place in this corridor currently and the working group anticipates that there will be very little vegetation management in the river corridor. Where it takes place, it should be for purposes of ecosystem restoration and not focus on commodity production. Specific guidance for range, timber, and fire is included below.

Standards:

Grazing. No grazing will be permitted in the management area except for the purposes of restoration and noxious weed control.

Timber cutting. The South Platte Corridor Management Area (SPCMA) shall be unsuitable for timber production.

Timber may be cut, sold, or removed from the SPCMA only if the Responsible Official determines that one of the following circumstances exists. The cutting, sale, or removal of timber in these areas is expected to be infrequent.

(1) The cutting, sale, or removal of generally small diameter timber (under 12 inches diameter at breast height) is needed for one of the following purposes and will maintain or improve one or more of the SPCMA's resource values.

(a) To improve threatened, endangered, proposed, or sensitive species habitat; or

(b) To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of catastrophic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period;

(2) The cutting, sale, or removal of timber is incidental to the implementation of a management activity not otherwise prohibited in the SPCMA.

(3) Trees may be cut for safety reasons or to allow the construction of new facilities, such as restrooms, that are necessary to protect the resource values of the SPCMA. The number of trees cut for under this provision is expected to be the minimum necessary to accomplish the purpose of the action.

Prescribed fire. Protection of resource values shall be considered in deciding how, or if, to fight fires in the SPCMA. Generally, firelines shall not be constructed with bulldozers or other heavy equipment unless necessary to save lives or property. Hand-constructed firelines are acceptable where needed.

Noxious weeds. In conducting plantings, use only native species of vegetation. Where noxious weeds are established, work to control or eliminate them and replace them with native species.

Guidelines:

Grazing. The Forest Service will seek cooperative agreements with private landowners along the river corridor to encourage grazing management that will protect the riparian habitat and the identified resource values.

Prescribed fire. Prescribed fires, both planned and unplanned ignitions, are permitted in the SPCMA for the following purposes:

- 1) To reduce unnaturally high accumulations of live and dead fuels caused by fire suppression.
- 2) To help reduce the risk of catastrophic fire, especially in areas where a large and/or very hot fire would likely degrade resource values.
- 3) Where needed to improve habitat for threatened or endangered species.

Fires with natural ignitions are allowed to burn only after a fire prescription is written for the area. This prescription will designate areas, if any, where fires will be allowed to burn after ignition and under what conditions. Areas where fires will be allowed to burn generally will be in more remote areas, to the extent feasible, to minimize conflicts with recreational activities in the SPCMA and with adjacent and included private land.

Travel Management and Watershed

These standards speak to containing the impacts of watershed disturbances on the South Platte. Much of the focus is on travelways, but watershed protection standards are also key in evaluating other disturbances (e.g., logging, development of recreation sites, etc.). Through previous discussions on travel management issues, participants in developing the SPPP reached general agreement that continued use of designated off-highway vehicle trails in Wildcat Canyon and the Corral Creek crossing would be allowed in the future, but that illegal routes should be closed and motorized use along the river corridor not expanded. However, it may be necessary to design mitigation measures to address sedimentation impacts. In the case of the non-motorized Gill Trail, a major mitigation project is already underway.

Throughout this section, references to roads, routes, or travelways apply to National Forest System routes. The standards do not apply to the existing county roads within the corridor.

Goals:

Waterway protection. Construct and maintain NFS roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands.

Standards:

Waterway protection. Allow new activities and uses within 300 feet or the top of the inner gorge (whichever is greater) of perennial and intermittent streams, wetlands and lakes (over one acre) only if onsite analysis shows that, after mitigation, there is no significant long-term adverse effects on hydrologic function, channel stability, riparian condition, and stream health. Existing use and occupancy activities within this zone, found to be causing degradation (as identified in the monitoring/water quality plan), will be scheduled for closure or mitigation.

Travelways and other disturbed sites will be constructed to avoid riparian areas to the maximum extent possible and to minimize and mitigate adverse effects on riparian habitat where it cannot be avoided.

Disturbed site management. Stabilize and maintain roads and other disturbed sites during and after construction to control erosion.

Reclaim roads and other disturbed sites when use ends to prevent resource damage.

Travel. Total mileage of National Forest System roads and motorized trails will not be increased within the South Platte Corridor Management Area. Illegal routes will not be considered in establishing this baseline.

Motorized or mechanized travel is allowed only on designated routes when the routes are signed open to each type of use.

Motorized use on Forest Service travelways will only be allowed when:

- Such use is appropriate for the physical and biological setting;
- Such use is consistent with the ROS setting and forest plan objectives;
- Unsafe conditions do not exist;
- Resource damage (including excessive erosion, vegetative, or soil damage) is not occurring;
- It does not interfere with animal migrations or impair threatened, endangered, or sensitive species.
- Travelways serve an existing or identified future public need; and
- A viable plan is in place for monitoring, maintenance, and enforcement of use.

Illegally created routes (non-system routes) shall either be closed, obliterated, revegetated, and sloped to drain as soon as possible, or integrated into the official travel system through a public process and after an environmental analysis.

System travelways determined to be no longer needed to achieve proposed management activities, or where resource damage cannot be adequately mitigated, shall be obliterated, revegetated, and sloped to drain.

Manage road or trail use by seasonal closure if:

- Use causes unacceptable damage to soil and water resources due to weather or seasonal conditions.
- Use causes unacceptable wildlife conflict or habitat degradation.
- Use results in unsafe conditions due to weather conditions.
- The road or trail serves a seasonal public or administrative need.
- The area accessed has seasonal need for protection or non-use.

Guidelines:

Waterway protection. Where travelway crossings of riparian corridors are needed, they should be constructed so as to bisect perpendicular to the corridor.

Historic, Archaeological, and Paleontological Resources

In looking at historic, archaeological, and paleontological resources in the South Platte Corridor Management Area (SPCMA), it became clear that most sites of interest are located on private lands along the North Fork. Accordingly, the working group suggests that these standards apply for any sites that are found on Forest Service lands but also be used in voluntary partnership efforts with private landowners.

Standards:

Heritage and paleontological values. Conduct all land management activities in such a manner as to comply with all applicable Federal, State, and local regulations. Many heritage and paleontological resource values can be protected effectively through application of the provisions of the following acts and regulations:

- *NEPA*
- *The National Historic Preservation Act of 1966 (NHPA), (P.L. 89-665, as amended, P.L. 91-423, P.L. 94-422, P.L. 94-458 and P.L. 96-515)*

- *Native American Grave Protection and Repatriation Act (NAGPRA)*, (P.L. 101-601, 25 U.S.C. 3001-3013).
- *Antiquities Act of 1906*
- *Archeological Resources Protection Act of 1979 (ARPA)* P.L. 96-95.
- *American Indian Religious Freedom Act of 1978 (AIRFA)* (P.L. 95 - 341)
- *36 CFR 800*
- *Executive Order 11593 (regarding relations with Tribes)*
- *36 CFR 296*
- *36 CFR 261*

Preserve significant historic, archaeological, and paleontological resources for their association with events or persons, their distinctive characteristics, or the scientific data provided. Known historic and archaeological sites within the management area include but are not limited to:

- Homesteads and ranches
- Cemeteries
- Schools
- Churches
- Fire houses
- Post offices
- Mines
- Sawmills
- Stills
- Dams
- Railroad routes
- Resorts and hotels
- Stagecoach and wagon roads
- Native American sites (artifact locations, campsites, trails, etc.)
- Reported Paleontological Resources
- Historic Sites that are listed in either “The National Register of Historic Places” or “The State Register of Historic Properties”

Seek alternatives that would avoid adverse effects, such as: major alterations, physical destruction, or relocation.

Tribal consultation. Consult with American Indian people during design of projects with potential to affect cultural rights and practices to help ensure protection, preservation, and use of areas that are culturally important to them and to ensure treaty rights.

Human remains. Leave human remains undisturbed unless there is an urgent reason for their disinterment. In case of accidental disturbance of historic graves or re-internment, follow appropriate state or tribal policies.

Recordation. When preservation is not feasible, record site data and/or relocate elements from the site in coordination with the local and state historic preservation officials.

Guidelines:

Interpretation. Enhance and interpret significant historic sites for the education and enjoyment of the public when such development will not degrade the heritage property or conflict with other resource considerations.

Provide appropriate interpretation at important archaeological and paleontological sites.

Provide interpretation for resources that cannot be preserved.

Establish an interpretive center devoted to the importance and preservation of the area's archaeology and prehistory.

Preservation. Protect heritage resources from damage or vandalism through project design, specified protection measures, monitoring, and coordination.

Promote land uses that support preservation and maintenance of historic resources.

Encourage development to sensitively integrate historically significant structures or sites into design and development plans for adaptive reuse.

Create a written record discussing alternatives to be considered, and justifying the preferred alternatives, when resources will be adversely affected.

Protect archaeological resources through the preservation of land or, as a final resort, through recovery of archaeological data before development occurs.

Salvage and recordation. Promote research, recordation and recovery of significant historic, archaeological or paleontological resources when preservation on site is not feasible or the value of the resource would be compromised if left to deteriorate.

Support relocation of significant salvageable historic structures after recordation has occurred as an alternative to preservation on site.

Inventory. An updated inventory of the SPCMA's significant historic, archaeological and paleontological resources should be completed, prior to private development or acquisition of Open Space parcels or other public lands. This inventory should then be assessed by state or local historic preservation officials to determine what structures or sites are important to preserve. The inventory should be updated regularly at intervals of no less than 10 years.

The appropriate agencies and organizations that should be contacted to identify historic and archaeological sites are the Jefferson County Historical Society, the Jefferson County Historical Commission, the Colorado Historical Society, U.S. Forest Service, and local and regional museums.

Archaeological and Paleontological Resource Protection. Significant archaeological and paleontological resources should be protected through the preservation of land surrounding the site or the mitigation of adverse effects of destruction through the recovery of resource elements by qualified professionals before land disturbance or development occurs.

A monitoring plan should be developed to track condition of significant sites. Regular maintenance should be provided for buildings to prevent deterioration.

Alternative use. Any proposed alternative uses should not have any unmitigated adverse effects on the resource.

Research. Encourage scientific or historical research and distribution of the resulting reports, monographs, or books to the interested public where such activities appropriately support specific Forest Land Management Planning goals.

Tribal use. Consider American Indian traditional cultural uses when designing projects and management activities.

Oral history. Oral interviews with long-time residents of the South Platte corridor should be conducted to gather information in order to identify and evaluate historic resources. These oral histories should be collected and recorded in coordination with state and county historical societies in order to preserve the historic knowledge of the area for interpretation to future generations.

Glossary for historic, archaeological, and paleontological resources:

Action:

Any activity, program project or undertaking or the approval, sanction, assistance, or support of any activity, policy, program, project, or undertaking, including but not limited to: (a) recommendations or reports relating to legislation, including requests for appropriations; (b) new and continuing activities, programs, projects, or undertakings directly engaged in by agencies or supported in whole or in part through state contracts, grants, subsidies, loans, or other forms of funding assistance, or involving a state lease, permit, license, certificate, or other entitlement of use; (c) the sale or transfer of state properties; (d) comprehensive or area wide planning in which provision may be made for any actions or which may result in a proposed action.

Archaeological Resource:

Material remains of past human life or activities that include, but are not limited to, pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of the foregoing items that are at least 100 years of age. These resources can be included in the National Register.

Historic Resource or Historic Property:

Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource 50 years of age or older.

Paleontological Resource:

Remains of any ancient organism, including fossilized plants, invertebrates (hard or soft bodied animals without a skeletal structures such as insects, crabs, clams, and snails) and vertebrates (including dinosaurs, mammals, sharks and fish, or any animal with a skeletal structure).

Undertaking:

A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction or a federal agency, including those carried out by on behalf of a federal agency; those carried out with federal assistance; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

Monitoring

This monitoring strategy is being developed by the Forest Service to help guide monitoring efforts as they pertain to management of the South Platte Corridor Management Area (SPCMA). It is being developed in cooperation with the partners involved with this project. Partners include signatories to the SPPP, Colorado Division of Wildlife, and Colorado Water Quality Control Division. The objective is to develop a monitoring strategy designed to monitor the resource values identified in the SPPP and the U.S. Forest Service Land and Resource Management Plan (LRMP), as amended, for the Pike and San Isabel National Forests and Comanche and Cimmaron National Grasslands. The monitoring program will be used to establish baseline data and identify over time whether the resource values, including water quality, are experiencing degradation. The resource values are identified in both the Forest Plan and the SPPP. If degradation is found to be occurring the Forest Service will re-evaluate the Forest Plan and determine if changes need to be made and the Friends of the South Platte River will re-evaluate the SPPP to determine if an amendment is needed. In essence, the goal of the monitoring program will be to determine if current management activities meet our objective of protecting resource values identified in the two plans.

In conjunction with the Monitoring Program for the SPCMA, project level and watershed monitoring strategies will be implemented. As an example, the monitoring strategy for the Upper South Platte Watershed Protection and Restoration Project is attached. Watersheds and sub-watersheds with project activities will be monitored for impacts to watershed conditions, riparian area health, and stream hydrology, including water quality and water yield.

Plan Overview

The objective of the monitoring strategy is to protect the resource values by establishing baselines and trigger points. The monitoring results will be used to determine if this overall

project objective has been met. This monitoring strategy is designed to be dynamic and may change as new information becomes available and management activities are identified.

The eligibility determination for the North Fork of the South Platte and the South Platte rivers identified Outstandingly Remarkable Values for each section of the river studied (**See Table A**). The SPPP recognizes these values (referred to as “resource values”) and summarizes how each will be protected. Some values not recognized in the eligibility study are included in the SPPP and will be monitored accordingly. In addition to the resources values, water quality and stream flow will also be monitored.

This strategy utilizes the "above and below" and “before and after” methods of monitoring. Monitoring stations will be established in the upstream portions of the SPCMA as well as in the downstream portions of the SPCMA for some parameters. Other parameters, will be monitored throughout the river corridor at predetermined locations. Baseline data will be the “before” data and data collected after implementation of the SPPP will be the “after” data.

Baseline data will be used to initiate the Monitoring Program. Baseline data has already been established for some of the parameters. An example would be data collected on fish populations by the Colorado Division of Wildlife. For parameters where baseline data has not been established, the Forest Service itself, or the Forest Service in cooperation with its partners, will collect and develop baseline data. Where baseline data has not been established at least one year of data will be collected to establish a baseline. A timeline will be developed for establishing these baselines in a reasonable amount of time. Realistically, this timeline will be determined by available resources and will be modified periodically in response to changes in available resources.

From the baseline data, trigger points will be determined. Trigger points will be determined using the best scientific information available. These trigger points will be an indication that degradation of a value may be occurring. An example would be a decline in fish populations to below sustainable levels. If a trigger point is reached then an assessment will be made to determine the cause for value degradation. Once a cause has been determined, a solution will be developed and implemented. If the cause is the result of a flaw in either the LRMP or the SPPP, the appropriate entities will meet to amend each plan in order to forestall any further degradation of the resource.

Data Management

The Forest Service, PSICC, will provide for data storage. Data collection and analysis will follow established scientific procedures.

The Forest Service will work with the partners to obtain information on existing monitoring efforts taking place within the SPCMA. This information will be utilized as appropriate to aid in establishing baseline measurements and assisting in determining overall effects of proposed activities. For example, the Denver Water water lab will be utilized for water analysis.

Monitoring Program Oversight and Documentation

The monitoring program oversight will be provided through the annual review process by the Forest Service and by the Friends of the South Platte River. Annually, the Forest Service will review the Monitoring Program and report to the Friends of the South Platte. However, information may be shared with the partners any time a request is made.

The monitoring report will contain, at a minimum, an evaluation of the data collected and a description of activities in the SPCMA. The monitoring report will become part of the public record and filed with the Pike and San Isabel National Forest.

Funding

The Forest Service will take the lead in funding monitoring activities and will work with partners to secure additional funding. The Forest Service will work with partners to assign personnel to conduct the monitoring activities, provide quality control and program oversight. Implementation of this strategy will be dependent upon funding. It is anticipated that the project will secure funding to implement the above parameters. Items marked with a double asterisk will be added as additional funding becomes available.

It is believed that many of the items in table A could be monitored with current base funding. As more funding is available the Forest Service will work with its partners to establish additional monitoring parameters as identified in **Table B** with a double asterisk.

Values that were identified by the working group as top monitoring priorities (if the full plan cannot be implemented given funding limitations) included: streamflows (minimum & ramping flow rate compliance); fish populations; effects of dispersed recreation on habitat; water quality; riparian habitat condition; and management indicator species and TES species habitat and population monitoring.

**Table A
SPPP Resource Values**

SEGMENT	Values						
	Cultural Resources, Historic	Fisheries	Geologic	Recreational	Scenic	Wildlife	Vegetation/ Ecological
Segment A Downstream of Elevenmile Dam to Lake George		X	X	X	X		
Segment B Lake George downstream to mouth of Beaver Creek		X					
Segment C Beaver Creek downstream to inlet of Cheesman Reservoir		X	X		X	X	
Segment D Downstream of Cheesman Dam to the Wigwam Club		X		X		X	
Segment E Upstream boundary of Wigwam Club downstream to confluence with the North Fork		X		X		X	
Segment H (North Fork) Insmont downstream to confluence with the mainstem	X			X		X	

**Table B
Monitoring Parameters**

Elements to Be Monitored	Parameters and Metrics Identified to Be Measured	Comments	Who Is Responsible	Frequency	Location
Water Quality	Total Suspended Sediment Nitrogen Phosphorus Total Organic Carbon Stream Flow pH Dissolved Oxygen Temperature Macroinvertebrates Fishery	Goal is to evaluate whether chemical, physical and biological integrity are being maintained or improved throughout the SPCMA.			
Vegetation Structure, Diversity and Composition	Stage II Inventory Cover Frequency Aerial Photo monitoring Fuel Loading Old Growth Noxious Weeds Wetlands	Goal is to measure change in vegetation structure, diversity and composition over time to determine whether ecological disturbances have occurred.			
Erosion and Sediment	Pebble Counts V* Erosion Bridges Silt Fence monitoring Suspended Sediment and Turbidity	Goal is to evaluate the maintenance of soil productivity by measuring erosion and sediment response.			
Water Quantity	Streamflow monitoring	Goal is to determine if any changes in water yield have occurred on a local scale.			
Suspended sediment and Turbidity	Testing in conjunction with water quality sample processing.	To determine sediment rating curve, sediment flux and TMDL data (TMDL to be set in 11-Mile Canyon by 2002).			
Channel Geomorphology	Cross Sections Width/depth ratios Channel/water slope	Goal is to determine if channel aggradation or degradation is occurring. Characterize natural and cycle of sediment transport, assess habitat quality, determine baseline for assessing long-term channel response to land-use change.			
Peak Flow**	Install crest-stage stream gages**	To determine peak flow water discharge.			
Precipitation**	Install rain gages**	To determine rainfall duration, intensity and amount and correlate to erosion data.			

**Table B
Monitoring Parameters**

Elements to Be Monitored	Parameters and Metrics Identified to Be Measured	Comments	Who Is Responsible	Frequency	Location
<p>RECREATION: Notes – The goal here is to determine how recreational use is affecting the resource. The parameters measured are to determine how much use is occurring, what kind of use, and how it might change over time. Recreational managers are interested in how changes in management practices might affect use, demographics, etc. As with any other portion of this Monitoring Plan, available resources will have an affect on what can and cannot be accomplished.</p>					
Developed sites	<ul style="list-style-type: none"> - Actual Use - Demand - Persons At One Time (PAOT) Capacity and number of sites - PAOT Managed at Full or Reduced Service Levels 	Goal is to determine carrying capacity, whether carrying capacity is being reached, and whether demand exceeds carrying capacity.	USFS	Annual	
Dispersed	<ul style="list-style-type: none"> - Actual Use - Miles of Trail Construction or Reconstruction 	Goal is to determine carrying capacity, whether carrying capacity is being reached, and whether demand exceeds carrying capacity.	USFS	Annual	
Dispersed Recreation Use	<ul style="list-style-type: none"> - Effects of Activities on people, other resources and facilities, including roads and trails. - Effects of other resource activities, recreation use and facilities. 	Goal is to determine what effect dispersed recreation is having on the resource. This will be tied into Water Quality and the Fish and Wildlife and Vegetation/Ecological values.	USFS	Annual	
<p>CULTURAL RESOURCES – Notes: Most of the cultural resources are not on public lands. The FS can continue to survey under the current plan on FS lands but this section will require cooperative agreements with current landowners and if area is going to be monitored by the FS. Otherwise the SPPP will have to include provision for monitoring these resources.</p>					
Acres surveyed/ Sites Evaluated		Goal is that the SPCMA has been surveyed in its entirety and all eligible sites evaluated and identified.		Annual	
Sites Protected/interpreted		Goal is to protect eligible sites and provide interpretation, where needed, either for mitigation or information purposes.		Annual	
FISH AND WILDLIFE					
Wildlife Habitat Diversity		<i>Need to address interspersion of habitat types, size of parcels of each type, landscape diversity - DOW</i>			
Acres of Habitat Modified					

**Table B
Monitoring Parameters**

Elements to Be Monitored	Parameters and Metrics Identified to Be Measured	Comments	Who Is Responsible	Frequency	Location
Acres of Habitat Improved					
Maintain Riparian Habitat		<i>Need to address cover, understory composition, shrub species composition, etc. - DOW</i>			
Pawnee Montane skipper Population trends				10 years	
Trend of Management Indicator Species-Habitats and Populations		Goal is to maintain or enhance MIS habitats and populations. (Note: The FS is currently reviewing the MIS list and updating NEPA documents to reflect population trends (Process to be completed by March 31, 2001) and changes in habitats since the Forst Plan was released in 1984 (Time frame?). MIS list to be revised (Timeframe?)	USFS	5-10 years	

SCENIC - Notes: If there are changes over time, what can be done about them?

Existing Visual Condition	Photo points	Goal is to maintain or enhance the scenic quality of the SPCMA.			

GEOLOGIC

Grazing allotment – 211 along Wigwam Creek to Lost Creek wilderness - ? Acres. Lease for 10 years. Assessment being done in 2002 (may be changed to 2003) on effects of grazing on resources such as water quality, vegetation, fisheries, etc. Amount of forage looked at. Cows allowed a certain amount of forage—rest needed for native critters. Stock is rotated. Lessee responsible for improvements (stock tanks, etc.). Current lessee stays away from creek because then cows get too close to 126.

**Table C
Monitoring Strategy**

**Parameter Description for Water Quality, Vegetation Structure,
Erosion and Sediment, and Channel Gemorphology**

Element	Parameter and Metrics	Purpose for Monitoring
Water Quality	Total Suspended Sediment	Help identify sediment load and erosion. State water quality parameter, public water supply.
	Nitrogen	State chemical water quality parameter, public water supply.
	Phosphorus	State chemical water quality parameter, public water supply.
	Total Organic Carbon	Public water supply.
	Stream flow	Determine volume of water. Parameter is key to performing other analysis, aquatic environment.
	pH	State water quality parameter, public water supply, indicator of aquatic health.
	Dissolved Oxygen	State water quality parameter, public water supply, indicator of aquatic health.
	Temperature	State water quality parameter, indicator of aquatic health and needed to perform other analysis.
	Macroinvertebrates	Indicator species of aquatic health.
	Fishery	Indicator of aquatic health, State designated beneficial use.
Vegetation Structure, Diversity and Composition	Stage II Inventory	Inventory of vegetation which is done at periodic times, measures change in structure, diversity and composition.
	Cover Frequency	Measures change in vegetation cover and size of openings.
	Aerial Photo Monitoring	Monitoring tool used to evaluate change on the landscape over a period of time.
	Fuel Loading	Indicator of fire risk and hazard.
	Old Growth	Indicator of diversity and TES habitat.
	Noxious Weeds	Indicator of invasive plants and State regulations.
	Wetlands	Indication of diversity, structure and composition. Areas have special functions, regulations and controls.

**Table C
Monitoring Strategy**

Element	Parameter and Metrics	Purpose for Monitoring
Erosion and Sediment	Pebble Counts	Provides size distribution of streambed material. Indicator of changes over time.
	V*	Models depositional patterns in streams. State evaluation tool.
	Erosion Bridges	Measures amount of erosion from a given hill slope.
	Silt Fence monitoring	Used to track erosion from an area upslope from a surveyed silt fence. Elevation changes over time will be used to determine volume of material eroded from the site.
	Suspended Sediment and Turbidity	Taken in conjunction with water quality monitoring, provides a measure of fine sediment in the stream.
Channel Geomorphology	Cross Section Width/Depth Ratios Channel/Water Slope	Used to track changes, aggradation or degradation, in channel geometry over time.