

## UPPER EAST FORK WATERSHED

The Upper East Fork watershed, located in the southeastern most portion of the Upper Sevier River watershed, is part of the Paunsaugunt Plateau. Six subwatersheds, encompassing 187,493 acres represent a variety of land ownership and uses (Fig. 4-33), as well as vegetation types.

Points of interest within the watershed include Bryce Canyon National Park and Tropic Reservoir. Highway 12, recently named an All-American Road, traverses east-west across the watershed, and the campgrounds and scenic vistas along the route are popular stops for tourists from all over the world.

### Land Ownership

Land ownership within the Upper East Fork is diverse, with State (15,991 acres), U.S. Forest Service (149,294 acres), Bureau of Land Management (232 acres), National Park Service (9,637 acres) and private lands (12,343 acres) (Table 4-19, Fig. 4-33).

While U.S. Forest Service lands dominate in the upper portion of the watershed, private agriculture lands and state lands are found in the lower sections, near transportation corridors. Most of the water from the East Fork is diverted and used for irrigation for land near Tropic, Utah, located outside the Upper Sevier River watershed boundaries. Both sheep and cattle are grazed on portions of public land within this area.

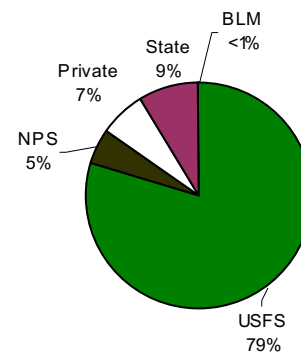


Fig. 4-32. The six subwatersheds within the Upper East Fork watershed are composed of state, federal, park service and private lands.

Upper East Fork Subwatersheds	Acres
Cameron Wash-East Fork Sevier River	23700
East Fork Sevier River Headwaters	30581
Hunt Creek	33989
Mud Spring Creek-East Fork Sevier River	45114
Showalter Creek East Fork Sevier River	31106
Tropic Reservoir	23230
<b>Total</b>	<b>187720</b>

Table 4-19. The 6 subwatersheds in the Upper East Fork Watershed make up 187720 acres.

Vegetation Type	Acres	%
Aspen	2787	1%
Grass/Forb	17590	9%
Mixed Conifer	29433	16%
Pinyon/Juniper	18361	10%
Ponderosa Pine	30346	16%
Sagebrush/Grass	56667	30%
Spruce/Fir	2940	2%
Other	29597	16%
<b>Total</b>	<b>187720</b>	<b>100%</b>

Table 4-20. Ponderosa pine and sagebrush are the dominant vegetation types in the Upper East Fork watershed.

### Vegetation Types

Ponderosa pine forests, nestled among Claron (geologic feature) formation pinnacles and amphitheaters, provide uniqueness to the area (Table 4-20). Because of the high rate of erosion from soft sedimentary rocks, continual freeze-thaw cycles and summer thunderstorms within this higher elevation watershed, established vegetation plays an important role in soil stabilization. However, the unstable substrate and high evaporation rates result in fairly shallow vegetation root bases.

Aspen, mixed conifer, spruce-fir and sagebrush are also found throughout the watershed with sagebrush being the dominant vegetation type (Fig 4-34).

## **Elevation, Roads & Streams**

The first road within the watershed was built by Ebenezer Bryce in the late 1800's to retrieve firewood and timber from the high plateaus of Bryce Canyon. Today this same route is part of Highway 63 to Bryce Canyon National Park, bringing over 1.5 million visitors annually to the park (Fig. 4-35).

ATV enthusiasts as well as bicyclists, hikers and horseback riders also use this route to access portions of the Great Western ATV trail - a 1,737 mile-long byway crossing five states through federal, state and private land. The naming of Highway 12 as an All-American Road will likely influence the number of future visitors throughout this area.

Other improved roads in the area include the Tom Best Springs Road, which intersects Highway 12 and journeys northeast to the historic Widstoe settlement and connects with Highway 63.

*Numerous ATV, bicycle, hiking and horesback trails, like the Straight Canyon Trail, are located within the scenic Upper East Fork watershed.*



*The highly erosive Claron formation soils and weather have carved the unique canyons and amphitheaters that make up Bryce Canyon National Park and much of the surrounding area. Arches, carved by water run-off, are abundant in the Upper East Fork Sevier River watershed.*

Recreation use within the Upper East Fork continues to increase, via an improved road which runs south and parallel to the East Fork Sevier River.

Located on the northernmost point of the watershed, Adams Head Peak (elev. 10,426) is one of the survey points used by Major John Wesley Powell's expedition in the 1800's. Agriculture and tourism remain the primary economic industries along John's Valley and the lower portions (elev ~7,500) of the Upper East Fork Watershed (Fig. 4-35).

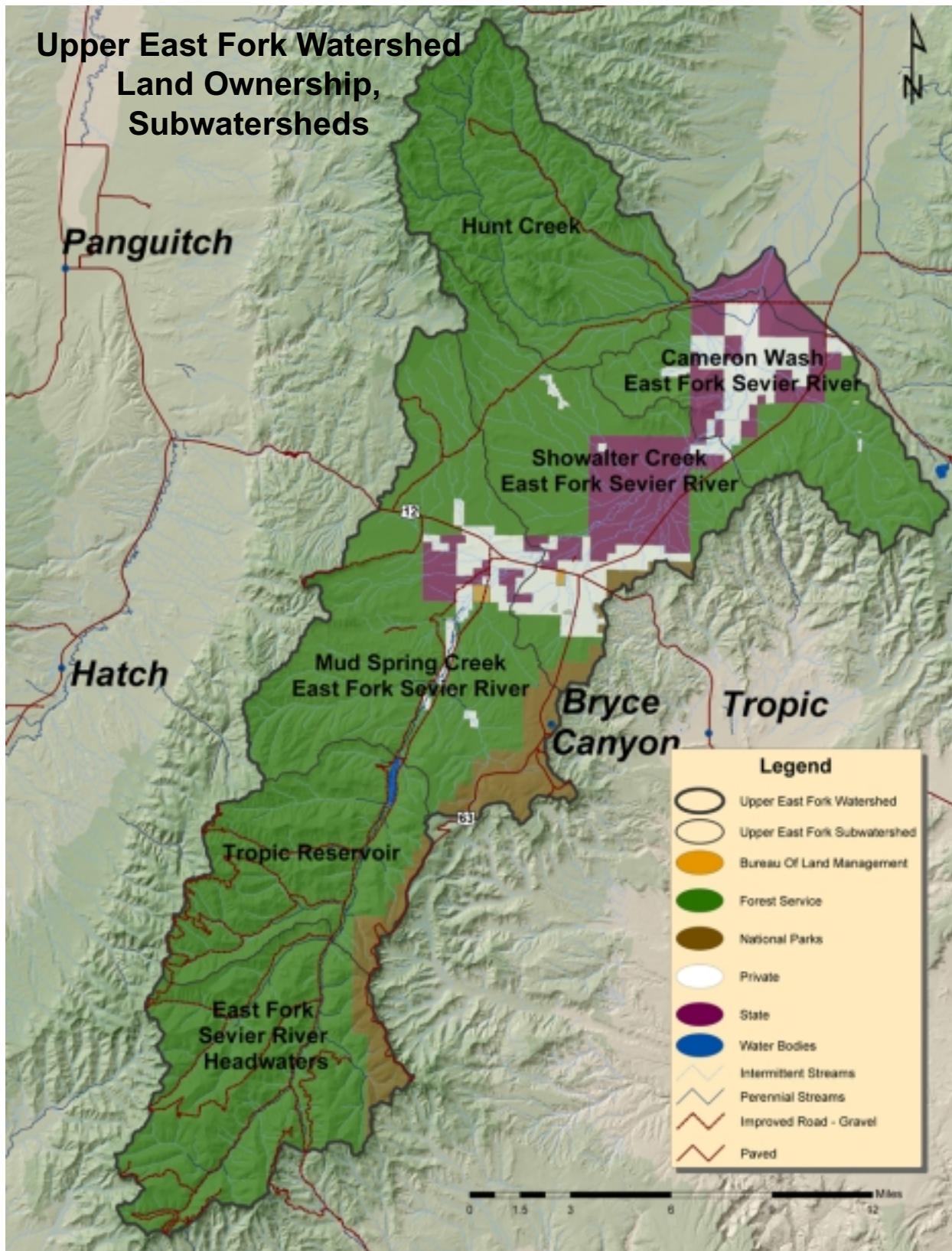


Fig. 4-33. The six subwatersheds that make up the Upper East Fork watershed are dominated by forested lands. The lush ponderosa pine forests and proximity to Bryce Canyon National Park make this a popular destination spot for outdoor enthusiasts.

## Upper East Fork Watershed Vegetation Types

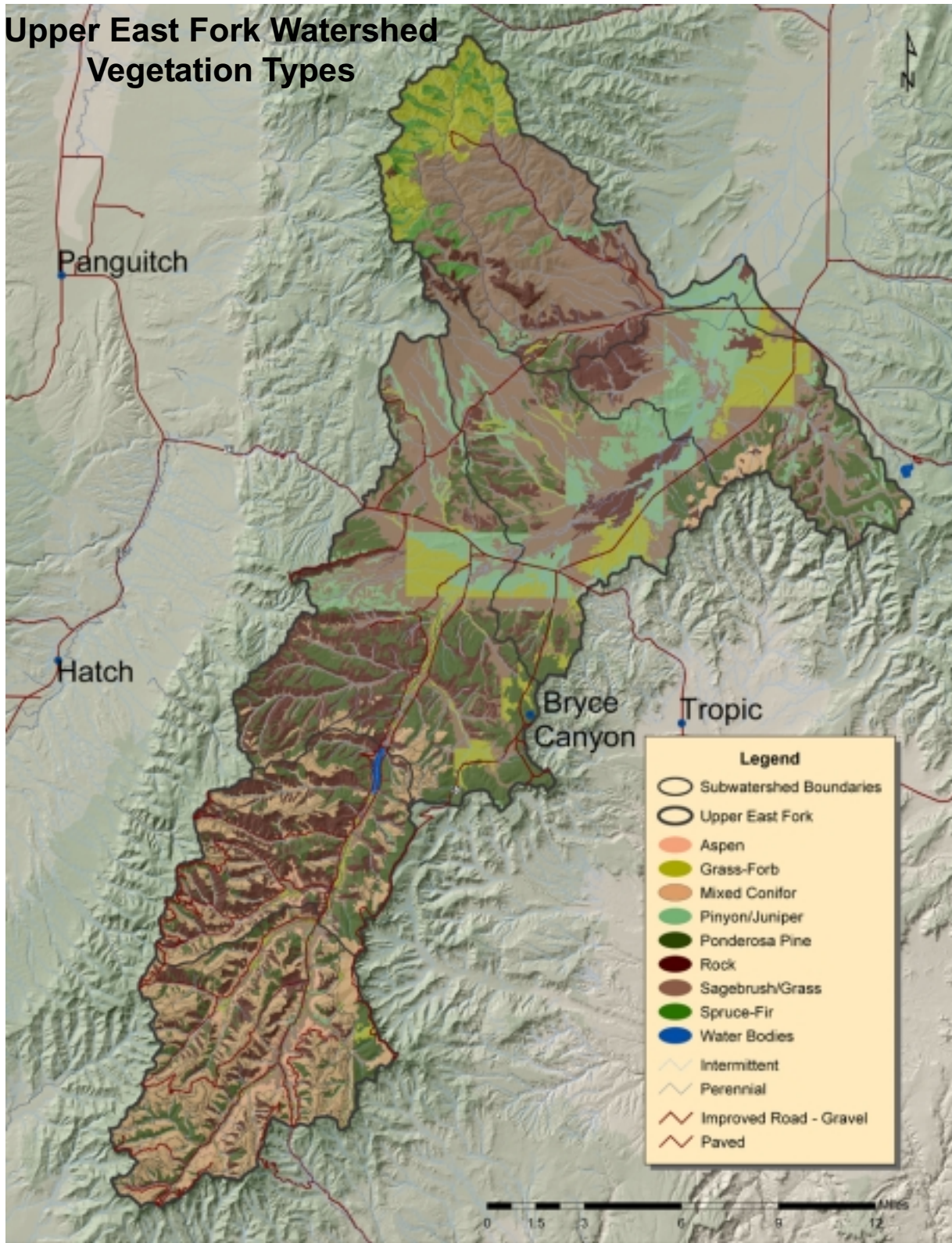


Fig. 4-34. The Upper East Fork watershed supports the largest population of ponderosa pine within the Upper Sevier River watershed. The distinctive soils and vegetation in this area are homes to such unique organisms as boreal toad, beaver, flammulated owl, northern goshawk, Utah prairie dog, as well as mule deer, Rocky Mountain elk and antelope.

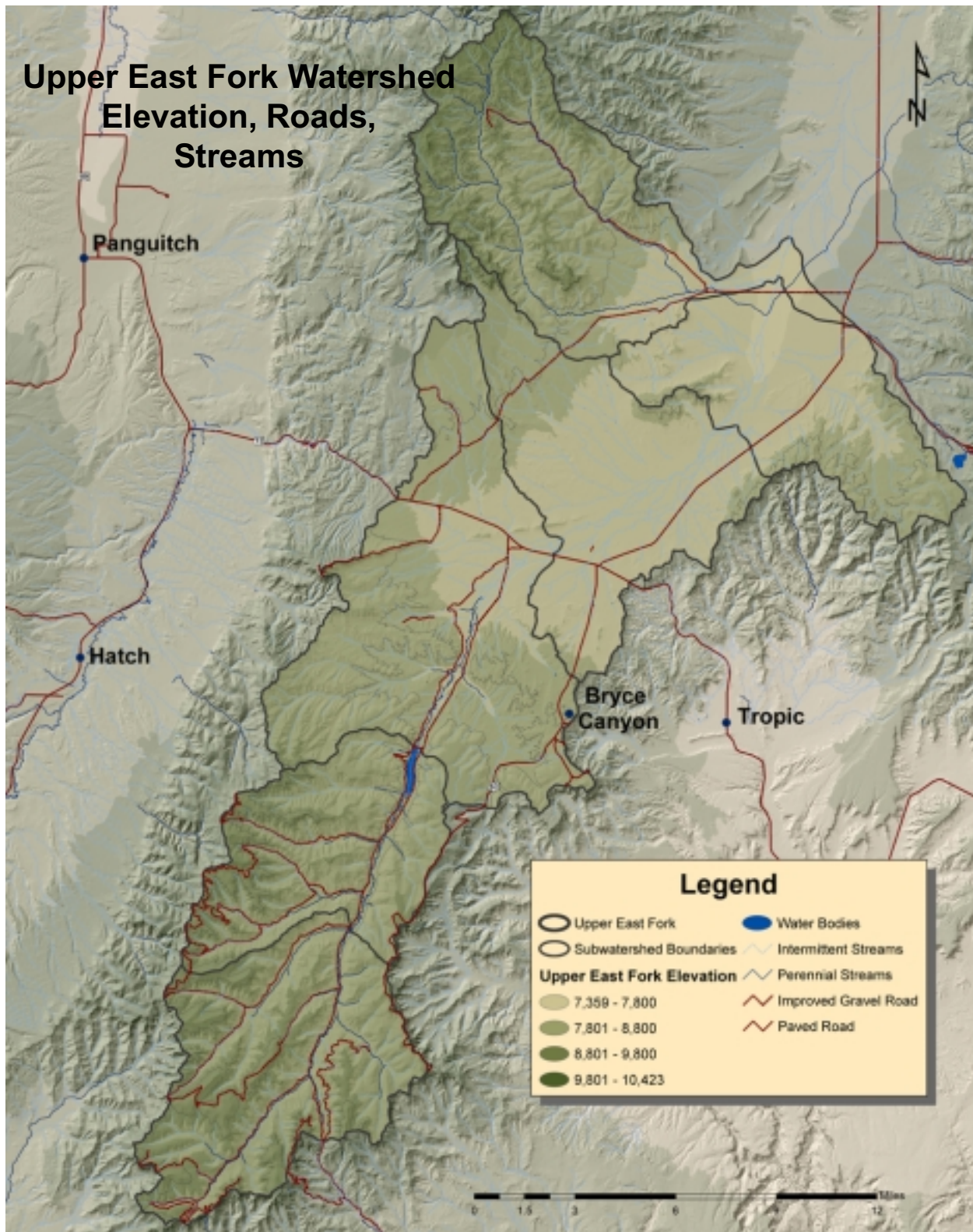


Figure 4-35. Two major highways support over 1.5 million tourists annually that visit Bryce Canyon National Park, or travel enroute to other area National Parks.

## Key Issues

Key issues identified for the Upper East Fork Watershed are: 1) Accelerated Erosion; 2) Access Management; 3) Communities at Risk to Wildfire; 4) Decrease in Historic Aspen Stands - Fuel Conditions; 5) Development and its Effects to Ground Water; 6) Enhancement or Protection of Riparian Habitat; 7) Wildlife Management in Agricultural Areas/ Enhancement or Protection of Utah Prairie Dog Habitat; 8) Shade Tolerant Vegetation - Fuel Conditions; 9) Noxious Weeds; 10) Sagebrush/Grassland Areas - Vegetation Composition. (Fig. 4-36). (Other issues and ratings within the Upper East Fork Watershed are listed in Table 4-21).

### 1. Accelerated Erosion

#### ***Current Conditions, Patterns and Trends***

Very little bank stability exists in the East Fork Sevier River, Tropic Reservoir, Hunt Creek and Cameron Wash subwatersheds and is contributing to unnatural flow regimes. Many streams have been dewatered, and/or diverted, and lack native riparian vegetation such as willow and cottonwood.

#### ***Reference Conditions, Patterns and Trends***

Expansive and diverse riparian grasses, along with willow and cottonwood complexes, were present prior to changes in water management in the 1880's. Large populations of beaver in the headwaters also helped maintain natural stream flows and helped reduce sediment transport. Very few roads and trails or dispersed camping existed along riparian areas, with little or no stream bank utilization and thus little or no streambank erosion.

#### ***Natural/ Human Causes of Change Between Current/Reference Conditions***

Development of irrigation systems has greatly impacted riparian areas by dewatering and altering stream flows. Currently, dispersed camping and road building in some areas have increased sediment flow, compacted soils, removed vegetation, and altered natural flow regimes. Changes in upland vegetation composition have also increased sediment transport into the watershed, further altering streambank stability. Accessibility of riparian areas to livestock has compacted soils and removed critical streamside vegetation.

### 2. Access Management

#### ***Current Conditions, Patterns and Trends***

High road densities along stream channels, with an increase in ATV use and dispersed camping, occur throughout much of the watershed. Increased

*Accelerated erosion occurs throughout much of the watershed, increasing downstream sediment transport.*



sediment transport, degraded stream conditions, lack of riparian vegetation, and damage to adjacent upland areas through access management are of special concern, with an increasing amount of illegal ATV use noted.

### **Reference Conditions, Patterns and Trends**



*Highly erosive soils, coupled with high road densities, are responsible for much of the erosion in riparian and upland areas.*

Historically, available roads were used for harvesting timber, with less camping and recreating occurring in riparian areas. Few resource and user conflicts occurred from these types of activities, with little or no damage to riparian and upland vegetation. Roads and trails were adequate for needed uses.

### **Natural/Human Causes of Change Between Current/Reference Conditions**

Increased recreational use of roads and riparian areas, with more off-road vehicle access, has decreased vegetation density and diversity, accelerated upland erosion, and reduced condition of riparian vegeta-

tion and aquatic habitat. Poorly designed, engineered and maintained trails (although adequate for historic uses) today introduce high amounts of sediment into aquatic ecosystems, further degrading nongame and recreational fishery opportunities.

## **3. Communities at Risk to Wildfire**

### **Current Conditions, Patterns and Trends**

Communities along the Highway 12 corridor, especially near Ruby's Inn and Bryce Canyon, are at increased risk to wildfire. Fire regimes of frequent, small intensity fires have been altered from historic conditions and the risk of losing key ecosystem components as well as community structures remains high. Ponderosa pine forests have changed from open, park-like areas with scattered, large trees to thick stands with dense thickets of small diameter trees, which are at risk of burning due to high amounts of fuel accumulations. Understory forbs and grasses are dominated by pinyon-juniper and decadent sagebrush and shrubs.

### **Reference Conditions, Patterns and Trends**

Frequent small intensity fires in ponderosa pine ecotypes, helped reduced fuel accumulations, while maintaining structural diversity and minimizing tree density. In the absence

of ground litter, and more open canopy, grasses and forbs were also maintained, serving as importing soil stabilizers. Communities of black silver, mountain big sagebrush and big sagebrush occurred in pure or mixed stands, with fire as the major disturbance factor. Mosaics of sagebrush vegetation types supported populations of big game and upland game birds.

**Natural /Human Causes of Change Between Current /Reference Conditions**  
Lack of fire, climatic changes and urbanization have all contributed to vegetation changes along the Highway 12 corridor. However, the increase in urban development in this area, and past fire exclusion efforts may increase high intensity wildfire potential in and around established areas.

#### 4. Fuel Conditions - Decrease in Historical Aspen Stands

##### **Current Conditions, Patterns and Trends**

Many aspen stands within the drainage are old, (ranging in age from 60 to 100 years), and lack structural diversity. In pure mature aspen stands, the absence of some type of disturbance has resulted in old clones dying with no possible regeneration. Aspen are important components of a healthy ecosystem, providing cover and forage for a variety of wildlife and livestock, maintaining watershed conditions, enhancing soil productivity and providing aesthetically pleasing landscapes. Extensive aspen forests occur in the Tropic Reservoir and East Fork Sevier River subwatersheds.

##### **Reference Conditions, Patterns and Trends**

Productive and extensive aspen forests occurred throughout much of the Upper Sevier River Watershed, and are known as some of the most impressive aspen forests in the western United States. Historically fire return intervals (generally 20 to 100 years) helped maintain aspen dominance by minimizing conifer encroachment and influencing stand diversity and composition (USFS, 1998).

##### **Natural /Human Causes of Change Between Current /Reference Conditions**

Exclusion of fire, coupled with ungulate grazing, have contributed to a decline in the extent of aspen stands. Wildlife grazing has reduced accumulations of fine fuels (shrubs and herbaceous layers), resulting in fewer fire starts and smaller fires, and has also contributed

*Extensive aspen forests once occurred throughout much of the Upper Sevier River watershed. Conifer encroachment threatens to replace many historic stands within the Upper East Fork.*



to the reduction and elimination of young aspen regrowth. Stand replacing treatments have traditionally been too small in size and limited in distribution to effectively perpetuate quaking aspen and control densities of white, subalpine and Douglas-fir at the landscape and larger scales.

## 5. Development and Effects to Ground Water

### ***Current Conditions, Patterns and Trends***

Current waste disposal systems and long-term sewage management are limited as more high-occupancy commercial developments and private property summer homes expand along the Highway 12 corridor, just outside of Bryce Canyon National Park. Improper waste disposal, both within developed and dispersed camping areas,



*Numerous developments and tourist attractions have sprouted up around the entrance to Bryce Canyon National Park.*

continues to rise.

### ***Reference Conditions, Patterns and Trends***

When Bryce Canyon was designated as a National Park in 1928, few facilities existed, except for the park lodge. Traffic into and out of the park was shuttled from Cedar City



*Although Bryce Canyon National Park still looks much the same as it did over 50 years ago, the area surrounding the park has changed, as more and more developments cater to the increasing number of tourists utilizing the area. (Photo courtesy: R.D. Adams Collection, Ph.11 Special Collections Gerald R. Sherratt Library Southern Utah University Cedar City, Utah.)*

over an improved road. The rugged, but highly erosive country remained fairly untouched until tourism and recreation in National Parks became a national past time.

***Natural/ Human Causes of Change Between Current/Reference Conditions***

Human uses and developments continue to expand within the Upper East Fork Watershed. Existing hotels are growing, and new hotels are being built on private property near the park entrance, other developments include a newly developed shuttle system, privately owned campgrounds, more shopping and guided tours, and a new western town tourist attraction. Property purchases for commercial and personnel development continue to increase. The public's interest in national parks and associated attractions, continues to grow, with annual tourist projections at 1.5 million per year for Bryce Canyon. Expanded bicycle and ATV trails within the area attract tourists from all over the world, necessitating a greater need for properly managed waste disposal systems.

**6. Enhancement and Protection of Riparian Habitat & Riparian Vegetation Composition**

***Current Conditions, Patterns and Trends***

In the Upper East Fork Watershed, riparian shrubs and trees, such as willow and cottonwood, are lacking or consist of very old, decaying plants, with little or no regeneration or plant diversity. Wildlife, especially birds associated with riparian areas, are currently declining. In the Hunt Creek area, decadent cottonwood and willow galleries and/or young age classes occur, with little or no riparian grasses. Cameron Wash, Showalter Creek, Mud Springs Creek Subwatersheds have little or no cottonwood, willow or riparian grasses, and where present, lack diversity and vigor. Riparian areas in the Tropic



*In riparian areas along the Upper East Fork that still have vegetation, grasses dominate, with few native woody plant species present.*

Reservoir and East Fork Sevier Subwatersheds are dominated by mid-seral grass species, such as Kentucky bluegrass, creating very little bank stability and contributing to unnatural flow regimes. Many critical streams have been dewatered, and/or diverted. Amphibian and fishery populations, reliant on quality riparian habitat, have declined or been eliminated from the watershed. Of special concern are isolated populations of Arizona Willow (*Salix arizonica*), a regional sensitive plant species, and declining amphibian species, such as

Boreal Toad (*Bufo boreas boreas*), located in the Upper East Fork Sevier River headwaters.

**Reference Conditions, Patterns and Trends**

Multi-age class cottonwood galleries and dense, diverse age-class willow complexes were present throughout the watershed prior to changes in water management in the 1880's. Expansive and diverse riparian grasses, along with willow and cottonwood, helped reduce sediment influx, maintained coarser stream substrate, contributed to cooler stream temperatures, and supported natural flow regimes. Large populations of beaver in the headwaters also helped maintain natural stream flows. Numerous bird and amphibian species frequented or depended on large expanses of riparian habitat.

**Natural/Human Causes of Change Between Current/Reference Conditions**

Irrigation systems within the watershed have greatly impacted riparian areas. Grazing practices and previous attempts at dryland farming have resulted in a vegetation change to rabbitbrush as the dominant plant species. Currently dispersed camping and road building in riparian areas have increased sediment flow, compacted soils, removed vegetation, and altered natural flow regimes. Elimination of beaver in historic areas has also reduced and altered stream flows, negatively affecting streamside vegetation survivability. Removal of willow to increase stream flow by decreasing plant water use (a common, but erroneous practice in the mid-50's), left many areas devoid of riparian vegetation, and at risk to

invasion by non-native plant species.



*Relocating prairie dogs onto public lands and restoring desired habitat within the Upper East Fork watershed is a high priority for wildlife management personnel.*

**7. Wildlife Management in Agricultural Areas & Enhancement or Protection of Utah Prairie Dog Habitat**

**Current Conditions, Patterns and Trends**

Utah prairie dog was listed as endangered under the Endangered Species Act of 1973 as amended, due to a decline in colony size and numbers. The status was changed to “threatened” in 1984, where it currently remains. Many of the remaining endemic populations of

Utah prairie dog are found on private lands within southwest Utah, although some re-established populations are located on state and federal lands within the Upper East Fork Watershed. Maintaining some populations on private lands is deemed necessary until long-term relocation efforts onto public lands are more successful. Prairie dogs are considered an agricultural pest and are unwanted inhabitants of cultivated lands. Permits are currently issued by the Utah Division of Wildlife Resources to reduce populations on private lands, but population expansion to these areas continues to create numerous conflicts. Potential prairie dog habitat occurs throughout most of the watershed.

**Reference Conditions, Patterns and Trends**

Prior to 1920, Utah prairie dogs dominated areas within Pine and Buckskin Valleys in Beaver and Iron counties, as far North as Nephi, south to Bryce Canyon National Park and east to the foothills of the Aquarius Plateau. The main concentrations of colonies now occur only in east Iron County and along portions of the East Fork and the main stem of the Sevier River. The presence of well-drained, deep soils in the Upper East Fork Valley, with abundant grass/forb complexes, provided ideal prairie dog habitat. These highly valued land areas also provide ideal growing conditions for agricultural crops.

**Natural/Human Causes of Change between Current/Reference Conditions**

Past poisoning campaigns, decreases in grass/forb type plant communities, pinyon-juniper expansion, and the introduction of a deadly plague have reduced prairie dog numbers and colony size. Agricultural expansion on private lands, coupled with decreased forage availability on public lands, may encourage prairie dogs to utilize the most readily-available habitat, sometimes on or near cultivated lands. Exclusion of fire has resulted in pinyon-juniper encroachment into sage/grass areas, while historic grazing practices have contributed to a

loss in species diversity and accelerated erosion within prairie dog habitat.

Reseeding with non-native plant species, such as smooth brome has reduced vegetation diversity and forage plant species

diversity within historic prairie dog ranges.

*Sagebrush and grasslands are decreasing because of pinyon-juniper expansion. In the Upper East Fork area, critical wet meadow areas are re-establishing with pinyon-juniper, increasing soil erosion, and decreasing riparian vegetation diversity.*



**8. Fuel Conditions - Shade Tolerant Vegetation**

**Current Conditions, Patterns and Trends**

Vegetational structural changes have occurred throughout much of the watershed, with an advance to more late successional, shade tolerant plant species. Mixed conifer and

spruce-fir components are more evident within the landscape and are migrating into grasslands, sagebrush and riparian areas. Stands of early seral species, such as aspen, are old, ranging in age from 60 to 100 years, and lack structural diversity, with little or no understory vegetation. Increased tree density within the mixed-conifer and spruce-fir types has resulted in an increase in insect and disease activity.

### ***Reference Conditions, Patterns and Trends***

Historically fire return intervals (generally 20 to 100 years) helped maintain aspen dominance by minimizing conifer encroachment and influencing stand diversity and composition (USFS, 1998). Typical stand structures consisted of multi-layered canopies with a range of tree sizes and types, providing excellent habitat for northern goshawk, flammulated owl, wild turkey, large ungulates and several species of neotropical migratory birds.

### ***Natural/Human Causes of Change Between Current/Reference Conditions***

Exclusion of fire and ungulate grazing have contributed to a decline in the extent of aspen stands and a subsequent increase in more shade tolerant plant species. Wildlife



*Canada thistle, one of the many noxious weeds found throughout the Upper East Fork watershed, is often difficult to control once established.*

grazing has reduced accumulations of fine fuels (shrubs and herbaceous layers), resulting in fewer fire starts and smaller fires, and has also contributed to the reduction and elimination of young aspen. Stand replacing treatments have traditionally been too small in size and limited in distribution to effectively perpetuate quaking aspen and

control densities of white, subalpine and Douglas fir at the landscape and larger scales.

## **9. Noxious Weeds**

### ***Current Conditions, Patterns and Trends***

Noxious weeds are being introduced to the watershed at an alarming rate. Noxious weeds are introduced and spread by a variety of means, including in livestock hay and feed, on ATVs and other vehicles, and possibly via animals (both wild and domestic). Numerous small patches of noxious weeds are currently found along primary routes within the watershed, especially in and around Bryce Canyon National Park. Others have been introduced illegally and/or legally. Much of the general public remains unaware of their role in noxious weed dispersal and local laws are lenient in dealing with weed dispersal problems. An increase in noxious weeds may decrease rangeland values, destroy desired recreation areas and adversely impact riparian areas and other plant and animal communities. Numerous chemical control agents are available, but increased regulations limit their use, and are oftentimes ineffective for large, established populations of noxious weeds.

Although many biological controls are readily available, they too have limited use, especially when weeds have spread over a large area.

***Reference Conditions, Patterns and Trends***

Many noxious weeds were first introduced into the United States by Euro-American settlers, either intentionally (as ornamentals), or accidentally. Native plants have evolved in the absence of noxious weeds, in close relationships with other local plant and animal communities. Historically, noxious weed spread was slow or non-existent because of limited seed dispersal and the ability of native plants to outcompete exotic species.

***Natural/Human Causes of Change between Current/Reference Conditions***

Changes in land use in the past century have created open niches in which noxious weeds easily establish, while increased roads and trails further compound the problem. Today, noxious weeds outcompete native plants, and once established spread rapidly. Increased ATV and off-road use and stricter environmental chemical use regulations also contribute to this growing problem. Early detection of noxious weed outbreaks and education remain the most effective methods to prevent noxious weed establishment, and although education materials are available, much of the public remains unaware of this potential problem.

## **10. Vegetation Composition - Sagebrush/Grasslands**

***Current Conditions, Patterns and Trends***

Excessive crown canopies with even age classes of decadent sagebrush have resulted in a major loss of understory species and an increase in bare ground area, especially in the Mud Springs, Showalter and Cameron Wash Subwatersheds. Black sage, important winter wildlife forage, currently dominates many sites where effective soil moisture is limited. Native grasses have been replaced with high densities of exotic species such as smooth brome and crested wheatgrass. Forbs are lacking throughout the watershed, with viable seed sources no longer available. Lack of vegetative cover and overland flow from rain is causing surface soil erosion and deposition into riparian areas. In some areas, where wildfires have occurred, sagebrush areas have regrown to rabbitbrush.

***Reference Conditions, Patterns and Trends***

Mixed age classes of sagebrush, with less than 15% canopy cover were dominant prior to Euro-American settlement. Patchy vegetation patterns, with several age and canopy classes of sagebrush and grasses were present and maintained by periodic fire, approximately every 20-40 years. Soil stability and productivity remained fairly intact, with little or no bare mineral soil exposed.

***Natural/Human Causes of Change between Current/Reference Conditions***

Exclusion of fire has resulted in pinyon-juniper encroachment into sage/grass areas, while historic grazing practices have contributed to a loss in vegetative species diversity and accelerated erosion within the watershed.

## Upper East Fork Watershed Key Issues Identified

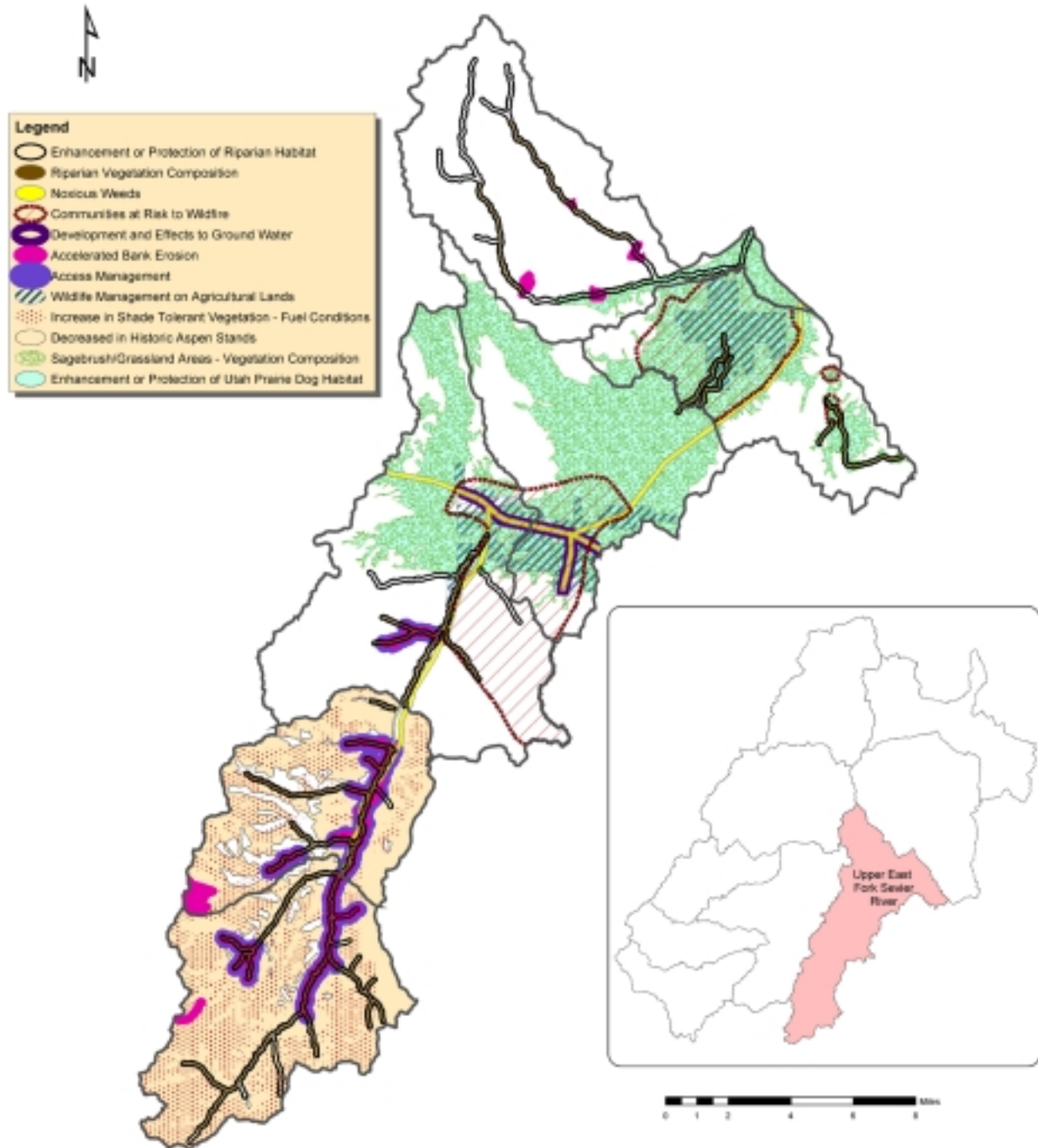


Fig. 4-36. The ten key issues identified for the Upper East Fork Watershed represent input from agriculture, fire, human uses, hydrology, species and habitat, and vegetation technical advisory committees.

	Hunt Creek	Cameron Wash - East Fork Sevier River	Showalter Creek - East Fork Sevier River	Mud Spring Creek - East Fork Sevier River	Tropic Reservoir	East Fork Sevier River Headwaters	Total for Upper East Fork
<b>Hydrology/Water Quality</b>							
<i>Hydrology</i>							
Dewatering and altered flow regimes	L	M	M	L	L	L	L
Releases from Otter Ck. Res. may be causing bank erosion along E. Fork Sevier River	NA	NA	NA	NA	NA	NA	NA
Diversion of water from Castle Creek to Deer Creek has caused severe channel degradation	NA	NA	NA	NA	NA	NA	NA
Diversions along the Sevier R. may be affecting sediment transport capacity and channel equilibrium	NA	NA	NA	NA	NA	NA	NA
Loss of riparian veg. has resulted in reduced bank storage and summer streamflows	M	M	M	M	H	H	M
<i>Hillslope Processes</i>							
Accelerated erosion on high elevation meadows	NA	NA	NA	NA	NA	M	L
Accelerated erosion in pinyon-juniper and sagebrush stands	M	M	L	L	M	NA	L
Accelerated erosion associated with urban development	NA	NA	NA	L	NA	NA	L
Accelerated erosion associated with roads	M	H	M	M	H	H	M
Rill and gully erosion on hillslopes	NA	M	M	M	L	L	L
Accelerated erosion associated with illegal ATV use	NA	M	M	M	M	M	M
<i>Riparian Vegetation Composition</i>							
Lack of healthy composition of riparian veg, defined by the presence of late seral herbaceous plants and multiple age class distribution of appropriate wood plant species	H	M	H	H	H	H	H
<i>Water Quality</i>							
Summer home development and associated impacts (I.e., groundwater contamination, erosion, recreation, etc.)	NA	NA	NA	NA	NA	NA	NA
Accelerated erosion, grazing management, recreation use, roads	M	M	L	M	H	H	M
TMDL listed and potentially listed water bodies due to nutrients, sediment, phosphorous, DO, habitat alteration, or temperature	M	L	L	M	H	H	M
<i>Channel Morphology</i>							
Active channel adjustments (vertical or lateral)	H	M	M	H	H	M	M
Accelerated bank erosion	L	M	M	L	H	M	M
Channelization	L	NA	NA	L	L	L	L
<b>Agriculture</b>							
Animal Feed Operations	NA	L	L	NA	NA	NA	L
Water conservation concerns (Sprinkler vs. Flood Irrigation)	NA	L	L	L	NA	NA	L
Pasture Mgt.	NA	L	L	L	L	L	L
Fertilizer Usage and Impacts	L	L	L	NA	NA	NA	L
Noxious Weeds	L	H	H	H	H	H	H
Wildlife Management on Agricultural Lands	H	H	H	H	H	H	H

Table 4-21. Priority ratings for all six Upper East Fork subwatersheds, as identified by technical advisory committees.

	Hunt Creek	Cameron Wash - East Fork Sevier River	Showalter Creek - East Fork Sevier River	Mud Spring Creek - East Fork Sevier River	Tropic Reservoir	East Fork Sevier River Headwaters	Total for Upper East Fork
<b>Fire</b>							
Communities at Risk	L	H	H	H	L	L	M
Fuel Conditions	L	H	H	H	H	H	H
<b>Human Uses</b>							
Development and Effects to Groundwater	L	H	H	H	L	L	M
Development and associated recreation uses to adjacent lands	L	M	M	H	NA	M	M
Access Management	L	M	H	H	H	H	H
Developed and Dispersed Recreation	L	L	H	M	NA	M	M
<b>Vegetation</b>							
Sagebrush/Grass	H	H	H	H	H	H	H
Aspen	M	L	L	L	H	H	M
Grassland - Meadow	M	M	M	L	L	L	L
Mixed Conifer/Mountain Fir	NA	L	L	M	H	H	M
Oak/Mahogany/Mountain Shrub	L	L	M	L	NA	NA	L
Pinyon/Juniper	H	M	H	M	L	L	M
Ponderosa	M	M	L	H	H	H	M
Spruce/Fir	NA	NA	NA	NA	NA	NA	NA
Tall Forb	NA	NA	NA	NA	NA	NA	NA
Noxious Weeds	L	M	M	L	NA	NA	L
<b>Species and Habitat</b>							
<i>Priorities for Enhancement or Protection of:</i>							
Southwestern Willow Flycatcher Habitat	M	L	M	M	H	H	M
Utah Prairie Dog Habitat	H	H	H	H	L	L	M
Bald Eagle Habitat	M	M	H	M	M	L	M
Spotted Bat Habitat	M	M	M	M	M	M	M
Townsend's Big-eared Bat Habitat	M	M	M	M	M	M	M
Flammulated Owl Habitat	L	M	M	M	M	M	M
Three-toed Woodpecker Habitat	L	L	NA	L	M	H	L
Northern Goshawk Habitat	M	L	L	M	M	H	M
Peregrine Falcon Habitat	H	M	M	M	M	M	M
Sage Grouse Habitat	H	H	H	M	L	L	M
Turkey Habitat	H	M	M	M	M	M	M
Deer Habitat	H	M	M	H	H	H	H
Elk Habitat	L	L	M	H	M	H	M
Pronghorn Habitat	M	H	H	H	L	L	M
Brian Head Mountain-Snail Habitat	NA	NA	NA	NA	NA	NA	NA
Beaver Habitat	H	L	L	M	H	H	M
Boreal Toad Habitat	NA	NA	NA	L	H	H	M
Bonneville Cutthroat Habitat	NA	NA	NA	NA	NA	NA	NA
Riparian Areas	H	M	M	M	H	H	H
Fisheries Habitat	L	M	M	M	H	H	M

Table 4-21 (con't). Priority ratings for all six Upper East Fork Subwatersheds, as identified by technical advisory committees.

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