Duck Creek Basin

Transportation Plan

30-Day Predecisional

Environmental Assessment

US Forest Service
Humboldt-Toiyabe National Forest
Ely Ranger District
and
Bureau of Land Management
Nevada State Office
Ely District

White Pine County, Nevada

March 2004

Table of Contents

1.0 Introduction: Purpose and Need for Action
1.1 Summary
1.2 Background
1.3 Decisions to be Made

2.0 Alternatives
2.1 Proposed Action
2.2 Public Involvement
2.3 Issues
2.4 Alternatives
3.0 Issue Discussion (affected environment)

4.0 Environmental Consequences
4.1 Recreation Resources
4.2 Noxious Weeds
4.3 Livestock Management
4.4 Wildlife
4.5 Cultural Resources
4.6 Soils
4.7 Riparian Habitat and Water Quality
4.8 Cumulative Effects

5.0 Consultation and Coordination

Figures – 1,2,3,4,5,6,7

Appendix A – Road Closure Methods
Appendix B – Definitions
Appendix C – Bibliography

1.0 Introduction: Purpose and Need for Action

1.1 Summary

A local White Pine County organization formed a technical review team to solve the transportation issues Duck Creek Basin, an 84,000 acre hydrologic basin located in the Schell and Duck Creek Ranges, approximately nine miles northeast of Ely (Figure 1). The team developed management recommendations and a transportation plan by consensus with a broad representation of user groups. This assessment is in response to the county commissioners' request to consider the recommendations for immediate action.

1.2 Background

In January of 2000, the White Pine Coordinated Resources Management steering committee (WPCRM), formed a two-year technical review team, the Off-Road Technical Review Team (TRT) in response to citizens' concerns about the dramatic increase of new Off-Highway Vehicle routes pioneered in the Duck Creek Basin (east of Ely, NV). The CRM chartered the Technical Review Team to analyze the explosion of Off-Highway Vehicles (OHVs) on public and private land in the Duck Creek Basin and recommend management options and a transportation plan. The team had twenty members each with one vote. Decisions were made on a consensus basis. Members of the team included ranchers, motorcycle group members, outfitters, wilderness advocates, local residents, developers, state agencies, Native Americans, US Forest Service (USFS), Bureau of Land Management (BLM), a wide range of public users. About 63% of the Basin is managed by USFS, 26% BLM and 11% is private land. The chair for most of the meetings of the TRT was a local resident. The team completed its mission in January 2002, resulting in a CRM-recommended transportation plan for the Duck Creek Basin on 401 miles of roads and trails on federal land.

Public lands covered by this plan include lands in the Duck Creek hydrologic basin, specifically the lands between Schell Creek Range and the Duck Creek Range, totaling approximately 119 square miles or 84,000 acres. The Humboldt-Toiyabe National Forest Ely Ranger District and the BLM Ely Field Office managed public lands are directly affected. There are no actions proposed on any of the private lands.

Due to the complexities of the Duck Creek Basin, a variety of land use classifications concerning motorized use currently exist. The area has Primitive, Semi-Primitive Non-motorized, Semi-Primitive Motorized, and Roaded Natural classifications (see Appendix B - Definitions). Under this approach, the agencies manage areas to provide a predominately natural or natural appearing environment. Evidence of human activity, restrictions, and controls are present but subtle. On-site interpretive facilities, low standard roads and trails, trailheads, and signing should stress the natural environment in their design and be the minimum necessary to achieve objectives.

The Proposed Action complies with the Humboldt National Forest Land and Resource Management Plan, Bureau of Land Management Egan Resource Area Land Use Plan, and White Pine County Land Use Plan.

This environmental assessment analyzes the effects of the Proposed Action and alternatives.

1.3 Decisions to be Made

Following the completion of this analysis, each agency will sign a decision document. The Forest Service will issue a Decision Notice, signed by the Forest Supervisor, Robert Vaught, providing specific guidance for implementing a transportation plan in the Duck Creek Basin on National Forest System Lands. Following that, based on the need specified in the Decision Notice, the Forest Supervisor will sign a Closure Order to implement road and trail closures.

The BLM has proceeded with the process for an emergency closure for their lands. The results of this analysis will be used in the Ely Resource Management Plan (RMP) to develop additional travel management guidelines.

2.0 Alternatives

2.1 Proposed Action

The TRT's transportation plan, a locally generated plan, is the proposed action. It specifies roads to be managed as open for all access, closed to motorized travel, single-track motorized and single-track non-motorized. Alternative A is the proposed action. To implement this plan, the FS and BLM will install signs, print maps for public information, reclaim roads, and install physical barriers and gates. The agencies will restrict motorized vehicle travel to designated roads and trails. No off-road motorized travel will be allowed.

2.2 Public Involvement

Local citizen concerns about the increase in the development of new roads and trails by off-road vehicle use in the Basin led to the formation of the TRT. This team was made up of a wide range of local and state interest groups, agencies, and private citizens. The team met for two years to discuss and develop management recommendations and a transportation plan for the Basin. The TRT held two local public meetings to explain what the team was developing in the plan, discuss concerns with the public, and collect comments.

In May 2003, the agencies sent a request for comments for this environmental assessment to over 100 individuals, agencies and organizations, including Native American tribal councils. We received 22 responses. All favored regulating off-road vehicles in some manner. One response requested that the agencies not over regulate. Most wanted the Basin closed to all off-road motorized travel. Many wanted additional roads closed above the Ranger Trail. Some wanted the Ranger Trail and other single-tracks as non-motorized trails. Many expressed the need for environmental education and law enforcement. One commentor favored banning ATV's in the Basin while another wanted to restrict them to the main roads. Some raised concerns about noise, wildlife, and soil erosion and others suggested more monitoring. A few suggested seasonal road closures. Two respondents supported the Duck Creek TRT's proposal (Alternative A) without modifications.

2.3 Issues

- Recreation experience – The quality of the non-motorized recreation experience degrades with increase of motorized and mechanized off-road travel and higher road densities.
- Noxious weeds – The increase in off-road travel and road densities increases the occurrence of noxious and invasive weeds.
- Livestock management – Changes in access may affect agency and permittee monitoring ability and improvement maintenance.
- Wildlife - Higher road densities lead to higher probability of disturbance to wildlife.
- Threatened, Endangered, and Sensitive species (TES) - Unregulated off-road motorized travel has potential to impact Threatened and Endangered, rare, and sensitive species.
- Cultural resources – Increased motorized travel increases the potential for damage to historic and prehistoric sites.
- Soil erosion - Roads and trails effectively channel runoff from storms and snowmelt which contributes to soil erosion in the form of rills and gullies.
- Riparian habitat and water quality - Off-road traffic tends to occur in drainage bottoms, degrading the riparian areas and water quality through soil disturbance.

2.4 Alternatives

In all action alternatives, motorized vehicle travel is restricted to designated roads and trails, with emphasis on a "closed unless designated open" management. No off-road travel is allowed. Road and trail closure and rehabilitation techniques and methods will follow Road Closure Methods (Appendix A) and Best Management Practices/Standard Operating Procedures. Specific reclamation methods will be determined for each travel route prior to implementation. Typically, the first few hundred feet will be given high priority for rehabilitation. Exceptions to the area closure are by USFS or BLM permission, or for a federal, state or local officer, or member of an organized rescue or firefighting force in the performance of official duties. See Figures A1, A2, B1, B2, C1, and C2 for maps of the alternatives. In all alternatives, the mileage disclosed for different proposed management actions is approximate and may vary.

The TRT proposed to close or modify access for some roads on private land. However, this environmental analysis will only address those roads that are within the authority of the agencies. Therefore, the proposed closures or other modified access on private land will be changed in Alternative A from private or single-track motorized roads to open roads for this analysis. Alternatives B and C do not propose any changes to road management on private land.

The alternatives use the following common terms:

- Open roads – travel is allowed for all users
- Closed roads – closed to all motorized travel
- Single-track, motorized trails – travel only by motorized vehicles less than 24 inches in axle width, mountain bikers, and non-motorized uses
- Double track, motorized trails – travel only by motorized vehicles less than 48 inches in axle width, mountain bikers, and non-motorized uses

- Single-track, non-motorized trails – travel only by mountain bikers and non-motorized uses
- Administrative roads – closed to the public, but remain open for administrative use by the agencies and permittees

No Action Alternative

Current management would continue. All areas remain open to unrestricted travel. Newly pioneered off-road tracks would continue to increase.

Alternative A (Proposed Action)

This alternative follows the recommendations by White Pine Off-Road TRT. They propose the agencies manage Duck Creek Basin with an emphasis on access-based recreation that includes closing selected roads to motorized recreation. The 18 miles of Ranger Trail within the Basin are managed as a single-track motorized trail. The TRT did not reach a consensus on how to manage one mile of road at the head of Berry Creek and it was left undecided. For the purpose of comparing alternatives, the proposed action will evaluate this road as an open road.

Routes will be managed as shown on Figures 2 and 3 in the following management categories:

- Open roads – 276 miles
- Closed roads – 115 miles
- Single-track, motorized trails – 32 miles

This alternative modifies the transportation management in the Duck Creek Basin to reflect the Technical Review Team's Final Report and map. The agencies will implement closure methods such as signs, physical barriers (rocks, berms and gates), and partial/complete reclamation. Appendix A provides more detailed descriptions of these methods. The USFS and BLM will print a brochure and map that reflect new travel management for public use.

Alternative B

This alternative is generated by the USFS and BLM interdisciplinary team to further address resource concerns not addressed in Alternative A. It closes additional miles of roads and single-track routes for protection of elk habitat, riparian areas and soils, ease in enforcement of closure routes, and logical end of road turn around locations.

The following road sections explains why the closure is proposed and/or what resource the closure is intending to protect and improve conditions.

- Southeast of East Creek – This is an old two-track that is revegetating. Closure of this route protects an upper elevation bench where other roads are also proposed to be closed.
- Upper Snake Creek – This single-track is very steep and highly erosive. It also provides access to the top of the Schell Creek Range. This closure reduces soil erosion, improves native vegetation, and protects the exceptional high elevation ecosystem.
- North Fork Timber Creek – This route travels through exceptional riparian habitat and crosses the creek in several locations. The basin is also valuable as elk calving grounds

and winter range. This closure protects and improves conditions in the riparian habitat and provides a protected riparian habitat basin for elk.

- North Fork Berry Creek – This route travels through riparian habitat and crosses the creek in several locations. The basin is also valuable as elk calving grounds and winter range. Closure of this route protects riparian and elk habitat.
- Upper Water Canyon – This route is very steep with boulders in heavy timber and has historically been a horse/foot trail. It accesses the crest of the Schell Creek Range at Cleve Creek Baldy Peak. This closure reduces soil erosion, and protects the high elevation ecosystem on the crest of the Schell Creek Range
- South Duck Creek Range – These two routes are on steep sidehill and do not connect due to steep rocky terrain. These are becoming two-tracks used by pickup trucks and ATV's. The routes dead end with no reasonable turn around area. These closures protect the vegetation and soils and provide a reasonable area for vehicles to turn around.

The Ranger Trail will be managed as a single-track non-motorized trail to preserve the trail for historical uses of hiking and horse travel and to provide non-motorized recreation users with a mid-bench elevation area to recreate. An alternative north/south route will be developed for motorized (less than 48 inch axle width) recreation to replace the lost opportunity to travel the Ranger Trail. A loop road south of Miller Creek will be managed as a double-track motorized trail.

All single-track motorized routes identified in Alternative A will be designated single-track non-motorized except for the single-track route in Alternative A connecting to Axhandle Pass in the Duck Creek Range. It will remain open and designated as a single-track motorized trail.

Two miles of road in a drainage north of Paine Gulch on National Forest System Land will be open for administrative purposes only and a gate will be installed. Another quarter mile of road near Peacock Spring on BLM-administered land will be open for administrative purposes only.

The one-mile-long undecided route from the Duck Creek TRT proposal in the upper end of South Fork Berry Creek will be closed to motorized travel to protect the high elevation ecosystem, deter motorized vehicles from accessing the crest of the Schell Creek Range, and protect wildlife habitat.

Routes will be managed as shown on Figures 4 and 5 in the following management categories:

- Open roads – 257 miles
- Closed roads – 127 miles
- Double track, motorized trails – 8 miles
- Single-track, non-motorized trails – 26 miles
- Single-track, motorized trails – 3 miles
- Administrative roads – 2 miles

Alternative C

This alternative directly incorporates many of the specific travel management requests received from public scoping. It is the same as Alternative A with the following changes:

- The Ranger Trail will be closed to all motorized vehicles.
- All travel routes above the Ranger Trail (east of proposed wilderness boundary) will be closed to motorized travel except for Timber, Berry, East, Kalamazoo, and Bird Creek access roads.
- The one mile route in the upper end of Berry Creek will be closed to motorized travel.
- All single-track routes will be closed to motorized travel.
- Seasonal closures will be considered for road protection, wildlife, and recreation as the need arises during monitoring.
- Berry Creek road from approximately 1/8 mile east of the North Fork of Berry Creek junction will be open for administrative use only and a gate will be installed.

Routes will be managed as shown on Figures 6 and 7 in the following management categories:

- Open roads – 241 miles
- Closed roads – 148 miles
- Single-track, non-motorized trails – 25 miles
- Single-track, motorized trails - 4
- Administrative roads – 5 miles

Alternative Comparison Table

	Open roads (miles)	Closed roads	Double-track motorized	Single-track non-motorized	Single-track motorized	Administrative only	Total
No Action	423	0	0	0	0	0	423
Alternative A	276	115	0	0	32	0	423
Alternative B	257	127	8	26	3	2	423
Alternative C	241	148	0	25	4	5	423

3.0 Issue discussion (affected environment)

Recreation Concerns:

The quality of non-motorized recreation degrades with increase of motorized and mechanized off-road travel and higher vehicle route densities. The informal development of new vehicle routes has created conflicts among recreational users. Motorized use during the fall hunting season is very high. The motorized/non-motorized user conflicts include hunting, sightseeing, hiking, cross country skiing, and equestrian users. The lack of an enforceable transportation plan in the Basin has allowed the encroachment of motorized use in every part of the Basin, leaving very little of the area available to non-motorized activities.

A majority of the recreation use is concentrated hunting use, although summer activities are becoming popular. Both developed and dispersed camping is present in the Basin. Three developed campground sites accommodate users throughout the Basin geographically. The area is extensively used for dispersed camping during the summer and fall seasons.

Vehicle routes are generally oriented in an east/west direction and go from the bottom of the Basin up the bench to the higher points of the mountain range. One notable exception is the Ranger Trail which is oriented north and south along the eastern side of the Basin and connects east/west roads without traveling on the north/south main county road. The county road is paved from Highway 93 through Gallagher Gap and south to the Berry Creek turnoff. The county road then becomes a county general graded dirt road south to the Success Summit on the south end of the Basin. Most vehicle routes in the Basin are a low standard two-track, except the county road and five east/west oriented improved gravel roads (Kalamazoo, East Creek, Bird Creek, Timber Creek, Berry Creek).

The current road density for recreation access is very high for the Duck Creek Basin. Vehicle routes (commonly referred to as roads) are increasing in the Duck Creek Basin. In 1977, a USGS map of the area revealed about 2.1 miles of roads per square mile. In 2001, a ground survey of the roads showed about 3.2 miles of road per square mile, an increase of 50% in 24 years. These new pioneered roads diminish the quality of the non-motorized recreation experience.

Noxious Weeds concerns:

Increase in off-road motorized and mechanized travel and road densities increases the spread of noxious and invasive weeds; off-road travel allows for the dispersal of weeds in areas that are difficult to locate and treat.

The agencies recognize that ground-disturbing activities such as ATV and off-road use increase the potential for spread of noxious and invasive plant species. Vehicles transport new weed seeds to the area, and disturbed ground creates an ideal seedbed.

Increased populations of weeds can affect the diversity of native plant species by out competing the native vegetation for nutrients, soil water, and available space. Weed species can be aggressive and out compete the native vegetation by sprouting earlier in the growing season and producing a prolific amount of seed that remains viable in the soil for many years. Because of this prolific seed production it can be difficult to remove weeds from a site once they are established. Many weeds do not have the necessary root systems to stabilize the soils and can lead to accelerated erosion on sites were they dominate as well.

When weeds take over a site, native wildlife species are affected. Reducing the native forage species that many wildlife species rely on during winter months reduces feed for local wildlife. Most weedy species are unpalatable in any growth stage and are especially so once mature, and . there are no nutritive values in many of the weedy species.

In the Duck Creek Basin, noxious weeds are invading many sites. Since 1998, the USFS has surveyed 8580 acres near major travel routes, and treated fifty acres within the Basin. Many of

the four-wheel drive and two-track roads are not accessible to a large spray truck, the most cost-effective means of inventory and treatment.

Livestock Management Concerns:

Road closures can reduce access to structural and non-structural improvements, and change management strategies by limiting motorized access to historically grazed portions of allotments.

Federal agencies develop grazing plans based on the locations of structural developments. The project area affects all or parts of four Forest Service grazing allotments (Timber Creek, Berry Creek, Boneyard, and Duck Creek) and three Bureau of Land Management grazing allotments (Duck Creek Basin, Duck Creek, and Gilford Meadows).

Wildlife Concerns:

Increase in off-road motorized and mechanized travel leads to high road densities that increase the potential to impact Threatened, Endangered and Sensitive (TES) species. Inherent to off-road vehicle use is the destruction of vegetation, some of which may be classified as a Sensitive plant species on the USFS Regional or Bureau of Land Management's Sensitive Species List. High road densities within an area also increase the potential for disturbance by humans, which can decrease the quality of the habitat for TES species. Loss of connectivity, or fragmentation of habitat prevents individuals between populations from interacting. Once populations become isolated through fragmentation of habitat, the likelihood of persistence is greatly reduced.

Increase in off-road motorized and mechanized travel leads to high road densities within the project area, which increases the potential for disturbance by humans. This often causes fragmentation of the habitat as wildlife use areas less because of the disturbance. This decreases the quality of the habitat for many wildlife species. In addition, roads that remain open during hunting season provide access for hunters and reduce the amount of security habitat available to elk and deer during times of stress. A widespread practice within the Basin is that of "antler hunting." Antler hunters commonly use ATV vehicles, causing habitat degradation and harassment of deer and elk. Increased off-road travel also affects vegetation. Shrubs and tall grasses that are crushed when ridden over are not selected for nest sites, as both concealing foliage and structure are lost for several nesting seasons. Plants that provide a food source are also lost.

This section describes the existing potential habitat. The discussion focuses on those species considered most sensitive to management activities: Federally threatened, endangered, and proposed species (*US Fish and Wildlife Service, File No. 1-5-03-SP-261*), USFS Regional sensitive species, BLM sensitive species, USFS management indicator species, and neotropical migrant species.

Threatened, Endangered and Sensitive Species Discussion:

Migrating bald eagles may occur within the Duck Creek Basin in the spring and fall. They are the only T&E species with potential to occur in the project area. Species from the USFS sensitive species list that are known to occur, or have potential habitat within the Basin are: Townsend's big-eared bat, spotted bat, goshawk, flammulated owl, three-toed woodpecker, sage grouse, pygmy rabbit, and peregrine falcon. Additional species from the Bureau of Land

Management sensitive species list that are known or have potential habitat in the Basin are: ferruginous hawk, western small-footed myotis, fringed myotis, long-legged myotis, burrowing owl, Swainson's hawk, pinyon jay, and golden eagle.

Plant species on the USFS and BLM Sensitive Species Lists that are known to occur, or have habitat in the Duck Creek Basin are: scorpion milkvetch *(Astragulus lentiginosus var. scorpionis),* currant milkvetch *(Astragulus uncialis),* Pennell draba (*Draba pennellii*), waxflower (*Jamesia tetrapetala),* Tunnel Springs beardtongue *(Penstemon concinnus),* Mount Moriah beardtongue *(Penstemon moriahensis),* Nachlinger catchfly (*Silene nachlingerae*), and rock violet (*Viola lithion*).

The Duck Creek Basin is home to a variety of wildlife. Large ungulates include mule deer and elk, which utilize the mid to upper elevations in spring, summer, and fall. They migrate to the lower elevations for winter use. Calving and fawning occur and at least 124 species of birds nest in the Basin. Raptors nest and hunt throughout the Basin. Three known sage grouse leks occur in Duck Creek, as does brood rearing habitat. Bats inhabit abandoned mine shafts, natural caves, and cliff crevices. Many day roost in hollow trees behind tree bark. Pygmy rabbit habitat occurs in sagebrush-dominated areas. Brown, brook, and rainbow trout inhabit the streams in Duck Creek Basin. Two sensitive species of butterflies, the White River wood nymph and the Koret checkerspot, have been identified in the Basin. The Schell Creek mountainsnail is a BLM sensitive species found in Worthington Canyon.

Management Indicator Species:
Management indicator species (MIS) are animal species that help indicate the effects and influences of land management on large groups of wildlife. Habitats for MIS are monitored to determine what population changes, if any, are induced by management activities. The four MIS used by the Humboldt National Forest Plan are mule deer, sage grouse, goshawk, and trout (Plan, II-11). The effects of each alternative to each MIS species are analyzed in the Environmental Consequences Section.

Neotropical Migrants:
Many birds that inhabit the Duck Creek Basin area are neotropical migrants, indicating they are only present during the spring, summer, and fall. Neotropical migratory birds have become a concern in recent years because of declining populations. The January 10, 2001 Executive Order to protect migratory birds directs agencies to "ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern." These birds inhabit a wide variety of habitats from grass/shrub communities to dense mature and old forests, some of which are found in the project area.

In response to Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, the USFS and BLM each developed a Memorandum of Understanding (MOU) with the US Fish and Wildlife Service to promote the conservation of migratory bird populations.

The MOU between the USDA Forest Service and the USDI Fish and Wildlife Service, signed January 17, 2001 identifies specific activities for bird conservation pursuant to EO 13186

including: 1) the need to identify management practices that impact populations of high priority migratory bird species and 2) to develop management objectives or recommendations that minimize these impacts. The USFS will follow the BLM policy below.

The Ely BLM district established a policy, entitled *Management Actions for the Conservation of Migratory Birds*, directing a "no activity" period to prevent "unintentional take" of migratory birds. The "no activity" period is from May 1st through July 15th. In compliance with District policy, if any activity is scheduled between May 1st and July 15th, the area to be disturbed must be clearly identified and a wildlife biologist must conduct a breeding bird survey to identify if migratory bird breeding or nesting is occurring in the area. If the wildlife biologist observes breeding or nesting activity, the agency will avoid the area until after July 15th.

Cultural Resource Concerns:

Off-road motorized and mechanized travel, combined with the high road densities that currently exist in the Duck Creek Basin, increases the potential to adversely affect heritage resources. These effects include physical damage to heritage resources by vehicles, increased heritage site visitation, and the heightened potential for artifact looting and vandalism.

The Duck Creek Basin and surrounding mountain ranges have the potential to contain cultural materials that span the entire archaeological record of the United States, from the early Paleoindian period (circa 14,000 years ago) to historic era properties. The Duck Creek Basin, northern Schell Creek Range, and Duck Creek Range are within the traditional territory of the Western Shoshone, and are one of the last areas of the continental United States to be settled by Euroamericans. The entire area of the Basin and surrounding ranges would have been utilized by the Native American inhabitants. Archaeological patterns identified throughout the Great Basin infer their use would have been concentrated near springs and streams, along principal drainages at the edges of major valleys, along major ridge systems, and in saddles. The Duck Creek Basin and its associated drainages were uncommonly well watered relative to the Great Basin as a whole, therefore, the location of archaeological sites within the Basin area may not be as water restricted as elsewhere in the region. Historic properties and personal accounts confirm the presence of Euroamerican settlers within the Duck Creek Basin, at least as early as the 1860's.

Due to the topographical requirements for functional roads, many of the older existing roads, and the newly pioneered roads within the Duck Creek Basin are found in areas that are considered to have a high potential to contain heritage resources.

A review of Forest Service and Bureau of Land Management records has not produced any known heritage resources located within, or in close proximity to, the roads and trails that will be affected by the proposed travel route modifications and closures. However, due to the lack of heritage resource surveys conducted within the area, one cannot simply infer that heritage resources are not present based on the record search.

Soil Concerns:

Unmanaged travel access in the Duck Creek Basin has led to a high density of newly pioneered roads and trails by motorized vehicles**.** Roads and trails effectively channel runoff from storms and snowmelt that contribute to soil erosion in the form of rills and gullies. In addition, roads and

trails effectively capture and divert overland water flow during precipitation and runoff events. This reduces the available water to plants below these "diversions" and stresses vegetation.

Most roads within the Basin are user developed and have not been engineered for safety nor do they conform to acceptable road or environmental design standards. Many roads travel directly up and down the hillsides or up the bottom of drainages. Consequently, there is active erosion occurring within the travel routes. These roads do not receive regular maintenance and quite often have never been maintained. Roads and two-tracks diverts water down the roadbeds. The grades are typically too steep and erosion of the roadbed develops entrenched travelways and two-tracks. As downcutting occurs, water is unable to discharge off the routes and excessive erosion continues downcutting where soils are unable to withstand the velocity and transport abilities of the water. In addition, vehicles traveling on steep roads impact the stability of the road surface by tires spinning and digging into the soil that accelerates erosion.

As water is captured by the roads, the hydrologic function of the Basin is modified. Runoff becomes more flashy and less infiltration of water into the soils occurs within the Basin. This reduces the availability of water for plants, modifies the distribution of subsurface water within the Basin, and could reduce the amount of water contributing to groundwater. In a drought year, this modification in water availability for plants could excessively stress certain plants where they are more susceptible to insects and disease. They also can die due to lack of water or have their growth reduced.

Riparian Habitat and Water Quality Concerns:

The water quality within the Basin degrades with increase of motorized and mechanized off-road travel and higher road densities due to greater sediment transport from overland flow and increased sediment load in streams. Off-road traffic tends to occur in drainage bottoms degrading the riparian areas and water quality.

The development of new roads has created unnecessary stream crossings, damage to springs and seeps through misuse, and the spread of invasive species in riparian areas. This reduces the ability of riparian areas to perform as a filter to remove contaminates from the streams or capture sediment before it reaches the drainage. Many stream crossings are causing excess sedimentation in the streams/drainages and excessive erosion. With the higher sediment load during storm events in the drainages, the drainage adjusts for this change in hydraulics by bank erosion and deposition downstream. This accelerates bank erosion and reduces the amount of vegetation that stabilizes the banks.

Travelways within the Basin carry excess sediment during storm events and often direct discharge from the storm water into drainages without any natural filtering by vegetation. The velocity of the water flowing down the drainages increases due to the increase in runoff. This degrades the quality of water in the streams/drainages by drainages adjusting to the increase in flow velocity and eroding the banks and downcutting the drainage bottom. With increased concentrated flow within the Basin, more rills, gullies and downcutting in streams may occur. This contributes to the degradation of water quality.

4.0 Environmental Consequences

None of the alternatives have an adverse effect on floodplains, wetlands, riparian areas, Areas of Critical Environmental Concern, Wild and Scenic Rivers, Congressionally-designated areas, prime or unique farmlands, environmental justice, sensitive soils, paleontology, air quality, visual quality, wild horse and burros, Native American religious concerns, hazardous and solid wastes, inventoried roadless areas, or wilderness. All action alternatives have varying degrees of improvement to floodplains, wetlands, and sensitive soils.

4.1 Recreation Resources

No Action:
Under the No Action Alternative, the agencies do not implement a transportation plan for the Duck Creek Basin. The No Action Alternative retains the high vehicle route densities and negatively affects the recreational experience of non-motorized users in the Duck Creek Basin. Benefits likely to be derived from the implementation of a transportation plan are not realized. Road density continues to increase.

All Action Alternatives:
All action alternatives restrict motorized travel in the 84,000-acre Basin to designated roads and trails. The three action alternatives vary in the number of miles of motorized travel allowed.

Alternative A (Proposed Action):
Alternative A enhances the recreation opportunities for non-motorized visitors. The TRT recommended closing 115 miles of roads to motorized use and retaining 32 miles as single-track motorized use.

This alternative improves opportunities for non-motorized recreational users and reduces user conflicts in the Basin. An indirect effect is that the Basin may attract more recreational users due to improved non-motorized (hiking, horse use) or mountain bike opportunities. This area closure will provide no opportunities for motorized users to travel off-road and will likely reduce the number of these visitors.

This alternative provides north/south access for motorcyclists and mountain bikers on the Ranger Trail but does not allow four-wheel ATV's. A possible indirect effect is that four-wheel users may choose to travel on county roads, which is prohibited by state statute prohibiting unlicensed vehicles on state or county roads.

Alternative B:
This alternative closes 127 miles of roads to create more non-motorized opportunities than Alternative A, especially on the Ranger Trail, which is open only to non-motorized travel. The non-motorized north/south access directly benefits the non-motorized users. There are 26 miles of single-track non-motorized trails and 8 miles of double-track motorized which are not included in Alternative A. This alternative reduces single-track motorized trails from 32 miles to 3 miles. In addition, this alternative provides an alternate motorized north/south double-track motorize route to the Ranger Trail.

This alternative also has 2 miles of road managed for administrative access to range improvements that are open to motorized users in Alternative A. This limits recreation in two small areas and has a direct impact on a small number of recreational users.

Alternative C:
Alternative C includes the motorized closures in Alternative A and some of B but reduces permitted motorized travel further. It closes 148 miles of routes. The road closures are concentrated on the east side of the Basin above the Ranger Trail, limiting motorized access on some routes above the Ranger Trail. This alternative provides 25 miles of single-track non-motorized trails including the Ranger Trail; this alternative provides the least motorized recreation opportunities of all the alternatives.

Compared to Alternative B, there are three additional miles of administratively closed roads, based on requests received during the public comment period. This additional closure is on the upper section of Berry Creek road which leads to a snowpack/precipitation telemetry site, a grazing improvement, and a special use permit cabin.

This alternative does not provide north/south access for motorized vehicles on the Ranger Trail. As a result, unlicensed motorized users may choose to travel on the county roads which is a violation of state statute.

4.2 Noxious Weeds

No Action:
Continued uncontrolled motorized use in the Basin will lead to the dispersal of more weed seed and the establishment of new noxious weed infestations.

Alternatives A, B and C:
Recreationists can transport and spread weed seeds, usually by seeds trapped in the tires of motorized vehicles and mountain bikes, or carried by horses. The current USFS weed-free order requires horseback riders to use weed-free feed on National Forest System land. In addition, the fewer roads and trails that visitors can travel on will reduce the area in which weeds are spread. Therefore, Alternative C is the most effective deterrent for new weed infestations, with Alternative B the next effective and then A. Road closure actions, such as building water bars or installing gates can introduce weeds. All site disturbance during road closure and rehabilitation will be seeded with a native seed mix. This mitigates weed invasion and establishment.

4.3 Livestock Management

No Action:
Current management activities are not affected and continue without any impact to the grazing operations. Access to all existing range structures remains open and maintenance of those structures continues at its current level.

Alternatives A, B and C:

The three action alternatives allow permittee access to their structural improvements, either by not closing the needed roads, or by closing with an administrative closure. Alternatives A, B and C impact the permittee's motorized access to off-road areas in the allotments. Alternatives B and C also impact the permittee's motorized access on the Ranger Trail. This would require the permittee to access the allotment on horseback or foot to check on the livestock. This would reduce the amount of area that could be monitored in a day.

4.4 Wildlife

This section evaluates the direct and indirect effects to wildlife and wildlife habitat. The biologists used indicators of effects to compare alternatives and assess effects in relation to legal and policy mandates of the agency. For Federally listed, threatened and endangered species, the indicators used were the critical habitat determinations required under the Endangered Species Act (ESA). For sensitive and management indicator species, indicators used were the estimated impacts to their habitat. Wide ranging species, such as the goshawk and flammulated owl, whose habitat occurs across several states, are not likely to have measurable effects to the species across its range from the actions that occur within the project area (Wisdom et al, 2000).

The wildlife biologist prepared a Biological Assessment/Evaluation (BA/BE) for all federally listed and proposed species and USFS Regional Sensitive Species. A summary of this analysis is included below.

No Action Alternative:

There would be no short-term wildlife displacement from road closure activities. However, there are no long-term benefits from the area closure. This alternative would not improve the habitat of many wildlife and plant species and conditions would continue to degrade. In addition there are no beneficial effects to sensitive or native plants from the project by reducing the spread of noxious and invasive plant species.

Threatened and Endangered Species:

Alternatives A, B and C:
Bald Eagle - (*Haliaeetus leucocephalus*) [*Threatened*]
The bald eagle is a winter visitor to the Ely Ranger District (Forest Plan, pg. II-10). Winter home ranges can be very large, especially for non-breeding birds. Winter roost sites vary in their proximity to food resources (up to 33 km) and may be determined to some extent by a preference for a warmer microclimate at these sites. Wintering areas are commonly associated with open water though in some areas eagles use habitats with little or no open water if other food resources (e.g., rabbit or deer carrion) are readily available (Natureserve, July 2003).

Direct and Indirect Effects:

The project area does provide minimal wintering habitat requirements for bald eagles, though it is outside any known wintering areas. Eagles may use the project areas as a travel route between nesting and known wintering areas. No winter habitat component important to bald eagles is present, thus no bald eagle wintering habitat is affected by the proposals.

Sensitive Species

The Biological Evaluation, located in the project record, fully describes the analysis for all sensitive species. Below is a summary of those species.

Sensitive Plant Species

Alternative A, B, and C:

Of the nine sensitive plant species that are known to occur, or have potential habitat within the project area, only four (scorpion milkvetch, Currant milkvetch, Tunnel Springs beardtongue, and Mount Moriah beardtongue) have potential habitat where road closures are proposed. The biologists will survey for sensitive plants prior to any ground disturbing activities and if found, the agency will modify the closure. There is a beneficial effect to sensitive plants by reducing the potential for the additional spread of noxious and invasive plant species.

Sensitive Wildlife and Fish Species

Peregrine falcon, flammulated owl, northern goshawk, Bonneville cutthroat trout, three-toed woodpecker, spotted bat, and Townsend's big-eared bat

Alternatives A, B, and C:

The area contains suitable habitat for all of the sensitive species, except for the Bonneville cutthroat trout. Because road closure activities are short in duration and will not alter or eliminate habitat for any of these species, disturbance to them is minimal. In the short term, the action alternatives would have little impact on these species' habitats. The proposed area closure has a beneficial effect to all the species by reducing the amount of disturbance and habitat degradation caused by higher road densities and off-road vehicle use.

Sage Grouse

Alternatives A, B, and C:

The sage grouse is a sagebrush obligate species and is found associated with both tall and short species of sagebrush in foothills, sagebrush shrublands, and mountain slopes. Habitat requirements vary during the year, but require an extensive mosaic of sagebrush of varying densities and heights, high levels of native grass cover for nesting, and areas rich in high-protein forbs and insect foods during nesting and brood-rearing. Male sage grouse display and mate on leks.

Three known leks occur in Duck Creek Basin. All known leks are farther than ¼ mile from any proposed road closure or rehabilitation activities. According to trend lek studies, the population in Duck Creek Basin decreased in the late nineties, but has rebounded to its highest level since the late 1980s (*personnel communication Curt Baughman)*. Habitat for nesting, early brood rearing, and summer habitat are also present. All of the action alternatives have a beneficial effect by reducing the amount of disturbance and habitat degradation caused by higher road and trail densities, and off road use by ATVs.

Pygmy Rabbit

Alternative A, B, and C:
Pygmy rabbits are found in dense stands of big sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus* spp.) growing in deep soils. They are highly dependent on sagebrush to provide both food and shelter with big sagebrush being their primary food source. Unlike other species of rabbits the pygmy rabbit digs its own burrows. Pygmy rabbits are found where sagebrush cover is sufficiently tall and dense, and where soils are sufficiently deep and loose to allow burrowing.

Potential habitat for the pygmy rabbits is present within the Basin. There are no known pygmy rabbit sites within the proposed activity areas; therefore no impacts to pygmy rabbits are expected. Should any sites become known the activity may modified by moving the site of the closure to avoid a burrow. All of the action alternatives have a beneficial effect by reducing the amount of disturbance and habitat degradation caused by higher road and trail densities, and off road use by ATVs.

Management Indicator Species

Mule Deer and Elk

Although elk are not a MIS for the Forest, the Duck Creek TRT expressed concerns about effects of off-road travel on elk habitat and harassment. Since their habitat requirements and use are similar to that of mule deer they will be analyzed together.

Deer and elk are present within the project area during the late spring, summer and fall. As winter snows accumulate, they move down to lower elevations. During spring "green-up" deer and elk move back up to the higher elevations. They fawn and calf somewhere along the way depending upon the timing of spring snowmelt and snowpack depth. Although deer and elk prefer some portions of the area over others, they use the entire project area for either foraging or cover.

For the past three years the deer populations in Unit 111-113 appears to be on a mild downward trend in response to the extended drought (*personnel communication Curt Baughman).*

Alternative A:
Mule deer and elk would be present during project implementation. However, only a temporary displacement would be expected to occur during project activities. The proposed road and area closures have a beneficial effect by decreasing disturbance to big game and vulnerability during hunting season. It reduces the opportunity of antler hunters to harass deer and elk on ATVs. No habitat alterations occur to either fawning and calving areas or primary foraging areas. As a result, no adverse effect to mule deer or elk populations would occur.

Alternative B:

Alternative B has similar impacts as Alternative A although this alternative provides an additional 12 miles of road closure and 26 miles of single-track non-motorized trails. Closing these roads and trails in upper reaches of Middle Creek, Bird Creek, Snake Canyon, Paine Gulch, Timber Creek, Berry Creek, and Worthington Canyon decreases human and vehicular disturbance to aspen stands, riparian habitats, and upland meadows. Deer and elk favor these habitats for calving and fawning.

Alternative C:
Alternative C would have the same impacts and effects as Alternative B. The additional closure of 33 miles of road and 25 miles of single-track non-motorized trails over Alternative A further enhances the deer and elk habitat within the Duck Creek Basin and provides the greatest amount of preferred habitat.

Trout

Alternative A, B, and C:
Rainbow, brown and brook trout are found in East, Timber, Berry and Bird Creeks. The Nevada Department of Wildlife stocked these creeks until 1986, since then they have maintained self-sustaining populations. All four of these creeks are diverted into diversion pipes. The culvert removal on Bird Creek is the only activity to occur within a stream channel. This is a one-time short duration activity and impacts to trout are minimal. Fish are able to move out of the way during the activity and there is only a short-term pulse of sediment released. The activity occurs outside the spring and fall spawning period, therefore any release of sediment would not impact the redds. No other activities occur within stream channels or in the surrounding riparian habitat, therefore no additional habitat features important to trout would be affected. The reduction in the number of stream crossings proposed enhances the water quality and habitat for trout.

Sage Grouse and Goshawk

Both of these species are listed on the Regional Forester's Sensitive Species and have been evaluated above in the sensitive species section.

Neotropical Migrants

Alternative A, B, and C:
The habitat alterations resulting from the area closure have a beneficial effect on neotropical migrants. Vehicles would not crush vegetation used for nesting or foraging located within the closure, nor would displacement occur from disturbance by humans. Loss of connectivity, or fragmentation, of habitat also decreases. Because the agency biologists will be surveying before implementing closure activities, neotropical migrants will not be displaced. The overall impacts of the project on cavity-nesting, shrub-nesting, and riparian dependant birds would be minimal. Alternatives B and C provide the best benefit because they have more miles of road closure.

4.5 Cultural Resources

No Action:
The non-renewable heritage resources that exist in the Duck Creek Basin continue to be adversely affected by uncontrolled vehicle access. These effects include physical damage to heritage resources by vehicles and the subsequent erosion caused by OHV use. Other effects are increased heritage site visitation, and the heightened potential for artifact looting and vandalism.

Alternatives A, B and C:
Heritage resources usually benefit whenever motorized access is limited and controlled. The greatest damage to heritage resources occurs when vandals have ease of access to a site. Damage also occurs in cases where the resource is impacted unwittingly by other uses, such as OHV trails and roads crossing heritage sites. Therefore, Alternative C provides the best benefit to heritage resources, with "B" and "A" close behind.

Depending on the level of ground disturbance, road closure work can damage heritage sites. An area cultural resource survey was not completed for this analysis. Some roads will be closed simply with a sign, while others may involve more disturbance, such as multiple water bars. In compliance with Section 106 of the National Historic Preservation Act, the agency archeologist will conduct archaeological surveys where ground disturbance activities are required to close a road.

Off-road motorized and mechanized travel, combined with the high road densities that currently exist in the Duck Creek Basin, increases the potential to adversely affect heritage resources. These effects include physical damage to heritage resources by vehicles, increased heritage site visitation, and the heightened potential for artifact looting and vandalism.

Road closures that involve ground disturbance activities also have the potential to adversely affect heritage resources. This can occur through the physical damage and destruction of historical and archaeological materials by earth moving activities.

The no-action alternative, and the action alternatives, all have the potential to adversely affect heritage resources. Due to the fact that the no-action alternative will likely facilitate the increase of unmanaged off-road activity in the future, the cumulative effects of the no-action alternative have the potential to cause more damage to heritage resources overall.

4.6 Soils

No Action:
Under the No Action Alternative, off-road motorized travel would continue to increase, soil erosion would increase, and riparian habitat would be negatively impacted. Roads would not be closed or rehabilitated where revegetation would stabilize soils.

Alternatives A, B, and C:
Off-road motorized travel is not allowed. This would reduce the amount of soil erosion in the Basin. The closure and rehabilitation/stabilization of roads proposed in all alternatives would

also reduce the amount of soil erosion occurring in the Basin. Downcutting in channels and existing travelways would be reduced or eliminated.

Alternative A would provide the least benefit. It closes 115 miles of roads and has 32 miles of single-track motorized trails proposed.

Alternative B is more beneficial than Alternative A. Alternative B closes 12 additional miles, has 29 less miles of single-track motorized trails, has 26 additional miles of single-track non-motorized trails, closes 2 miles of road to administrative use only, and adds eight miles of double-track motorized trails. The closure of the route in north fork of Timber Creek is very important for maintenance of riparian soils.

Alternative C provides the most soil stability protection to the Basin. It closes 33 additional miles of road than Alternative A and 21 miles more than Alternative B. It has no single-track motorized or double-track motorized trails. It proposes 25 more miles of single-track non-motorized trails than Alternative A. It also proposes 5 miles of road closure for administrative use only. The indirect effect of stabilizing soils within the Basin is the development of a productive soil profile where vegetation could establish and increase ecological function within the watershed.

4.7 Riparian Habitat and Water Quality

No Action:
Under the No Action Alternative, off-road motorized travel continues to increase and riparian habitat and water quality continues to degrade. Roads are not closed or rehabilitated. This would also continue degradation of riparian habitat and water quality.

Alternatives A, B and C:
Off-road motorized travel would not be allowed. This reduces the negative impacts to riparian habitat and water quality within the Basin. Water quality is improved due to the increase of vegetation stabilizing the soils and the reduction of water being diverted down travelways. Drainage and stream erosion is reduced due to the decrease in storm runoff and closure of some roads that cross drainages, streams, and riparian areas. Alternative A would provide the least benefit with C providing the most and B between the two.

Alternative C provides the most protection to water quality and riparian. It improves more high elevation areas than Alternative B by closing most of the roads above the Ranger Trail. This would improve the hydrologic function of the basin by improving restored overland flow, reduce concentrated and diverted flows down roads, remove vehicle damage during wet/soft ground conditions in the Spring, and reduce high elevation access to sensitive areas.

Both Alternatives B and C protect water quality and riparian areas in but not limited to the following drainages:

- Southeast of East Creek: Closure of this route protects an upper elevation bench where vegetation would stabilize soils.
- Upper Snake Creek – This single-track is very steep and highly erosive.

- North Fork Timber Creek – This route travels through exceptional riparian habitat and crosses the creek in several locations.
- North Fork Berry Creek – This route travels through riparian habitat and crosses the creek in several locations.
- Upper Water Canyon – This route is very steep with boulders in heavy timber and has historically been a horse/foot trail.
- South Duck Creek Range – These two routes are on steep sidehills and do not connect due to steep rocky terrain.
- Upper Gilford Creek – This route follows along the bottom of a steep drainage.
- Upper McDonald Creek – This route follows along the bottom of a steep drainage.
- Upper Worthington Canyon – This route is steep, follows the bottom of a drainage, and accesses high elevation sensitive terrain.
- Upper Middle Creek – This route is in steep terrain and the road where another road access the upper end of the route within ¼ mile.

The indirect effect of all action alternatives is the improvement in the ecological function of the watershed, and possible increase in the base flow of the streams. Alternative C has the most potential for these improvements to the basin with Alternative A having the least.

4.8 Cumulative Effects

The Basin lies within commuting distance of Ely and McGill, and is becoming a popular area for residential development. The area has the potential for new homes and subdivisions on the private land, and user conflicts may grow.

Habitat for wildlife, fish and sensitive plants usually benefits whenever motorized access is limited and controlled. Fragmentation and disturbance are reduced along with habitat degradation. This area closure, along with any additional closures or residential development, may cause increased use in other areas, which could cause increased resource damage to them.

The Basin has a number of abandon mine openings that pose a safety threat to visitors. As funding becomes available, these will be secured by either physical closure, bat gates, or fencing with signs. Some of the roads leading to these sites are proposed to be closed. Therefore, before any road closure activity can occur, the work at these abandon mine sites will need to be completed.

There may be other changes in the Schell Creek Range. During 2004, Congress may pass a White Pine County Public Lands Act. One proposal in this legislation is a new Wilderness in the Schells, suggesting the wilderness boundary lie adjacent to the Ranger Trail, but not include it. Wilderness regulations will be more difficult to enforce if a motorized and mechanized Ranger Trail is the Wilderness boundary

Another action that may occur is treatment of pinyon/juniper encroachment, or treatment of diseased white fir. Whether for restoration of native ecosystems, or to reduce risk of catastrophic fires, these treatments will increase the potential for noxious and invasive weed invasions and soil and water erosion. The lack of treatment, especially where fire risk is high in the white fir

vegetation, may lead to catastrophic fires with similar consequences, though under uncontrolled circumstances.

Reducing motorized or mechanized travel in the Duck Creek Basin will not likely reduce the number of motorized/mechanized recreationists on the USFS or BLM lands in the area. What is likely to happen is that these visitors will continue to visit the area, but move their actions to other areas, increasing motorized impacts to other areas.

5.0 **CONSULTATION AND COORDINATION**

Interdisciplinary Team Members:
Loretta Cartner – Forest Service, Ely, NV - Team Leader, writer/editor, hydrology/soils/riparian, GIS
Lucas Phillips – Forest Service, Ely, NV – range/weeds, writer
Tom Flanigan – Forest Service, Ely, NV – heritage resources, writer
Kathy Johnson – Forest Service, Ely, NV – biological resources, writer
Susan Baughman – BLM, Ely, NV – biological resources, writer
Jeff Brower – BLM, Ely, NV – hydrology/soils/riparian
Dave Jeppson – BLM, Ely, NV – recreation, GPS, GIS
Steve Leslie – BLM, Ely, NV – recreation
Jack Tribble – BLM, Ely, NV – recreation, writer

Patricia Irwin – Forest Service, Ely, NV – District Ranger, writer/editor
Matt Wilkin – BLM, Ely, NV – geographic information system (GIS) editor
US Fish and Wildlife Service, Reno, NV
State Historic Preservation Office, Reno, NV
Ely Shoshone Tribal Council
Nevada Wilderness Project
Friends of Nevada Wilderness
White Pine County Off-Road Technical Review Team
White Pine County Coordinated Resource Management Team
Nevada Department of Wildlife, Ely, NV

APPENDIX A
ROAD CLOSURE METHODS

Berm – Berms may be constructed at the beginning of a road or where it connects to other roads. They will be constructed with a dozer or backhoe. Dimensions will be at least 3-4 feet high and revegetated.

Rip – Roads scheduled for closure may be ripped for at least the first 400-500 feet 12 inches deep on 18 inch centers with a dozer. For very compact sections, cross ripping may be employed to better loosen the soil and prepare the soil for revegetation. Other parts of the road or the entire road may be ripped depending on resource protection, closure, and revegetation needs.

Seed – Revegetation will be accomplished by broadcast application at a site specific recommended rate. The mix will be design for site specific conditions and composed of a balance of native grasses, shrubs, and forbs. Seed will be certified noxious weed free. All mechanically caused ground disturbance will be revegetated.

Boulders – Boulders may be placed at the beginning of closed roads or where it connects to other roads. Minimum size of boulders will be 3 feet in diameter. Installation will be accomplished with a backhoe or excavator.

Woody debris – Large woody material may be pulled onto the beginning of closed roads or where they connect with other roads or over the entire length where woody debris is available. It will be pulled back over the road during final stages of recontouring if available. This would be accomplished with backhoe, excavator or dozer.

Pitting – Selected areas may be pitted to capture water, organic debris, and provide microsites where seed will have a improved favorable condition for revegetation success. This is performed with a backhoe or excavator bucket. The ground is loosened and left in a loose and rough condition where small pitting of the soil is left on the surface.

Vertical mulch - Mulch areas with standing live or dead plant materials where visual impacts need to be improved to appear more natural and/or camoflauged. This work may be performed with hand crews and chainsaws or using heavy equipment such as excavator. Mulch materials will be collected from the immediate surroundings if there is a sufficient supply such that the natural surrounds are not negatively impacted. Rock may be collected by hand from the surrounding area and scattered on the travel route to make it less recognizable as a vehicle path. Shrubs may be partially buried into the ground to make them appear rooted.

Recontour – Recontouring may be performed on identified road sections to reclaim the area to blend in with the surrounding topography. This work will be accomplished with heavy equipment such as an excavator, backhoe, and dozer. The fill slopes of the roads will be pulled back into the road prism and left in a rough condition to provide microsites to improve revegetation success. If woody debris is available, it will be scattered over the recontoured surface.

Signs – Signs will be installed for all road closures. They will also be used to direct motorized and nonmotorized travel on certain routes. A kiosk may be installed at either end of the Basin along the main north-south travel route to provide the public with travel, environmental, and educational information. A travel map will be posted on the kiosk as well.

Travel brochures – Brochures may be printed to provide the public with travel information in the Basin. They may be provided in local offices as well as at the kiosks.

Waterbars – Waterbars may be constructed for erosion control and constructed in accordance with USFS specifications. Installation of water bars would be performed with a dozer, grader, backhoe, or excavator. If soils are highly erodable, the ground at the outlets may be stabilized with rock cobbles or other soil erosion materials.

Culvert removal – Culverts may be removed from all permanently closed roads and disposed of in an acceptable manner. The area will be reshaped to approximate the natural channel in appearance and function. This work will be completed by using a dozer, backhoe, or excavator.

Re-establish drainages – Where necessary, re-establish natural drainages by removing fill slopes out of the drainage and shape to as near natural shape as practical. This will be accomplished using a dozer, backhoe, or excavator.

Gate installation – Gates will be installed at the beginning of roads managed for administration use only. If necessary, fencing, boulders, or berms will be placed along each side of the gate to prevent unauthorized access around the gates.

Outsloping – Outsloping may be performed on identified road sections to prevent erosion and re-establish overland hydrologic flow patterns. Outsloping methods would be in accordance with USFS specifications. This work will be completed using a dozer, backhoe, or excavator.

Cattleguard removal – Cattleguards will be removed where they are no longer needed and if necessary, fencing will be installed to connect to existing fencelines. Fence design will approximate the adjacent connecting fence. This work will be completed by hand where a motorized vehicle may be used to transport materials.

APPENDIX B
DEFINITIONS

Allotment: A geographic area delineated for the purpose of grazing domestic livestock.

Best Management Practices: Those practices that best meet the needs to resolve any issue while reducing impacts to the resources or individuals in question.

Invasive Plant/Invasive Species: A plant that is not native to an ecological site but can establish in an area and replace native species. These plants are so abundant they are not likely to be controlled.

Native plants/Native Species: Those plants that are naturally occurring within a defined environment.

Non-Structural Improvement: Practices and treatments undertaken to improve range or facilitate livestock management, excluding structural improvements; seeding, chaining etc.

Noxious Weed: A plant that possess one or more of the following characteristics; aggressive, difficult to manage, poisonous or toxic, they are not native to the defined environment in which they are found.

Primitive: The Primitive settings are just that! Characterized by essentially unmodified natural environments, their size and configuration assure remoteness from the sights and sounds of human activity. The use of motorized vehicles and equipment is not permitted except in extreme emergencies, such as saving someone's life or protecting the resource.

In the Primitive class, the user is forced to be self-reliant and expects low levels of user density.

In the semi-primitive and primitive settings, the use of the visual management system plays a critical role in assessing and maintaining conditions which support the naturalness of the area. For example, it may not be enough to forbid motorized use in the non-motorized classes. The character of any roads or other structures, such as buildings, bridges, or fences, must also be in harmony with the natural landscape.

Roaded Natural: The Roaded Natural class is characterized by predominately natural-appearing settings, with moderate sights and sounds of human activities and structures. The overall perception is one of naturalness. Evidence of human activity varies from area to area and includes improved highways, railroads, developed campgrounds, small resorts and ski areas, livestock grazing, timber harvesting operations, watershed restoration activities, and water diversion structures. Roads and motorized equipment and vehicles are common in this setting. Density of use is moderate except at specific developed sites, and regulations on user behaviors are generally less evident than in the Urban or Rural classes.

In some regions, a distinct subclass of setting features exists within the Roaded Natural class.

This subclass occurs where human modification is locally dominant or co-dominant with a natural-appearing landscape, much like the rural setting. However, the recreation opportunities provided are significantly different from the Rural setting. For example, although numerous, highly improved roads might exist in this subclass, there is a sense of remoteness because of the distances from major travelways. In addition, the density of recreation use is often low compared to the Rural class. Also, users have the opportunity for exploration and to use both on-road recreation vehicles and OHVs. Camping is not confined to developed campsites, so users have considerable autonomy in choosing sites and using equipment.

Semi-Primitive: Both the Semi-primitive Motorized and Non-motorized classes are characterized by predominantly natural or natural-appearing landscapes. The size of these areas gives a strong feeling of remoteness from the more heavily used and developed areas. Within these wildland settings, there are ample opportunities to practice wildland skills and to achieve feelings of self-reliance.

The most significant difference between the semi-primitive motorized and non-motorized settings is the presence or absence of motorized vehicles.

In the non-motorized settings, the presence of roads is tolerated, provided: they are closed to public use; they are used infrequently for resource protection and management; and the road standards and locations are visually appropriate for the physical setting. In many cases, old roads are acceptable as non-motorized travelways so long as they do not reflect misuse or poor stewardship of the land. These roads would have motorized use in the semi-primitive motorized class, especially by OHVs.

Structural Improvement: Improvements requiring construction or installation to improve the range or facilitate livestock management; fences, spring developments, etc.

Term Grazing Permit: Document used to authorize individuals, partnerships, or corporations to graze livestock on National Forest System lands. It is issued to livestock operators for a period of up to 10 years to graze a specified number, kind and class of livestock for a specific season and area of use.

APPENDIX C
BIBLIOGRAPHY

Baughman, Curt. 2004 February. Wildlife Biologist, Nevada Department of Wildlife. Personnel Communication.

NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: http://www.natureserve.org/explorer. (Accessed: July 2003).

USDA Forest Service. Intermountain Region. Humboldt National Forest Land and Resource Management Plan, 1986.

Wisdom, M.J., R.S. Holt, B.C. Wales, C.D. Hargis, V.A. Saab, D.C. Lee, W.J. Hann, T.D. Rich, M.M. Rowland, W.J. Murphy, and M.A. Eames. 2000. Source habitat for terrestrial vertebrates of focus in the Interior Columbia Basin: broad scale trends and management implications. USDA Forest Service Pacific Northwest Research Station General Technical Report PNW-GTR-485, Portland, OR.

Figure 1
General Site Location Map

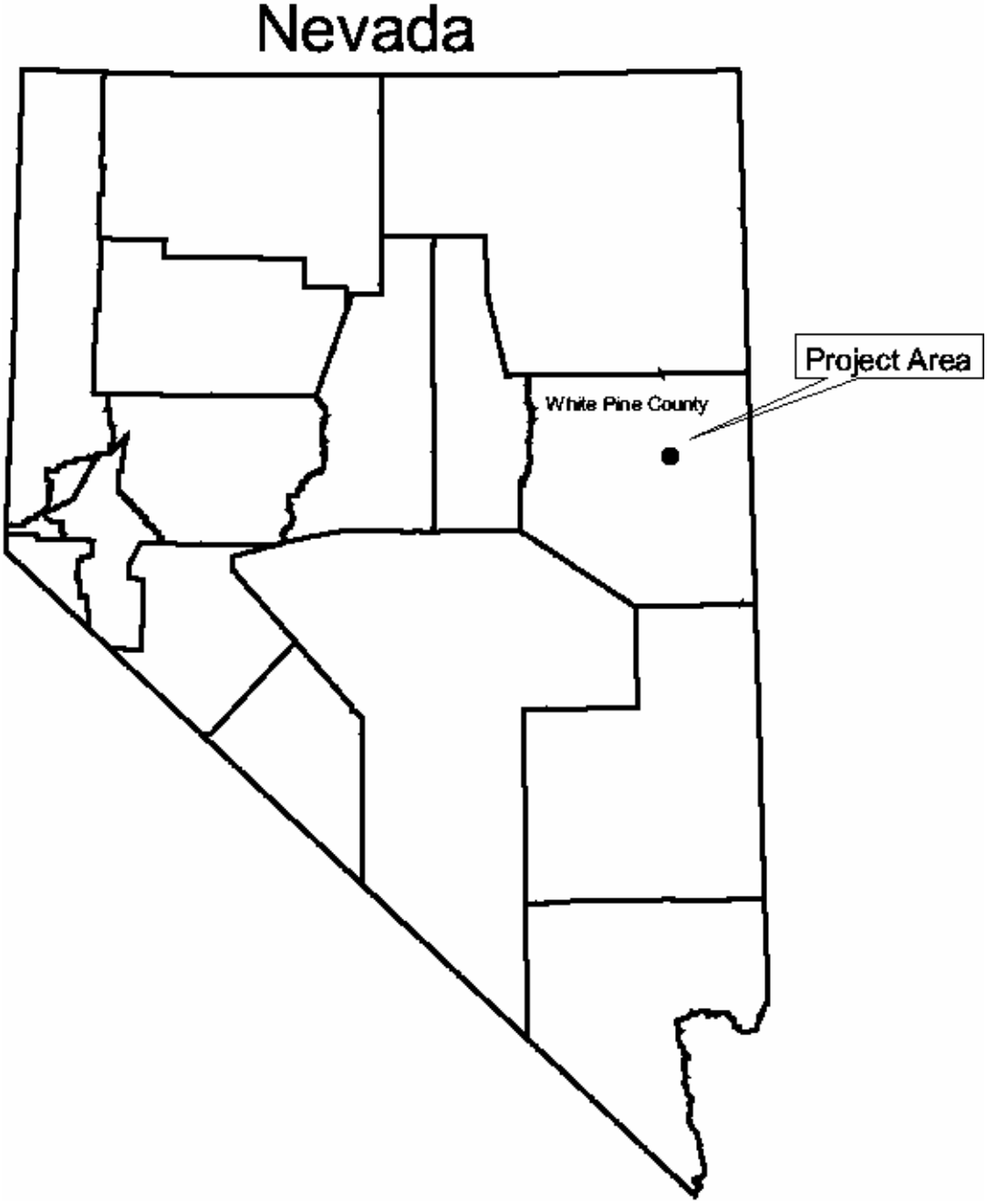

Figure 2 - Duck Creek Basin Transportation Plan
Alternative A, North Half

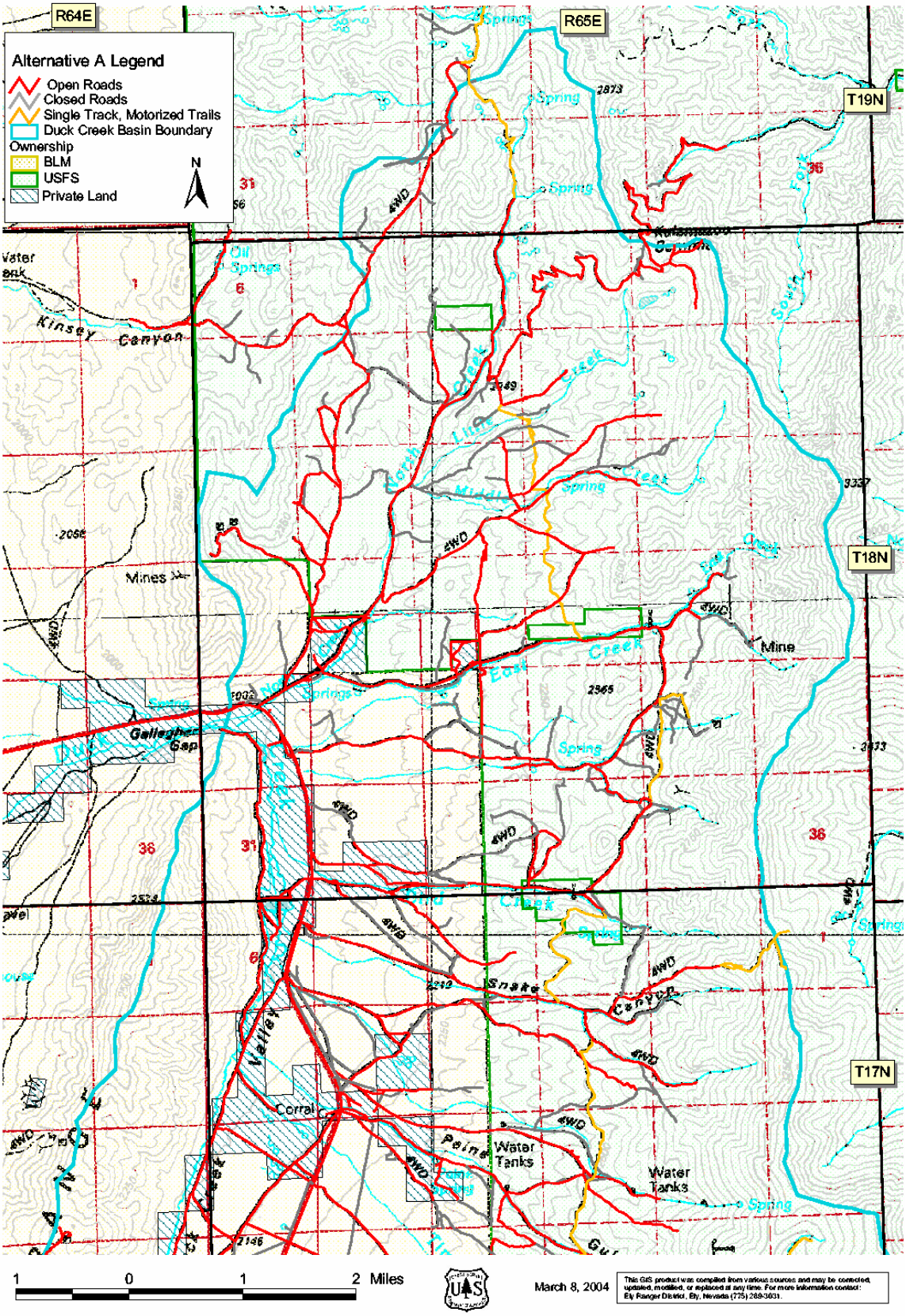

Figure 3 - Duck Creek Basin Transportation Plan
Alternative A, South Half

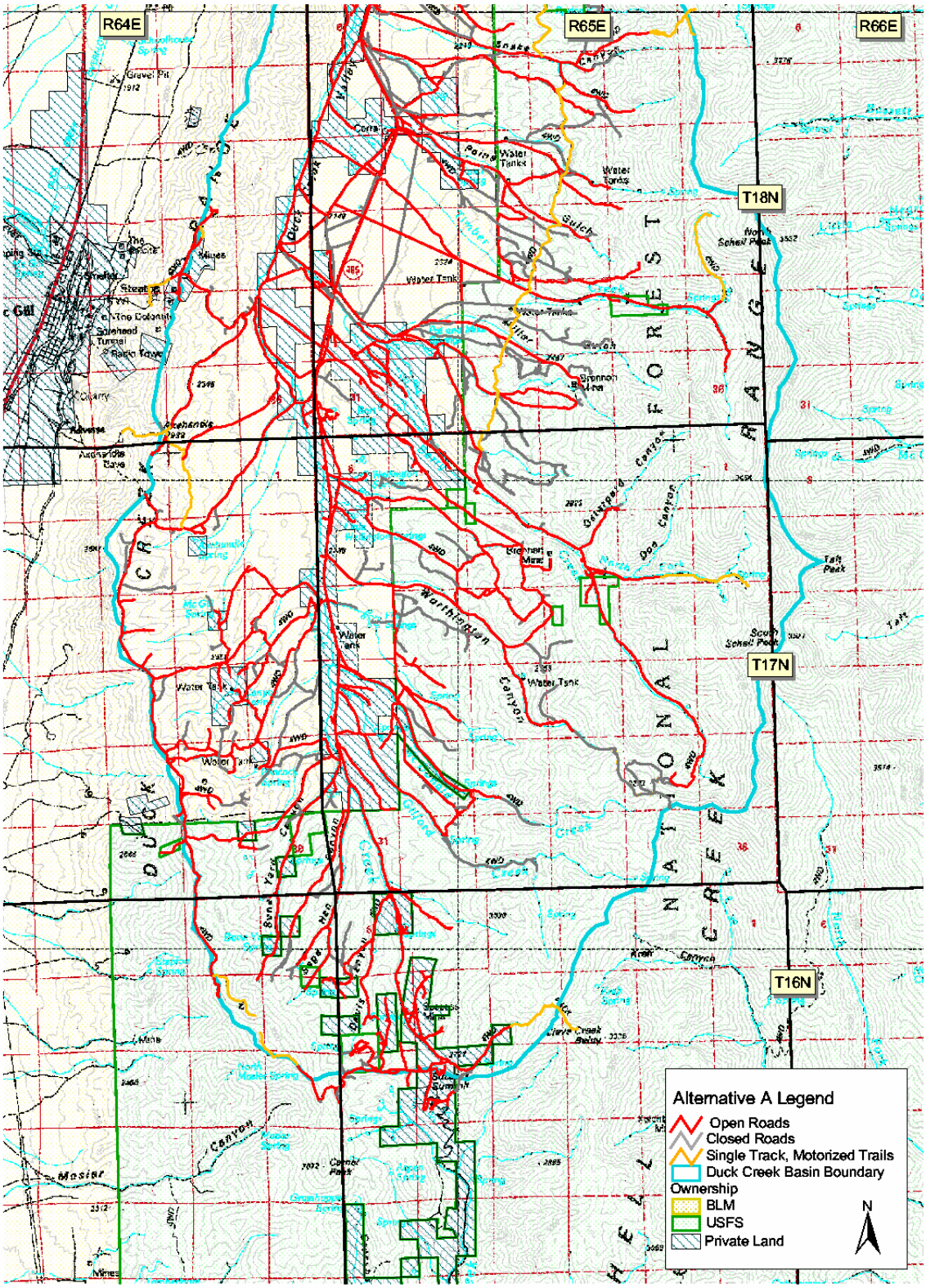

Figure 4 - Duck Creek Basin Transportation Plan
Alternative B, North Half

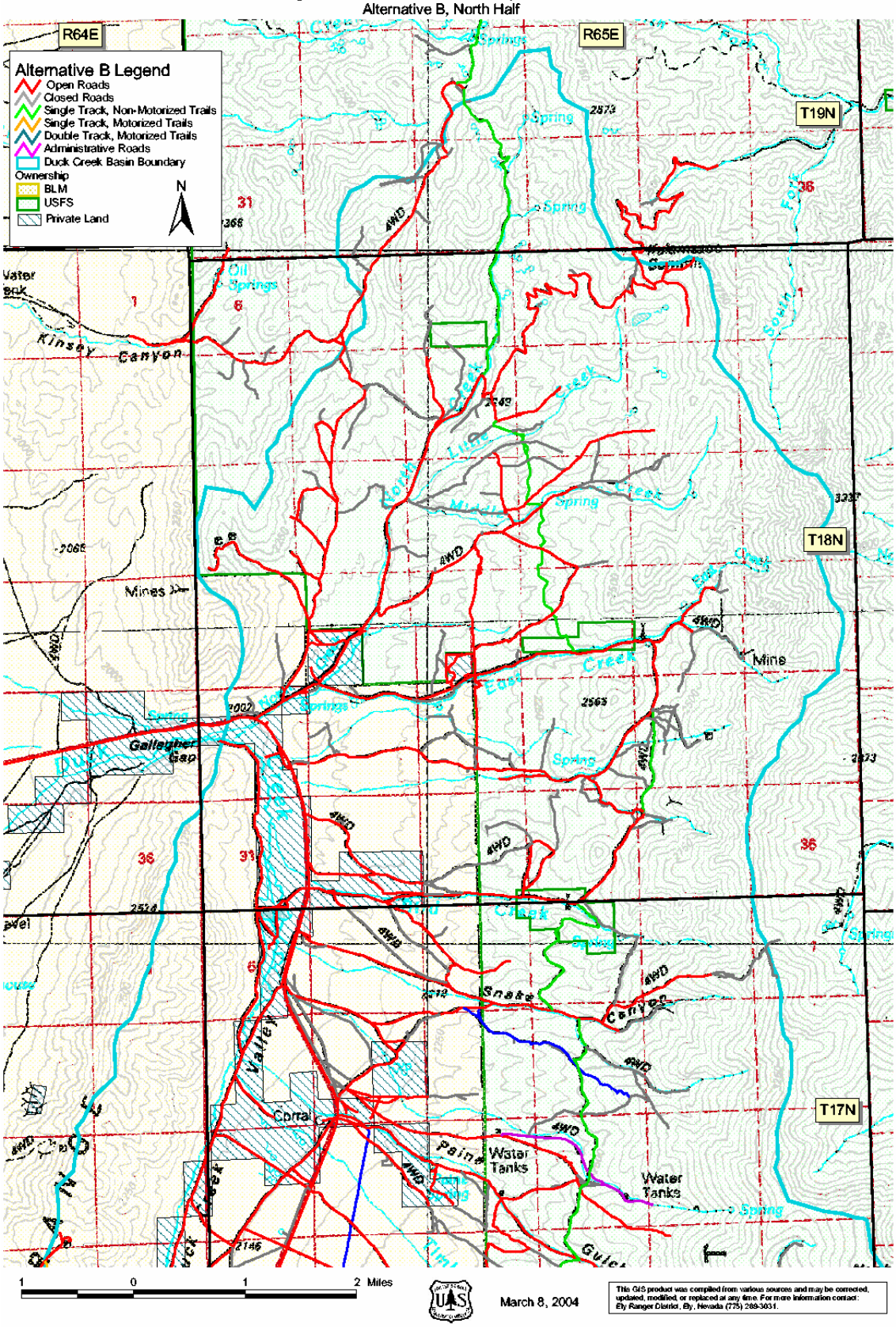

Figure 5 - Duck Creek Basin Transportation Plan
Alternative B, SouthHalf

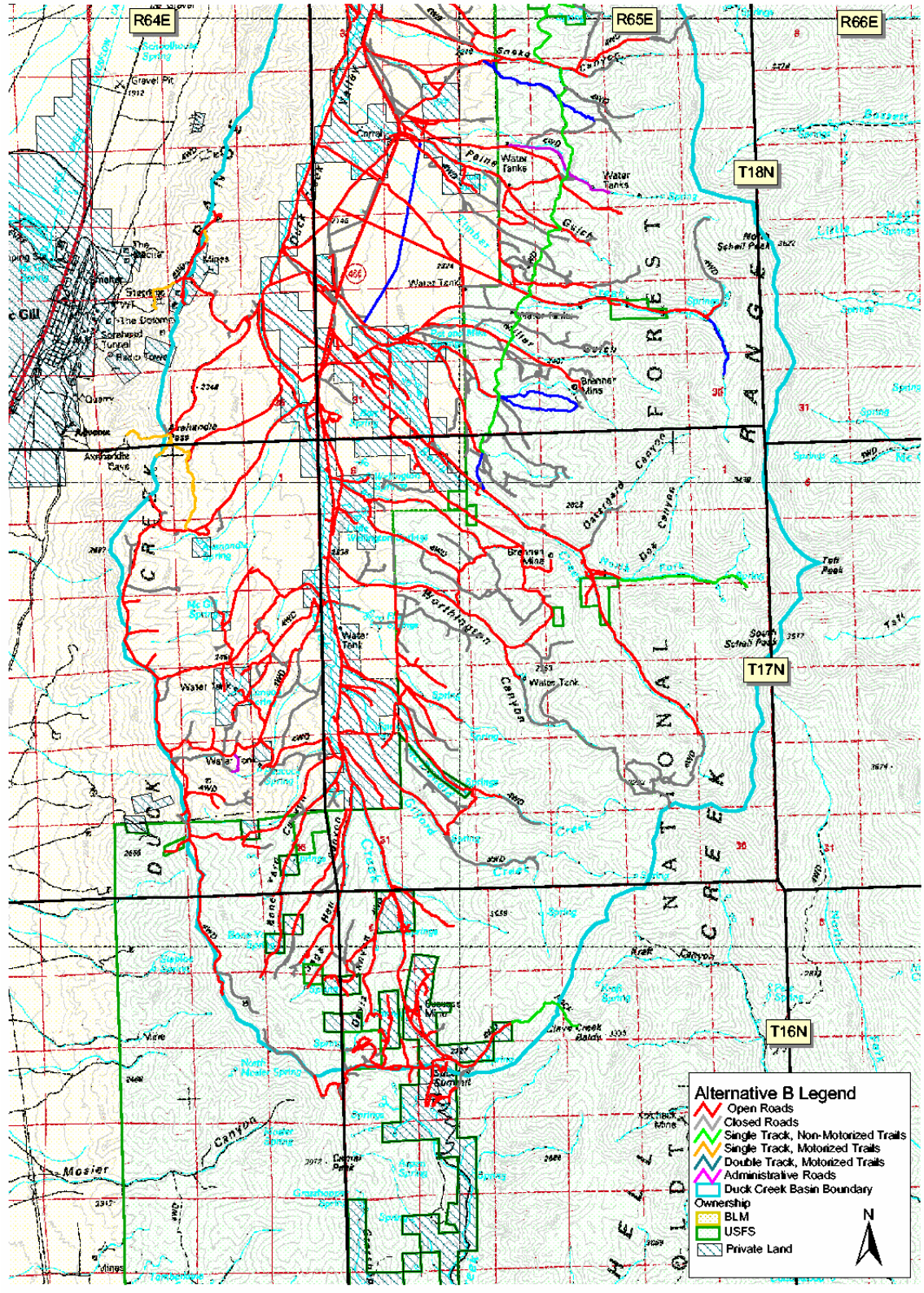

Figure 6 - Duck Creek Basin Transportation Plan
Alternative C, North Half

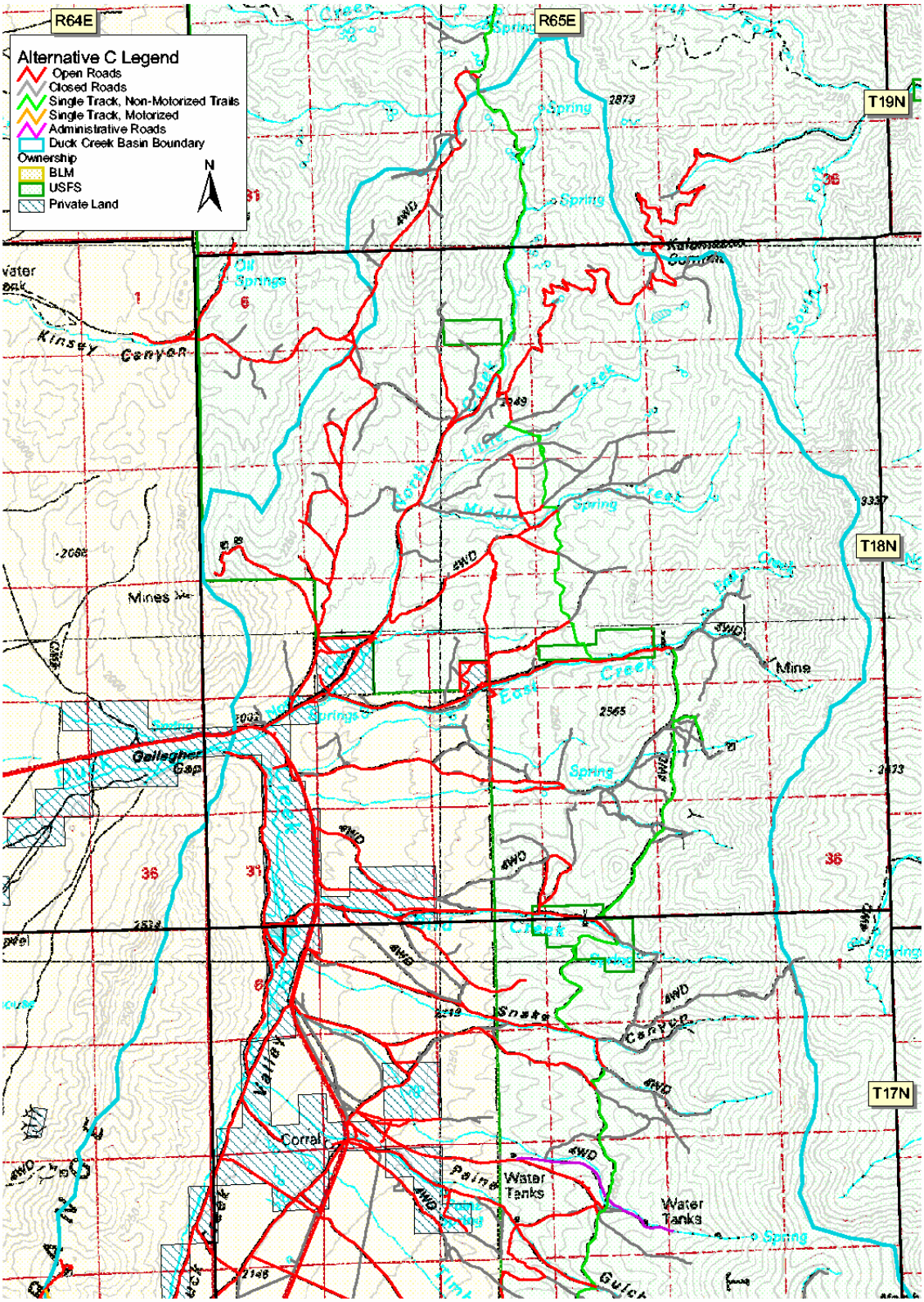

Figure 7 - Duck Creek Basin Transportation Plan
Alternative C, South Half