

2 ALTERNATIVES

This chapter is divided into the following sections:

- 2.1 Introduction
- 2.2 Actions or Alternatives Considered But Not Given Detailed Study
- 2.3 Alternatives Considered in Detail
- 2.4 Forest Plan Amendment
- 2.5 Monitoring and Evaluation
- 2.6 Alternative Summary
- 2.7 Comparison of Project Objective Achievement
- 2.8 Comparison of the Effects of the Alternatives on Significant and Key Issues
- 2.9 Identification of the Preferred Alternative

2.1 INTRODUCTION

Chapter 2 is the heart of this environmental impact statement, as described in 40 CFR 1502.14. This chapter describes the alternatives, including no action, considered for the Monticello and Blanding Municipal Watershed Improvement Projects and summarizes how the alternatives address the Purpose and Need and Issues presented in Chapter 1.

2.2 ACTIONS OR ALTERNATIVES CONSIDERED BUT NOT STUDIED IN DETAIL

This section discloses twelve actions or alternatives that were considered but eliminated from detailed study [40 CFR 1502.14(a)]. These alternatives are briefly discussed below along with reasons why they were eliminated.

The Proposed Action as Defined in the Notice of Intent - This alternative would provide for improvement of the City of Monticello's water system, reconstruction of FR 50079, and timber harvest. The project proposal for timber harvest and associated temporary road construction was based on direction defined by interim management guidelines for Inventoried Roadless and contiguous areas greater than 1,000 acres in size in place at the time of publication of the NOI.

The Inventoried Roadless Area boundary used to develop harvest treatment areas was inaccurate (mapping errors) and has been adjusted in the current Proposed Action. Use of temporary roads is now possible under current policies in areas outside of Inventoried Roadless Area boundaries, and harvest area boundaries and logging methods have been adjusted accordingly. The proposed water system has also been adjusted based on new information from City of Monticello and the Bureau of Reclamation, and the original alignment will not be evaluated further. The original proposed action with the above changes is Alternative B and has been analyzed in this document.

Water System Improvement - This alternative would provide for improvement of the City of Monticello's water system without timber harvest treatments or reconstruction of FR 50079. These actions are within the scope of effects and decision space of the identified alternatives and will not be considered further as an individual alternative.

Water System and Transportation System Improvement - This alternative would provide for improvement of the City of Monticello's water system and reconstruction of FR 50079. No timber harvest would occur at this time. The reconstruction of the municipal water system received minimal negative comment during scoping. These actions are within the scope of effects and decision space of the identified alternatives and will not be considered further.

Blanding Water System - The City of Blanding and the Bureau of Reclamation requested that reconstruction of the tunnel through Jackson Ridge be considered, including a staging area for equipment and access points for the reconstruction. After review, it has been determined that the proposed work may be completed under authority of the existing special use permit, and the BOR has withdrawn their request for the tunnel work to be included. This proposal will be reviewed under separate analysis.

Closure of FR 50079 for Municipal Watershed Protection – It has been suggested that existence of a road within a municipal watershed is incompatible with the maintenance and production of water from the area for culinary purposes. FR 50079 is an established road, popular recreation route, and designated Scenic Backway considered important to San Juan County and the local communities. It provides access to private inholdings as well as recreation infrastructure necessary for the use and management of the National Forest. It is the primary access for the care and maintenance of the water collection and conveyance systems for the cities of Blanding and Monticello. San Juan County has an easement on 2.5 miles of this road. The county maintains the remainder of the road (about 16 miles) under a Forest Road Agreement. The presence of the road is compatible with Manti-La Sal National Forest Land and Resource Management Plan (LRMP) guidelines for Municipal Watersheds (MWS Prescription areas).

Vegetation Treatment Utilizing Non-Mechanized Management Options - Some have suggested that mechanical treatment of forest vegetation and spruce beetle risk on National Forests System lands and within municipal watersheds is inappropriate and a non-mechanical intervention alternative should be considered (prescribed fire or the application of other spruce beetle suppression techniques that are less invasive to the area as a whole).

Although aspen communities have evolved directly with and depend on fire or other disturbance to regenerate, the fact that this area is managed as a municipal watershed, with the majority of the area a conifer (spruce-fir) forest type not ecologically suited to frequent, extensive fire, precludes consideration of this type of treatment. The stand configuration (aspen primarily on lower slopes with conifer above) on steep slopes could place much of the area at risk during limited periods when application of fire is practical. The extent of disturbance with this type of fire could place municipal watershed areas at risk. Limited use of fire is considered in alternatives that allow timber harvest or other suppression techniques. The use of prescribed fire alone as a vegetation management technique will not be analyzed in detail in the EIS.

Other spruce beetle suppression tactics (funnel traps and pheromone baiting, trap trees, and disposal by limited removal, burning, peeling, or bucking and drying of infested trees) are included in the alternatives analyzed in detail, but will not be the focus of a separate alternative. These strategies are considered short-term in nature. They are expensive and not considered

adequate to provide long-term management of spruce beetle populations and risk. Analysis of the no-action and action alternatives will provide sufficient information to address this question.

Logging Efficiency Alternative - Some have suggested that the proposed action is not economically feasible to implement. The proportion of helicopter logging to other logging systems is too high and some yarding distances are too long. It has been recommended that an alternative with additional temporary road construction be analyzed to display the effects of reduced yarding distances and increased tractor or forwarder logging.

This alternative has been incorporated into Alternatives B (Proposed Action) and C (Modified Timber Harvest). In order to address Forest Vegetation concerns regarding feasibility of implementation due to earlier policies restricting access in portions of the project area, additional temporary roads and tractor/forwarder logging areas were included and harvest areas that have yarding distances that are considered excessive will be displayed and analyzed as optional treatment areas. Since policy that restricted road access into areas greater than 1,000 acres adjacent to Inventoried Roadless Areas has changed, a specific alternative (other than no action) that excludes these areas from this access will not be analyzed in detail.

Expansion of Off Highway Vehicle (OHV) Trails within the Municipal Watershed - Some have suggested that the pipeline corridors and some roads and trails associated with proposed harvest treatments in the municipal watersheds and other areas should be retained on the transportation system for OHV or other vehicle use.

Although vehicular travel can and has been authorized within municipal watersheds under authority of the Forest Plan, “minimizing surface disturbing activities is the overall direction” within MWS areas (Forest Plan, page III-74). Temporary roads and skid trails are included in the proposed action and alternatives that propose harvest treatments, but expansion of the motorized trail system within the municipal watersheds or along the pipeline corridor outside the municipal water supply area does not meet the identified purpose and need for the proposed action.

Construction of one to three toilets within the municipal watersheds to protect/maintain water quality - Some have suggested toilets should be constructed within the municipal watersheds to provide sanitation facilities for those utilizing FR 50079 for recreation activities to protect water quality.

A proposal to construct toilets within the project area was considered by an Intermountain Region Recreation Facilities Design Team on October 17, 2001 (Skibbiness, 2001). Although within municipal watershed, the team felt that the level of recreation activity within the area did not warrant the expense of constructing and maintaining these types of facilities at this time and recommended that available funds be routed to other areas of higher use and need.

Adjustment of the Pole Creek and Bankhead Creek pipeline segments to protect visual resources - It was suggested that the Pole Creek and Bankhead Creek portions of the Monticello pipeline be diverted below the old ski area, across private property (north/south) to the Blue

Mountain Highway corridor to eliminate about one mile of utility corridor aligned vertically in a straight line from Monticello.

Three separate individuals own the property that was proposed for the diversion. The City of Monticello indicated that preliminary contacts made with the landowners were negative and easements would be difficult or impossible to obtain. This specific proposal will not be analyzed within this EIS. A modified version of this proposal is included in the analysis.

Construction of FR 50079 to the normal standard for a graveled Maintenance Level (ML) 3 Forest Road to a full 50-foot curve standard - Some have suggested construction of limited curves in switchback areas would be unsafe, and the road should be reconstructed to a full or normal standard for safe use of larger vehicles.

Because of limitations from riparian areas, steep slopes, and construction costs research was done prior to publication of the NOI to determine a safe useable standard of road that logging trucks and other large equipment could safely negotiate at a reasonable cost. It was determined that curves of about 40-foot radius could meet this need with newer equipment (DeFreest, 2001). The amount of excavation and cost of constructing retaining walls required to reconstruct some curves to a 50-foot radius standard would be excessive and could affect water quality within the municipal watershed. Therefore, reconstruction of curves in switchback areas and other areas of limited space to the 50-foot standard will not be analyzed in detail within this EIS. Design features are included in the action alternatives to address safety concerns for equipment during timber harvest and pipeline reconstruction. FSH 7709.56, Chapter 4 (4.3.1, Item 2) provides for exceptions in minimum road curvature based on vehicle design.

Implementation of Road Analysis Recommendations – It has been suggested that all recommendations for changes in road/trail classification and decommissioning of all unclassified roads within the project boundary be included in order to provide additional improvement of watershed values within the area.

Because of the controversial nature of dealing with Forest access issues and the need for additional site-specific review, only those roads and trails directly related to proposed road construction or reconstruction, water system reconstruction, or timber harvest will be evaluated under this analysis. Total implementation of recommendations for management of the project area roads and trails (classified or unclassified) is outside the scope of this analysis and will not be considered at this time, except in the context of the cumulative effects analysis.

2.3 ALTERNATIVES CONSIDERED IN DETAIL

A No-Action alternative (Alternative A) and two action alternatives (Alternatives B and C) were developed and considered in detail. These alternatives, along with those considered but not studied in detail (Section 2.2), represent a reasonable range of alternatives for this project, defining the significant issues, while responding to the identified purpose and need.

Action alternatives include Forest Plan direction and project design features that address various issues, reduce potential environmental effects, and allow for improved project implementation.

All applicable Forest Plan direction is hereby incorporated by reference unless otherwise stated. The project design features are listed in Appendix A.

2.3.1 Alternative A – No-Action

Alternative A addresses the requirement to provide a “No Action” alternative. Current management of the area would continue, minus continuation of spruce beetle trapping and baiting treatments that have occurred in the area since 1999. No reconstruction of the City of Monticello’s water collection and conveyance system would occur at this time. Only spot maintenance would occur on the existing water system, as needed. No roads would be constructed, reconstructed, decommissioned, or added to or removed from the Forest infrastructure. Deferred road maintenance would be implemented as appropriate/allowed under existing NEPA including, but not limited to, grading, hazard tree removal, clearing, spot graveling as needed, and culvert repair/replacement. No timber harvest treatments would occur.

2.3.2 Elements Common to All Action Alternatives (Alternatives B and C)

Alternatives B and C are described in the next two sections and have the following elements in common.

Water System Improvement/Relocation (Map 6) – The City of Monticello would be authorized to reconstruct their water collection and conveyance system located on National Forest System lands. The water system construction/improvements would be completed in five years, and the special use authorization could be amended/reissued for up to 20 years.

Specifically, the following is proposed:

- Eliminate/abandon approximately 3.0 miles of existing buried pipeline that carries water from North Creek, Bankhead Creek, and Pole Creek to the Monticello Water Treatment Plant.
- Replace the existing buried pipe in the remainder of the system (approximately 9.7 miles) with new pipe.
- Install approximately 3.4 miles of new buried pipeline along the lower portion of North Creek Road FR 50079, the Blue Mountain Ski Area Road FR 50086, FR 55266, and Blue Mountain Highway (Forest Highway 049 - within the San Juan County right-of-way corridor) to the Forest boundary.
- Upgrade or replace all of the existing water collection boxes and spring developments (38 to 45 boxes would be constructed).
- Allow construction/reconstruction of up to a 12-foot wide temporary road/trail within a 20 to 30-foot wide corridor along the length of the pipeline to provide temporary construction access, room for equipment to maneuver for pipeline installation, and stockpile of soil and debris. The pipeline would be buried within this corridor, and the corridor would be closed to vehicle access after project completion.
- Utilize existing openings or create small openings at intervals along the length of the pipeline corridor to be used as temporary storage areas for topsoil, rock, and woody debris. These storage areas would generally be less than 0.25 acre in size.
- Following reconstruction, the pipeline corridor and temporary road access would be seeded, drained, and closed to public motorized access, except for administrative use.

The City of Monticello would be authorized access along the pipeline corridor on a case-by-case basis for monitoring and maintenance of the water system.

Road Improvement, Construction, and Reclassification – The North Creek Road, FR 50079 (approximately 16 miles), would be improved to a Traffic Service Level C to accommodate passenger vehicles (Map 7). This would include removal of hazard trees and clearing of the road corridor, turnout construction, culvert replacement, realignment of curves/switchbacks, roadbed widening, and graveling. Road improvements would be completed within five years and would include the following:

- Ten curves in areas with limited room for construction would be realigned to approximately 40-foot radii to improve public access along the existing road for recreation, permitted uses, and to accommodate hauling of up to 33 foot logs for vegetation treatments.
- Other curves located in areas with less limitation could be realigned to about 50 foot radii or be retained in the existing alignments.
- The finished road surface would be about 14 feet wide with vegetation clearing (trees and brush) of four feet either side of the road surface.
- Rock sources (crush site or pits) and a binder material source are included for road reconstruction (Map 8).

Additional road construction, reconstruction, maintenance, and reclassification proposed for implementation of timber harvest, water system reconstruction, future management of the Monticello and Blanding municipal water systems, and correction of current errors in the existing Forest Road and Trail database include the following (Map 7):

- Approximately 2.3 miles of temporary roads would be constructed to facilitate log removal. These roads would be decommissioned at the completion of timber harvest or post-harvest treatments.
- Classified roads used for log haul would receive pre-haul maintenance (blading and shaping of running surface, drainage repair, clearing, and some realignment of approaches or intersections within the existing right-of-way).
- Some unclassified roads may be used for timber harvest and pipeline construction. Approximately 7.6 miles of existing unclassified road would be decommissioned following timber harvest and pipeline reconstruction.
- Approximately 0.1 mile of classified trail that provides access to the north end of the Blanding Water Tunnel in Indian Creek would be classified as a Forest road, reconstructed, and graveled to a Traffic Level C standard. This existing road surface has not been classified and is the primary trailhead access for motorized Trail #160.
- Approximately 0.3 mile of existing unclassified road that accesses the Blanding Water Tunnel from the north (beyond the trailhead of Trail #160-Indian Creek) and south sides (Johnson Creek) would be classified as private under the City of Blanding's Special Use Permit. This road would be closed to public motorized access and would be available only for permittee or Forest Service administrative purposes.
- About 0.6 miles of unclassified road in North Creek that provides access to the City of Monticello's water system would also be added to the Forest Road system. This road would be closed to public motorized access and would be available only for permittee or Forest Service administrative purposes.

- About 0.3 miles of unclassified road in Pole Creek that provides access to the City of Monticello's water system would be classified as private under the City of Monticello's Special Use Permit. This road would be closed to public motorized access and would be available only for permittee or Forest Service administrative purposes.
- Approximately 0.4 mile of currently classified road would be decommissioned and removed from the Forest Road system.
- Approximately 0.4 miles of currently classified motorized trail would be decommissioned and removed from the Forest Trail system.
- Approximately 0.7 miles of currently motorized trail would be reclassified as non-motorized trail.
- Approximately 0.5 miles of classified motorized trail in the Dickson Gulch/Gold Queen Gulch area would be converted to classified road.

Vegetation Treatments

- Timber removed during treatments could be hauled to the northeast into Monticello or south into Blanding. The haul route on FR 50079, FR 50354, and other roads could be closed to public access during periods when helicopters are decking logs, during cable operations, and during hauling for public safety.
- Locations for temporary roads, log landings, skid trails, and forwarder trails would be approved and authorized before use. Use of forwarders may require clearing of approximately 2.5 miles of trail.
- Generally, log landings for ground-based operations would be located along harvest access roads every $\frac{1}{8}$ to $\frac{1}{4}$ mile. Log landings and decking areas would likely be less than 0.5 acre in size for ground-based (tractor/forwarder) yarding areas and less than 2 acres in size for helicopter yarding areas. Cable yarding would require decking of logs along FR 50354, with construction of larger (less than 0.5 acre) landings about $\frac{1}{8}$ mile apart.
- Treatment of the Horsehead spruce stand would be less intense than other vegetation treatments. The appearance of the feature would be maintained while promoting recruitment and release of young seedlings in the understory by retaining 140 to 180 square feet of basal area per acre.
- In mixed conifer/aspen stand areas, improvement cuts (conifer removal) and prescribed fire would be used as treatments to reduce competition from conifer species and enhance root sprouting (aspen) to maintain aspen as the dominant component.
- Treatment of gophers would occur only where needed using underground treatment methods in spruce stands.
- As determined appropriate through monitoring by an Entomologist and Silviculturist, spruce beetle trapping, pheromone baiting, and disposal of trap and infested trees would continue in the project area during the five-year implementation period to limit spruce beetle population increases and minimize subsequent spruce mortality.
- Prescribed post-harvest activities would be implemented to treat existing and harvest generated fuels, prepare seedbeds for natural regeneration (Engelmann spruce and aspen), plant Engelmann spruce seedlings, protect reforestation areas (natural or planted) from damage from wildlife or livestock (including gopher control as needed), and to thin or weed trees less than 8 inches DBH. Harvest treatments and associated follow-up work (slash disposal, reforestation, etc.) would be completed over a five-year period.

Design Features Common to Water System Reconstruction/Relocation; Road Improvement, Construction, and Reclassification; and Vegetation Treatments

Detailed descriptions of design features are available in Appendix A.

- During periods of road construction, water system construction or reconstruction, or timber harvest, Forest roads or trails may be administratively managed to control conflicting traffic, unsafe conditions, or traffic flows. Management actions could include (but are not limited to) temporary closure, signing, or use of traffic controllers (flaggers) to manage traffic.
- Noxious weed monitoring and management practices would be used to prevent the establishment of noxious weeds in areas disturbed by water system and road construction and reconstruction and vegetation treatment (harvest, prescribed burning, or scarification).
- Erosion control measures would be implemented in areas disturbed by water system and road construction and reconstruction, landings, and skid trails used for timber harvest. These may include, but are not limited to, use of drainage structures, erosion control seeding, and scattering of woody debris.
- Spruce beetle or Douglas-fir beetle management techniques would be applied to manage large green logs, cull pieces, and infested stumps to minimize spread to standing live trees.

2.3.3 Alternative B - Proposed Action

Alternative B emphasizes reduction of the risk of development of epidemic spruce beetle populations within the project area and provides intensive management for the regeneration of aspen. This alternative is responsive to the purpose and need identified in the NOI and in Chapter 1 of this document. Proposed vegetation treatments in this alternative focus on the Forest Vegetation issue (Chapter 1).

At the time of publication of the NOI, an error in the boundary of the Blue Mountain Inventoried Roadless Area was identified, but existing policy required retention of the boundary utilized in the Roadless Area Conservation Final Environmental Impact Statement (USDA Forest Service 2000), and the proposed action was adjusted accordingly. Since that time, policies that define management of these and adjacent areas have changed. Accordingly, the GIS (computer digitized) boundary has been corrected and proposed treatment areas and associated road proposals have been adjusted in accordance with current policy. This allows more logical management of stands in the Indian Creek area (including areas of prior development) and better emphasizes concern for the health and management of the spruce and aspen components of the project area. Key differences of this alternative from the original proposed action include the following:

- Timber harvest units have been adjusted to conform to the corrected Blue Mountain Inventoried Roadless Area boundary.
- Temporary roads have been included in areas originally excluded from road construction (due to interim roadless and transportation system policies that no longer apply) and logging systems are adjusted accordingly.
- Aspen treatments would be implemented in units of less than 40 acres. Proposed aspen regeneration treatments where clearcut area would exceed 5 acres in size are identified on Map 12 (even-aged management).

- Some proposed timber harvest areas would be identified as “optional”. If these areas prove to be economically infeasible to implement through a timber contract at the time of bid, they would not be offered.
- Implementation of timber harvest in this alternative would require a Forest Plan Amendment to allow deviation from Forest Plan Standards and Guides for the northern goshawk.

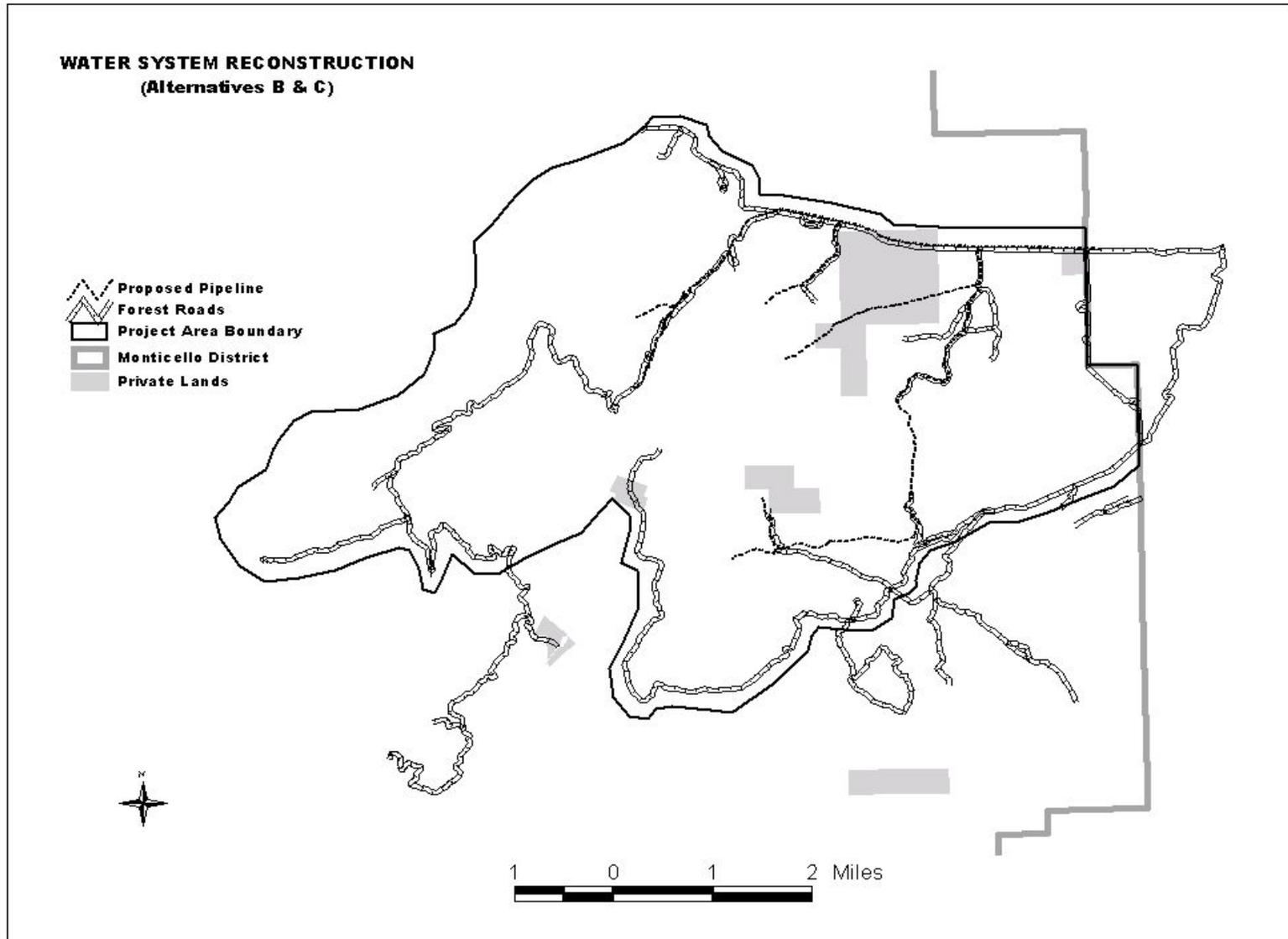
Vegetation Treatments - Approximately 808 acres of spruce/subalpine fir, 926 acres of aspen/spruce-fir, and 75 acres of aspen would be silviculturally treated (harvested) to develop a more diverse, open ecosystem (Map 9). Total treatment would occur on approximately 1,809 acres. Of this area, 267 acres would be considered optional at the time of project implementation due to distance from roads which may preclude offer of an economically viable contract package (Map 14). Logging methods would include helicopter (68%), tractor/forwarder (28%), and cable (4%) (Map 11).

Within spruce and spruce-fir stands, silvicultural (harvest) methods would include thinning, group selection (patch cuts), overstory removal (cutting of larger, upper canopy trees to release trees in the lower canopy level), sanitation (removal of infested or diseased trees), and salvage (harvest of dead, damaged, and dying trees). Most spruce trees greater than 18 inches DBH would be removed from treated stands while thinning to bring stand density to between 100 and 120 square feet of basal area (cross-sectional area of the stems per acre at breast height). Clumps of two to nine trees would be limited to non-spruce or isolated spruce surrounded by other tree species and would cover less than 40 percent of treated acres. Small openings (patch cuts, one to five acres in size) would be created in about 20 percent of the treated areas to diversify structure by regenerating spruce, fir, and aspen. Treatments would be designed to reduce stand susceptibility to spruce beetle attack to a low to moderate level, improve size and age diversity, and maintain Engelmann spruce as the primary component.

In aspen and some mixed conifer/aspen stands, treatments would include large and small clearcuts (less than 40 acres in size) designed to regenerate all or portions of existing mature and old aspen clones. The desired future condition for these stands would be retention of or an increase in aspen community. About 192 acres would be treated under an even-aged silvicultural system (Map 12).

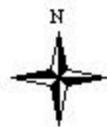
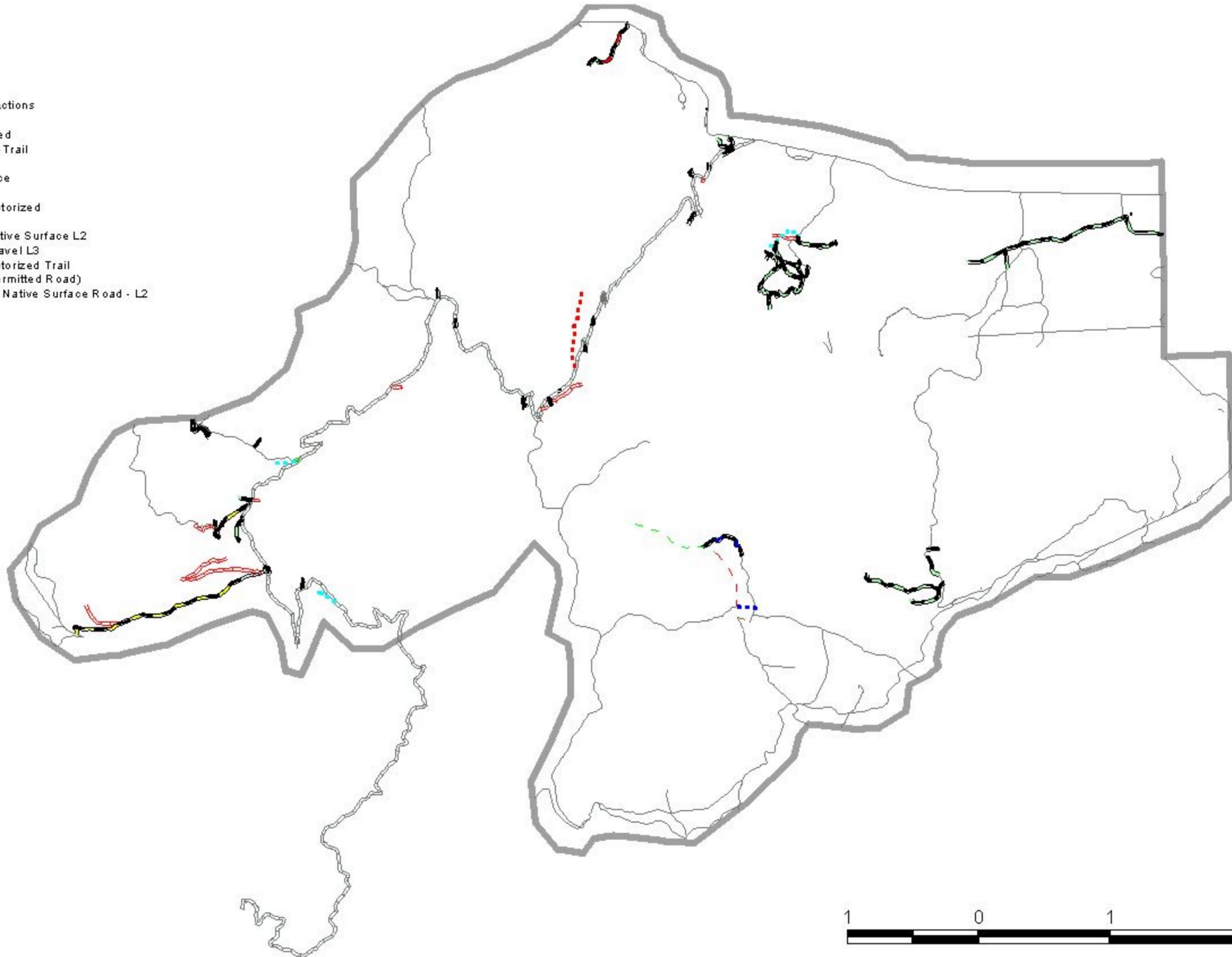
Figure 5 displays an estimate of acres that would need reforestation, fuels reduction, thinning, or weeding of trees less than eight inches DBH, or protection treatments following timber harvest.

Map 6 - Water System Reconstruction (Alternatives B & C)

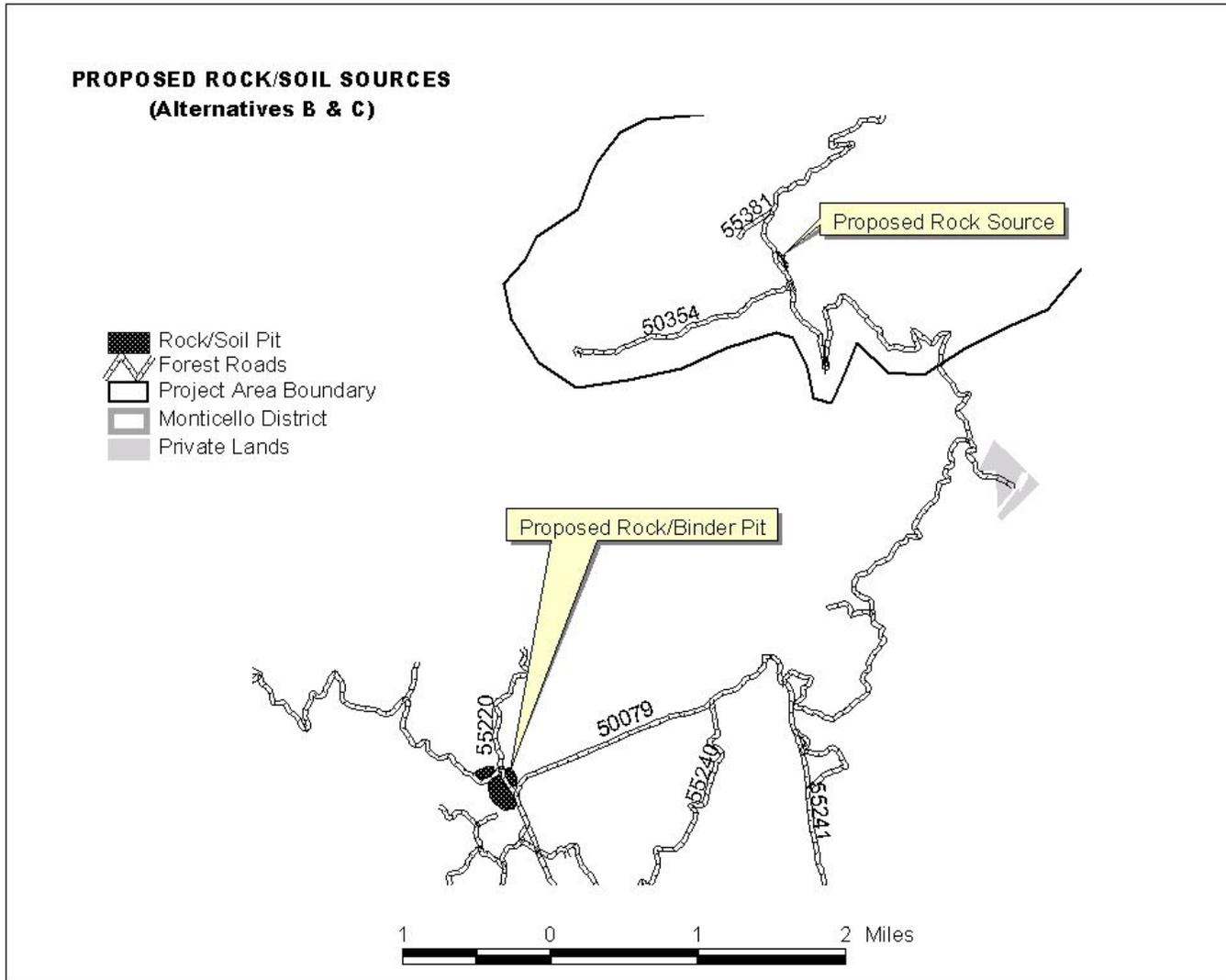


Alternatives B&C - Road/Trail Actions

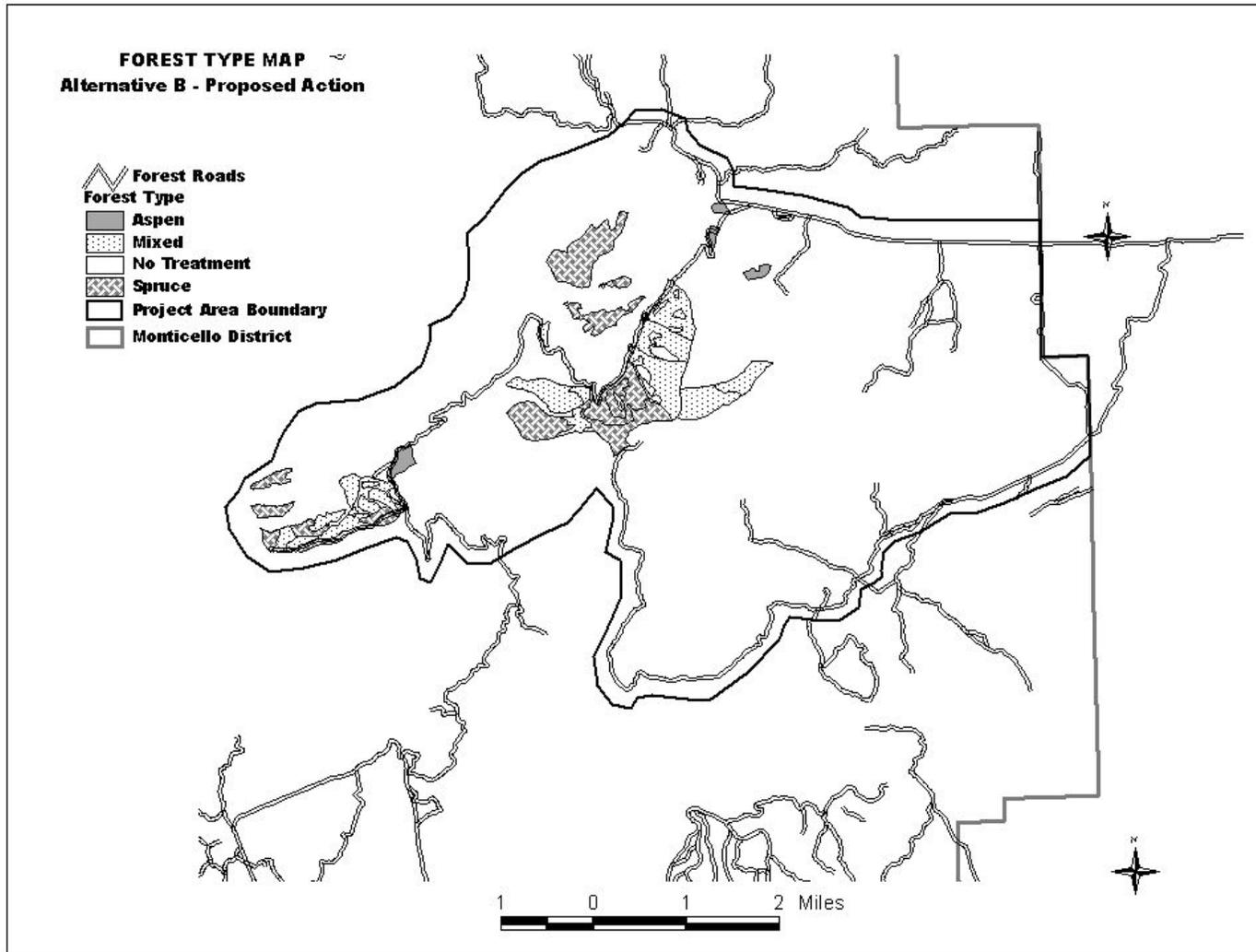
-  Decommission Classified
-  Decommission Unclassified
-  Decommission Motorized-Trail
-  Pre-Haul Maintenance
-  Reconstruct/Native Surface
-  Reconstruct/Gravel
-  Motorized Trail to Non-Motorized
-  Unclassified to Level 1
-  Classify Unclassified - Native Surface L2
-  Classify Unclassified - Gravel L3
-  Classify Unclassified - Motorized Trail
-  Unclassified to Private (Permitted Road)
-  Classify Motorized Trail - Native Surface Road - L2
-  No Change in Status
-  Temporary Roads
-  Project Area



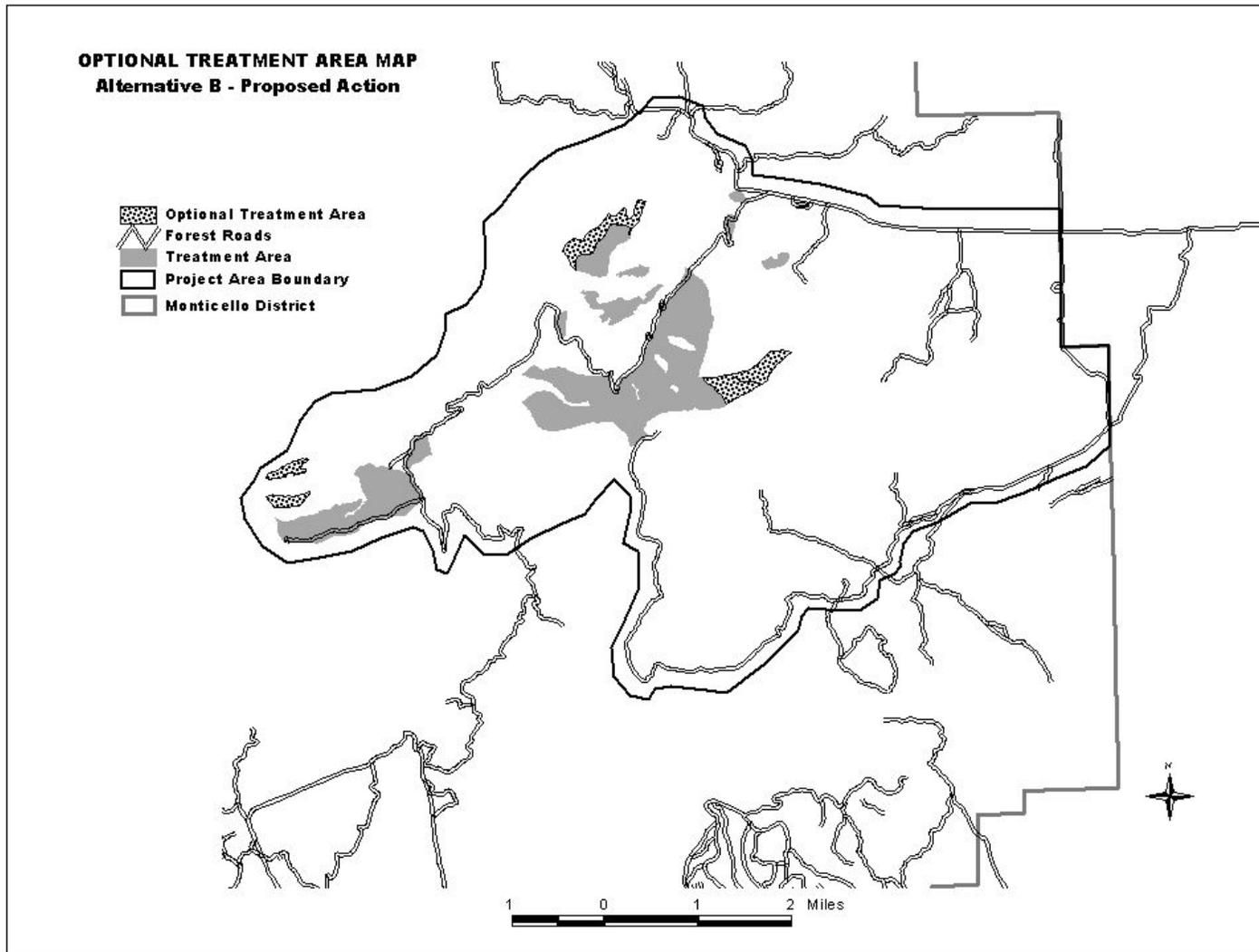
Map 8 - Proposed Rock/Soil Sources (Alternatives B & C)



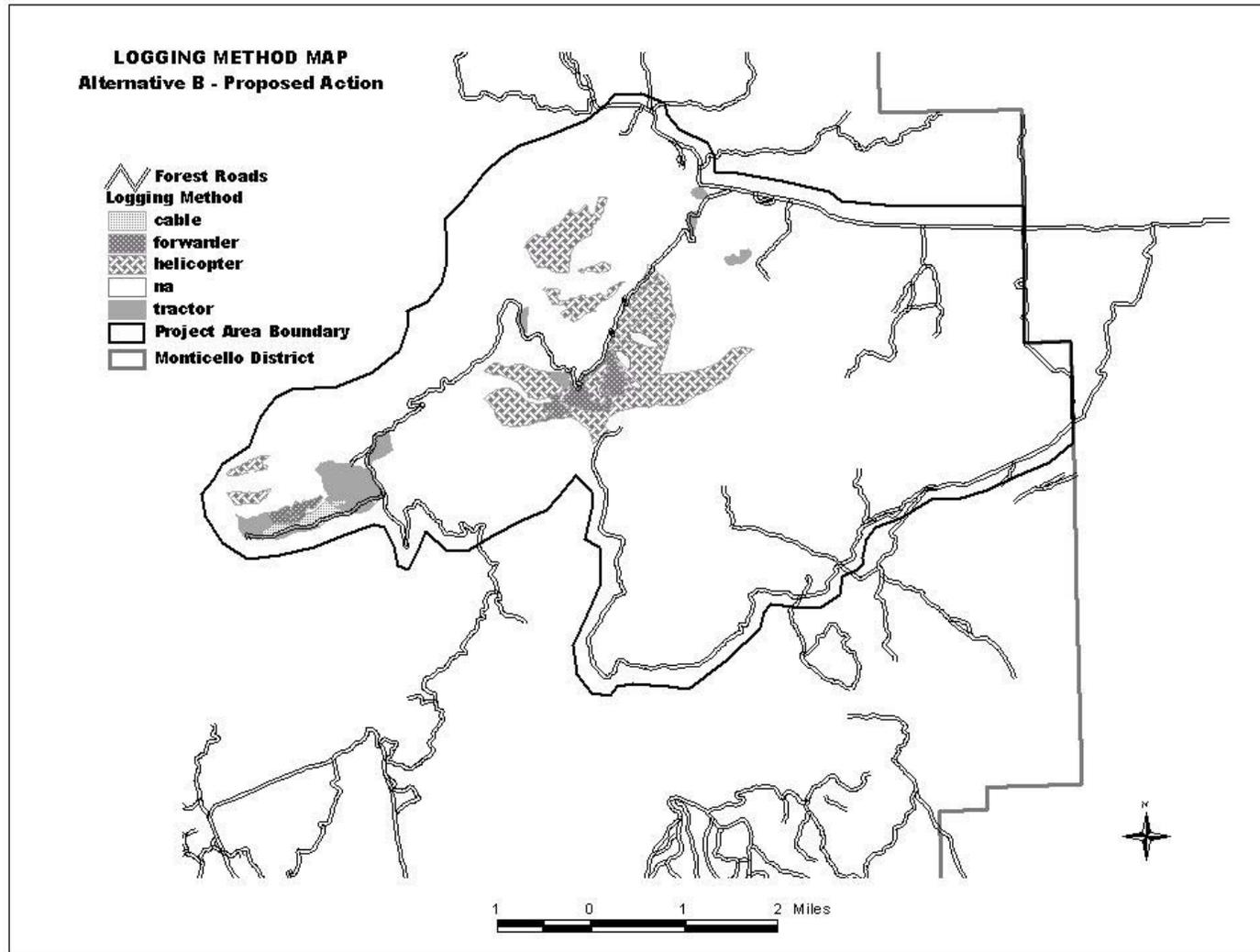
Map 9 - Forest Type Treated (Alternative B)



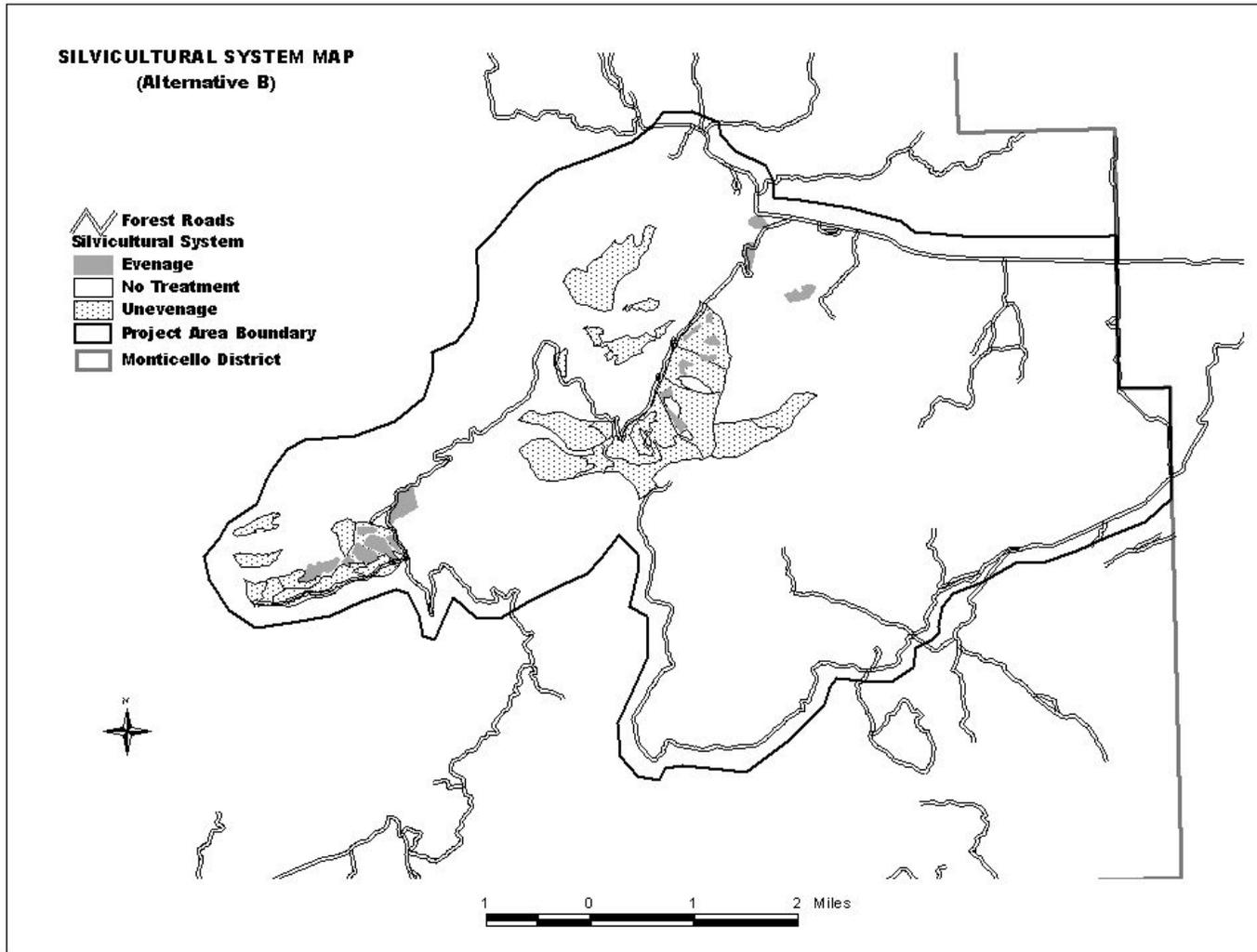
Map 10 - Optional Treatment Area (Alternative B)



Map 11 - Logging Method (Alternative B)



Map 12 - Silvicultural System (Alternative B)



2.3.4 Alternative C - Modified Timber Harvest

This alternative was developed to address the Wildlife Resource issue (Chapter 1) and concern that timber harvest treatments in the proposed action may affect habitat of the northern goshawk and three-toed woodpecker (Region 4 Sensitive species). Under Alternative B, the size of openings and emphasis on removing many of the larger diameter spruce trees while thinning in a more uniform manner than prescribed by the Forest Plan may affect the habitat of this species. Vegetation treatments have been modified in Alternative C to address these concerns.

Nesting habitat of the three-toed woodpecker may be affected by timber harvest identified in the proposed action. This alternative analyzes additional protection of three-toed woodpecker habitat by removing some areas from potential treatment.

Vegetation treatments are the same as described for Alternative B with the following changes:

- Northern goshawk management guidelines would be implemented in timber harvest treatments.
- Aspen regeneration treatments would be implemented in units of 20 acres or less. Proposed aspen regeneration treatments where clearcut area would exceed five acres in size are identified on Map 13.
- Group regeneration openings in spruce areas would not exceed four acres in size (except in areas of dead salvage).
- Nesting territories of the three-toed woodpecker would not be harvested.

Vegetation Treatments - Approximately 808 acres of spruce/subalpine fir, 820 acres of aspen/spruce-fir, and 60 acres of aspen would be silviculturally treated (harvested) to develop a more diverse, open ecosystem (Map 13). Total treatment would be approximately 1,690 acres. Of the treated area, 234 acres would be considered optional at the time of project implementation due to distance from roads, which may preclude the offer of an economically viable contract package (Map 14). Logging methods would include helicopter (68%), tractor/forwarder (28%), and cable (4%) (Map 18).

Within spruce and spruce-fir stands, treatments would be accomplished through silvicultural (harvest) methods that include thinning, group selection (patch cuts), overstory removal, sanitation, and salvage. Spruce trees generally greater than 18 inches DBH would be removed from treated stands while thinning to bring stand density to between 125 and 135 square feet basal area. Thinning would be accomplished in a manner that would provide a clumpy configuration for northern goshawk habitat. Clumps of two to nine trees would be evident in over 40 percent of treated areas. Group regeneration openings in spruce areas would not exceed four acres in size (except in areas of dead salvage). These openings (patch cuts, one to four acres in size) would be created in about 15 percent of the treated areas to diversify structure by regenerating spruce, fir, and aspen.

Size of treatment blocks in aspen and some mixed conifer/aspen stands is reduced in this alternative. Treatments would include large and small clearcuts (20 acres or less in size) designed to regenerate all or portions of existing mature and old aspen clones. Retention of or an

increase in aspen community would be the desired future condition for these stands. About 164 acres would be treated under an even-aged silvicultural system (Map 16).

Figure 5 (page 46) displays an estimate of acres that would need reforestation, fuels reduction, thinning or weeding of trees less than eight inches DBH or protection treatments following timber harvest.

2.4 FOREST PLAN AMENDMENT

Selection of Alternatives A, B, or C would require a site-specific, non-significant amendment to the Manti-La Sal National Forest Plan. This amendment applies to the City of Monticello's water collection and conveyance system and associated maintenance and proposed reconstruction. Amend Wildlife and Fish Resource management 04, 05, Amendment to the Forest Plan (dated April 14, 2002) Standard X, page CC-63, which states: "When non-vegetative management activities (for example: ...utility corridors, etc.) are proposed that would result in loss of suitable goshawk habitat, sufficient mitigation measures will be employed to insure an offset of the loss".

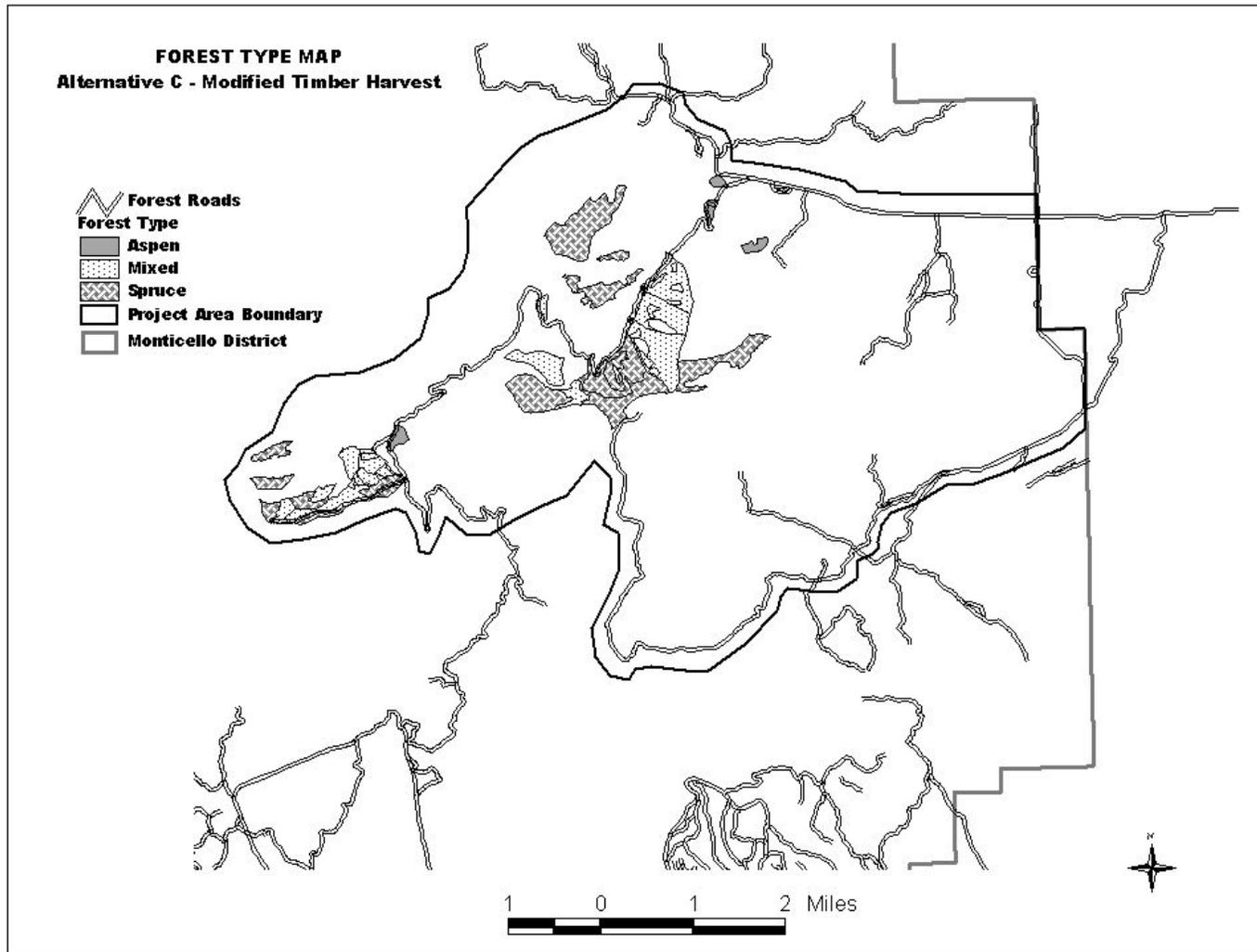
Amend the Forest Plan as follows for implementation of Alternative A – No-Action: "Allow dewatering in the Gold Queen, Dickson Gulch, and Bankhead areas, using those mitigation measures established under the existing special use permit to offset the loss of suitable goshawk habitat whenever possible." Existing water troughs are used to mitigate dewatering during maintenance of the City of Monticello's water collection and conveyance system.

Alternative A, No-Action, allows maintenance of the existing water system under the current special use permit. The City of Monticello's right to water from the Gold Queen, Dickson Gulch, and Bankhead areas, their permit, and installation of the water system was established prior to the 2002 Forest Plan Amendment and the Forest Plan (1986). Initial dewatering occurred when the system was constructed. Gradual degradation of the system has allowed water to escape which increased numbers of wet areas or water within stream channels. The existing permit allows the City of Monticello to maintain their system. Some dewatering of wet areas and changes in streamflow would occur as spot repairs are made as authorized by the existing permit.

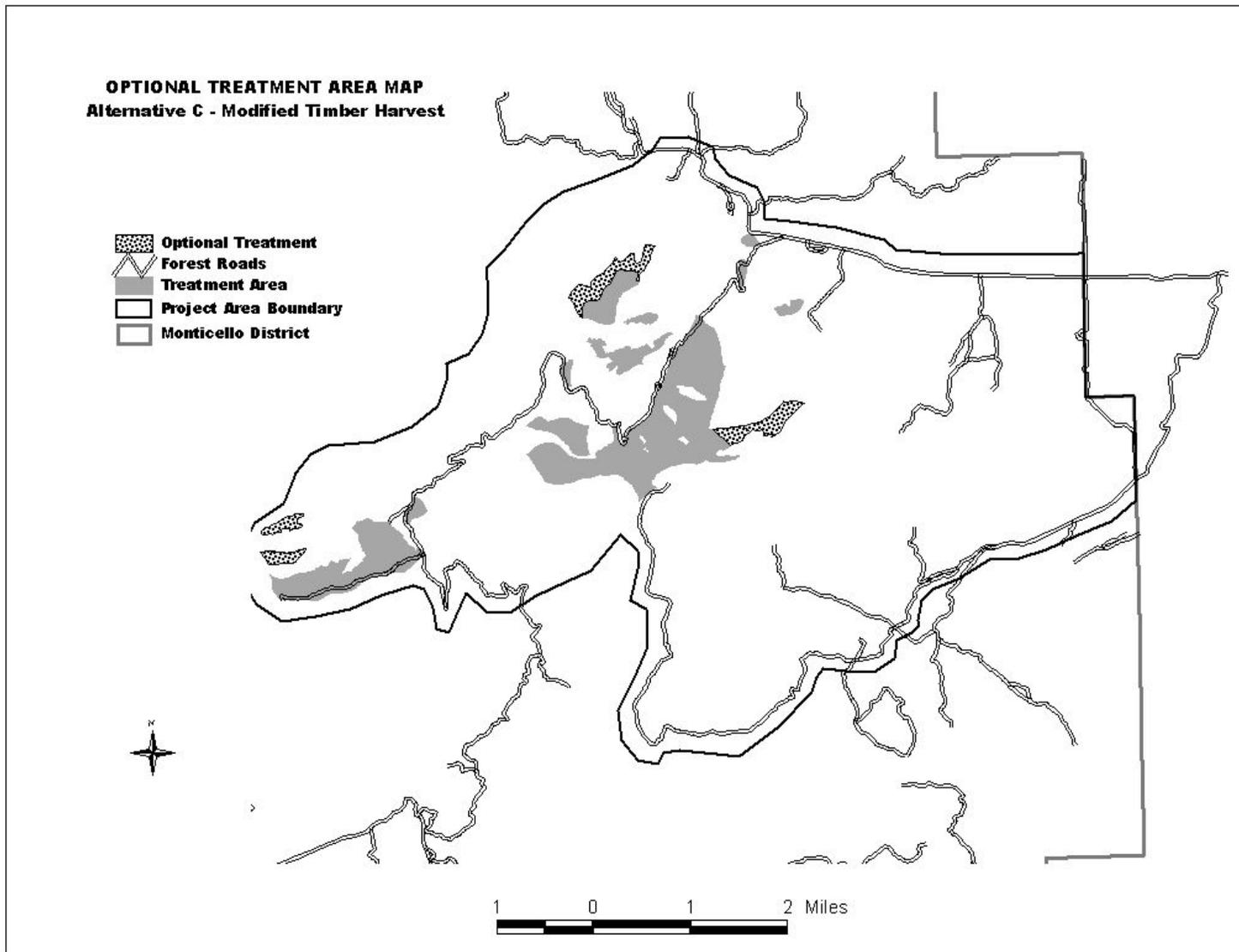
Amend the Forest Plan as follows for implementation of Alternatives B or C : "Allow dewatering in the Gold Queen, Dickson Gulch, and Bankhead areas, using mitigation measures to offset the loss of suitable goshawk habitat whenever possible." Water troughs, guzzlers, overflow valves, and line meters to monitor collection volumes would be used to mitigate dewatering during reconstruction of the City of Monticello's water collection and conveyance system.

A discussion of effects of alternative implementation can be found in Chapter 3.

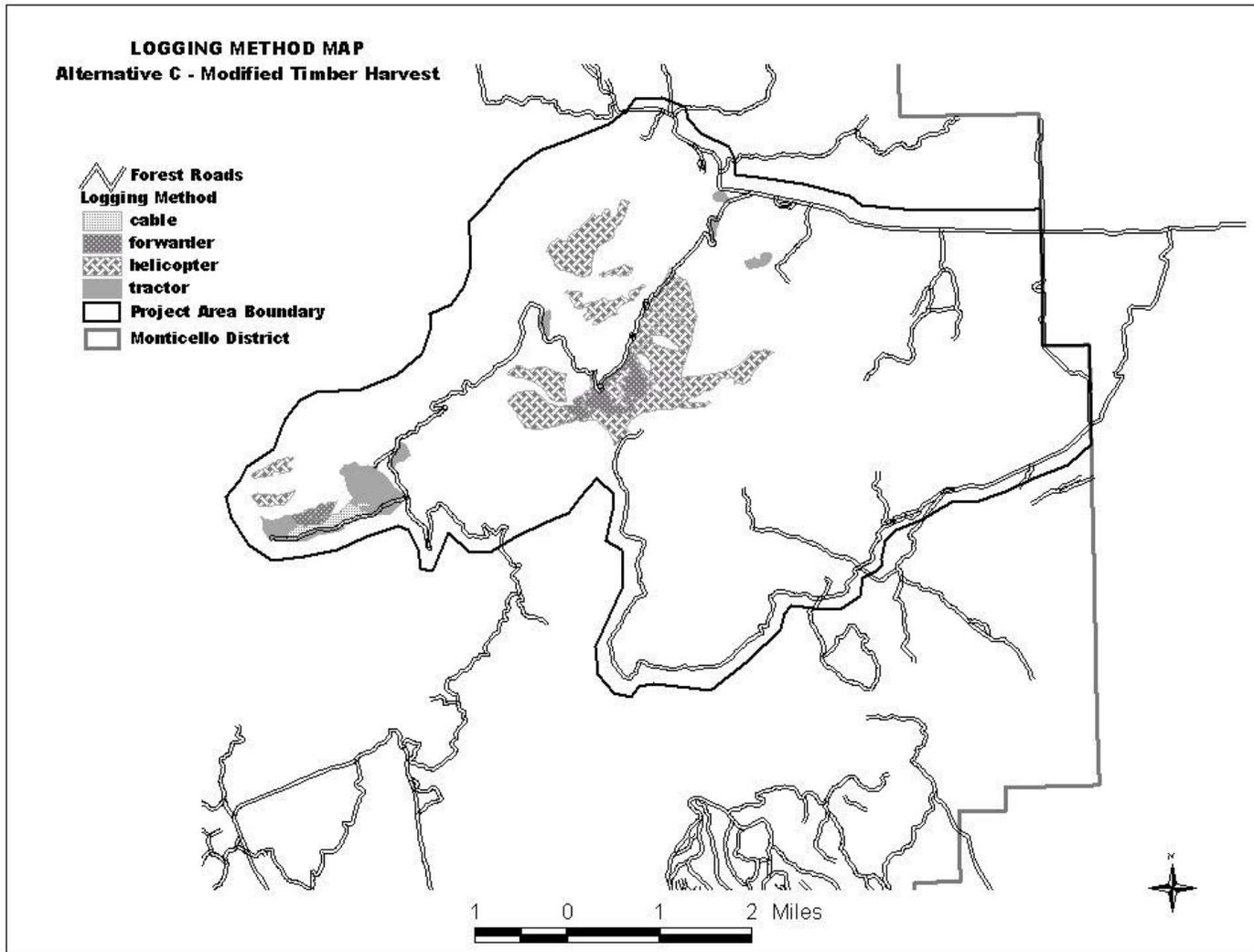
Map 13 - Forest Type Treated (Alternative C)



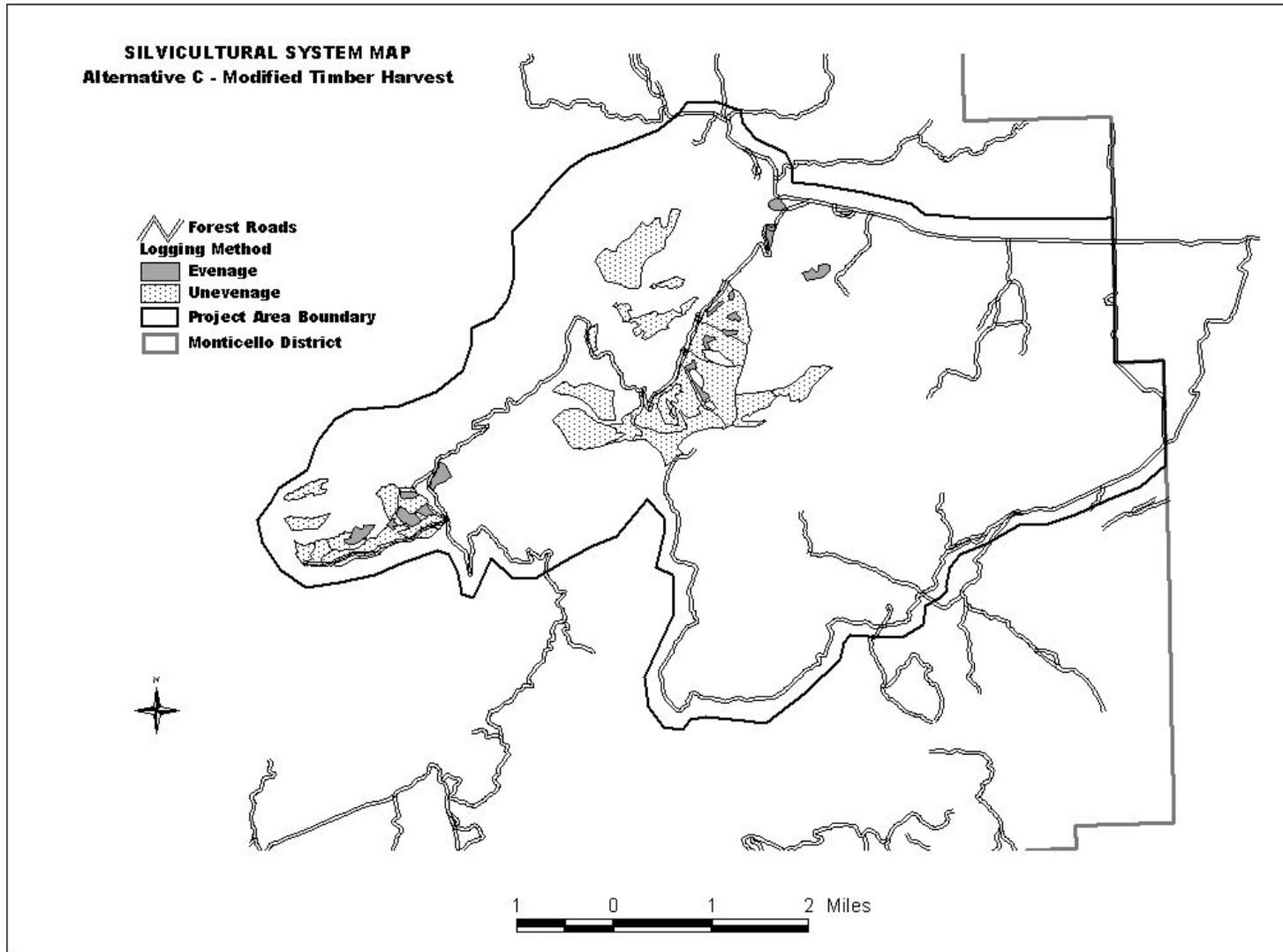
Map 14 - Optional Treatment Area (Alternative C)



Map 15 - Logging Method (Alternative C)



Map 16 - Silvicultural System (Alternative C)



2.5 MONITORING AND EVALUATION

Monitoring and evaluation are used to determine whether the Forest Plan is being implemented as planned. Monitoring collects data to show whether the project has produced the effects predicted in the analysis presented in this document. Evaluation reviews the monitoring results and determines what adjustments are needed. Monitoring and evaluation give the decision-maker and the public information on the progress and results of implementing the activities described in this document. Monitoring plans for this project are found in Appendix A.

2.6 ALTERNATIVE SUMMARY

The following table provides a comparison of the various outputs or specific treatment proposals of the three alternatives analyzed in detail in this document. A detailed comparison of the consequences of implementing each alternative can be found in Section 2.7.

Figure 4 - Alternative Summary Table

	ALTERNATIVE A NO-ACTION	ALTERNATIVE B PROPOSED ACTION	ALTERNATIVE C MODIFIED TIMBER HARVEST
PROJECT AREA (acres)	20,400	20,400	20,400
WATER SYSTEM RECONSTRUCTION			
Pipeline Reconstruction (25 Foot Average Corridor)	0 miles	FS Lands = 13 miles Private Inholdings = 2 miles	FS Lands = 13 miles Private Inholdings = 2 miles
Collection Box Construction	0 boxes	38-45 boxes	38-45 boxes
ROAD CONSTRUCTION & RECONSTRUCTION (Miles & Acres)			
Reconstruction (FR 50079 and FR 50354)	0 miles	16.3 miles	16.3 miles
Total Temporary Road Construction (Miles) & Disturbance Area (Acres) (33 Foot Clearing)	0 miles	2.3 miles 9.3 acres	2.3 miles 9.3 acres
Indian Creek Temporary Roads & Disturbance Area	0 miles	1.7 miles 6.8 acres	1.7 miles 6.8 acres
North Creek Temporary Roads and Disturbance Area	0 miles	0.4 miles 1.7 acres	0.4 miles 1.7 acres
Bankhead Creek Temporary Roads & Disturbance Area	0 miles	0.2 mile 0.8 acres	0.2 miles 0.8 acres
FOREST ROAD RECLASSIFICATION OR DECOMMISSIONING (Miles)			
Unclassified Roads Decommissioned	0	7.6	7.6
Classified Roads Decommissioned	0	0.4	0.4
Motorized Trail Decommissioned	0	0.4	0.4
Unclassified Roads to be Classified	0	0.9	0.9
Unclassified Road Classified as Private Road (closed to general public access)	0	0.6	0.6
Classified Trail Converted to Classified Road	0	0.5	0.5

Monticello & Blanding Municipal Watershed Improvement Projects
Draft Environmental Impact Statement

	ALTERNATIVE A NO-ACTION	ALTERNATIVE B PROPOSED ACTION	ALTERNATIVE C MODIFIED TIMBER HARVEST
Motorized Trail Converted to Non-Motorized Trail	0	0.7	0.7
HARVEST METHOD (Acres)			
Helicopter	0	1,216	1,148
Cable	0	70	70
Forwarder	0	195	189
Tractor	0	328	281
SILVICULTURAL SYSTEMS (Acres)			
Even-Age System (Aspen Clearcut)	0	192 (Clearcut units less than 40 acres in size)	164 (Clearcut units 20 acres or less in size)
Uneven-Age System (Group & Individual Tree Selection)	0	1,617 (Openings less than 5 acres in size)	1,524 (Openings less than 4 acres in size)
Optional Acres	0	267	234
VEGETATION TREATMENT (Acres)			
Timber Harvest Area	0	1,809	1,688
Spruce/subalpine fir	0	808	808
Aspen/spruce-fir	0	926	820
Aspen	0	40	40
Aspen/Mixed Conifer	0	35	20
LANDING & SKID TRAIL DISTURBANCE (Acres)			
Indian Creek Landing & Skid Trail Disturbance	0	33	29
North Creek Landing & Skid Trail Disturbance	0	13	13
Bankhead Creek Landing & Skid Trail Disturbance	0	2	2
Total Landing & Skid Trail Disturbance	0	48	44
POST-HARVEST STAND TREATMENTS (Acres)			
Tree Planting (spruce seedlings)	0	180 to 190	170 to 537
Natural Regeneration	0	410 – 660	350 - 535
Jackpot Unit Burn	0	408	331
Jackpot Patch Burn	0	250	181
Lop and Scatter (limbs/tops)	0	990	990 - 1858
Weed & Thin (spruce/fir)	0	810 - 850	815 - 915
Gopher Control Baiting (spruce)	0	180 190	168 - 357
Whip Felling (aspen regeneration)	0	410 660	355 - 535
Animal Damage Fencing (aspen)	0	2 miles	2 miles

- ❖ Approximate mileages and acreages.
- ❖ Some figures may be adjusted as the analysis progresses.

2.7 COMPARISON OF PROJECT OBJECTIVE ACHIEVEMENT

The following table provides a comparison of how each alternative meets project objectives. Information in this section is based upon presentation of the alternatives earlier in this chapter and the resource information detailed in Chapter 3. Based on this and additional information that

follows, the Responsible Official and the public should be able to compare how the different alternatives address the purpose and need, respond to the issues, and affect resources.

Figure 5 - Summary Comparison of Alternative Achievement of Project Objectives

OBJECTIVE/INDICATOR	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C			
OBJECTIVE #1 – Cooperate with local government agencies to permit them to provide continued and more efficient collection and removal of water to the Monticello and Blanding municipal water systems for public uses.						
Special Use permit issued (yes/no)	No	Yes	Yes			
Miles of pipeline reconstructed	0	NFS lands – 13 Private inholdings - 2	NFS lands – 13 Private inholdings - 2			
Collection boxes reconstructed	0	38-45	38-45			
OBJECTIVE #2 – Improve the transportation system						
Miles of road reconstructed/maintained.	0	16.3	16.3			
Forest Road standard achieved. Operational Maintenance Level (ML)/Traffic Service Level (TSL)	ML2/TSLD	ML3/TSLC	ML3/TSLC			
Safety analysis (high, moderate, or low rating).	Moderate	Moderate	Moderate			
OBJECTIVE #3 – Move towards restoration of the ecological structure, function, processes, and composition of the spruce and aspen component of the project area						
Spruce/subalpine fir stands treated (acres)	0	657-808	657-808			
Spruce-fir regenerated (acres)	0	131-162	117-139			
Spruce beetle Risk Rating (average)	Moderate to High	Moderate	Moderate			
Aspen treated (acres)	0	75	60			
Aspen regenerated (acres)	0	75	60			
Structural class distribution by forest type (acres):						
Spruce/subalpine fir	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term
Early	0	0	162	194	139	415
Young	0	397	0	397	0	261
Mid-Aged	30	1,191	30	383	30	400
Mature	1,558	0	1,396	614	1,419	512
Aspen/spruce/subalpine fir						
Early	0	0	162	194	91	273
Young	0	582	0	582	0	945
Mid-Aged	292	1,647	292	838	292	674
Mature	1,934	0	1,775	615	1,846	337
Aspen/mixed conifer						
Early	0	0	192	192	150	150
Young	29	29	29	29	29	29

Monticello & Blanding Municipal Watershed Improvement Projects
Draft Environmental Impact Statement

OBJECTIVE/INDICATOR	ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C	
Mid-Aged	3,288	3,288	3,288	3,288	3,288	3,288
Mature	2,500	2,500	2,308	2,308	2,350	2,350
Vegetation Type change (acres):						
Aspen/Mixed Conifer	0		192		164	
Aspen/Spruce-Fir	0		189 - 216		181 - 204	
Spruce/Subalpine-Fir	0		0		0	
Slash treatment (acres)	0		1,809		1,688	
Large fuel reduction (acres harvested)	0		1,809		1,688	
Predicted rates of spread (chains per hour)	2003 – 3.9 to 3.4 2092 – 12.6 to 13.3		Post-harvest–25.5-28.0 2092 – 1.6 to 2.6		Post-harvest-27.0-29.1 2092 – 9.9 to 12.1	
Predicted potential for escape (low, moderate, high)	2003 – Low 2092 – High		Post-harvest – High 2092 – Low		Post-harvest - High 2092 – Moderate-High	

2.8 COMPARISON OF THE EFFECTS OF THE ALTERNATIVES ON SIGNIFICANT AND KEY ISSUES

The following table provides a comparison of the effects of the alternatives on the significant issues and their indicators. Information in this section is based upon presentation of the alternatives earlier in this chapter and the resource information detailed in Chapter 3.

Figure 6 - Comparison of Alternatives by Issue

ISSUE	ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C	
ISSUE #1 – FOREST VEGETATION						
Spruce-fir stands treated (acres)	0		657-808		657-808	
Spruce-fir regenerated (acres)	0		131-162		117-139	
Spruce beetle Risk Rating (average)	Moderate to High		Moderate		Moderate	
Aspen treated (acres)	0		75		60	
Aspen regenerated (acres)	0		75		60	
Structural class distribution by forest type (acres):						
Spruce/subalpine fir	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term
Early	0	0	162	194	139	415
Young	0	397	0	397	0	261
Mid-Aged	30	1,191	30	383	30	400
Mature	1,558	0	1,396	614	1,419	512
Aspen/spruce/subalpine fir	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term
Early	0	0	162	194	91	273
Young	0	582	0	582	0	945
Mid-Aged	292	1,647	292	838	292	674
Mature	1,934	0	1,775	615	1,846	337
Aspen/mixed conifer	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term
Early	0	0	192	192	150	150
Young	29	29	29	29	29	29
Mid-Aged	3,288	3,288	3,288	3,288	3,288	3,288
Mature	2,500	2,500	2,308	2,308	2,350	2,350

Monticello & Blanding Municipal Watershed Improvement Projects
Draft Environmental Impact Statement

ISSUE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Vegetation Type change (acres):			
Aspen/Mixed Conifer	0	192	164
Aspen/Spruce-Fir	0	189 - 216	181 - 204
Spruce/Subalpine-Fir	0	0	0
Slash treatment (acres)	0	1,809	1,688
Large fuel reduction (acres harvested)	0	1,809	1,688
Predicted rates of spread (chains per hour)	2003 – 3.9 to 3.4 2092 – 12.6 to 13.3	Post-harvest–25.5-28.0 2092 – 1.6 to 2.6	Post-harvest-27.0-29.1 2092 – 9.9 to 12.1
Predicted potential for escape (low, moderate, high)	2003 – Low 2092 – High	Post-harvest – High 2092 – Low	Post-harvest - High 2092 – Moderate-High
ISSUE #2 – WILDLIFE RESOURCES			
Northern goshawk:			
Acres of habitat meeting Forest Plan guidelines	Short-term – 9,634 Long-term – 6,142	Short-term – 9,121 Long-term – 7,179	Short-term – 9,634 Long-term – 6,841
Impact determination	Short-term-No impact Long-term-MII*	Short-term-MII* Long-term-MII*	Short-term-No impact Long-term-MII*
Three-toed woodpecker:			
Acres disturbed	Short-term - 0 Long-term – 3,492	Short-term - 513 Long-term – 2,455	Short-term - 377 Long-term – 2,793
Aspen regeneration	Short & long-term - 0	Short & long-term-192	Short & long-term-164
Impact determination	Short-term -Beneficial Long-term - MII	Short-term-MII* Long-term-MII*	Short-term-MII* Long-term-MII*
Deer and Elk:			
Forest canopy opened to allow increased ground vegetation (acres)	Short-term - 0 Long-term - 3,492	Short-term - 513 Long-term – 2,455	Short-term - 377 Long-term – 2,793
Aspen regeneration (acres)	Short/long-term - 0	Short/long-term-192	Short & long-term-164
Forage habitat assessment	Currently – 42.58% Long-term: 45%:55%	Long-term - 47%:53%	Long-term - 49%:51%
Road Density (miles per square mile)	Short-term-2.3 Long-term – 2.3	Short-term - 2.4 Long-term - 2.1	Short-term - 2.4 Long-term – 2.1
Changes in road standard (miles)	0	16 miles improved	16 miles improved
Vulnerability assessment (as related to road density)	Less Vulnerable 61.2% loss of habitat effectiveness	More Vulnerable Short-term – 72% loss of habitat effectiveness Long-term – 65.0% loss of habitat effectiveness	More Vulnerable Short-term – 72% loss of habitat effectiveness Long-term – 65.0% loss of habitat effectiveness
ISSUE #3 – TRANSPORTATION SYSTEM			
Road Reconstructed (miles)	0.0	16.3	16.3
Motorized Trail (miles)	13.3	11.8	11.8
Forest Road Standard (FR 50079) Operational Maintenance Level Traffic Service Level	ML2 TSLD	ML3 TSLC	ML3 TSLC
Safety analysis (high, moderate, low)	Moderate	Moderate	Moderate

Monticello & Blanding Municipal Watershed Improvement Projects
Draft Environmental Impact Statement

ISSUE	ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C	
ISSUE #4 – VISUAL LANDSCAPE						
Visual Quality Objective (VQO) changes						
Partial Retention (acres)	18,819		18,819		18,819	
Modification (acres)	541		541		541	
Private Land (acres)	1,040		1,040		1,040	
Scenery Management changes						
Natural Appearing (acres)	No change		No change		No change	
Cultural (acres)	No change		No change		No change	
Horsehead Appearance: Distinct appearance/shape retained? (yes/no)	No		Yes		No	
ISSUE #5 – RECREATION						
Recreation Opportunity Spectrum (ROS) met (acres)						
Private Land	1,040		1,040		1,040	
Roaded Natural	13,810		13,810		13,810	
Semi-Primitive Motorized	1,962		1,962		1,962	
Semi-Primitive Non-Motorized	3,588		3,588		3,588	
ISSUE #6 – MUNICIPAL WATERSHED						
Erodibility and Susceptibility to compaction:						
Ground disturbance following project completion(acres)						
Indian Creek	144		220		216	
Spring Creek	106		30		30	
North Creek	278		459		459	
Johnson Creek)	2,322		2,418		2,418	
Ground Disturbance recovery 10 years following project completion (acres)						
Indian Creek	144		165		165	
Spring Creek	106		106		106	
North Creek	278		304		304	
Johnson Creek)	228		259		259	
Degree meets State Support of Beneficial Uses (full, partial, or not)	Not		Full		Full	
Meets State Antidegradation Policy (yes/no)	Yes		Yes		Yes	
Resiliency of the watershed (high, medium, low)	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term
Indian Creek	High	Low	High	Low**	High	Low**
Spring Creek	High	Low	High	Low	High	Low
North Creek	High	Low	Moderate	Moderate	Moderate	Moderate
Johnson Creek	High	Low	High	Moderate	High	Moderate

*May impact individuals

**Low overall; Moderate in headwaters

2.9 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

A preferred alternative has not been identified for the Monticello and Blanding Watershed Improvement Project.