

Building Resilience in the Mixed Forest Province of Northern Minnesota

A proposal for the

Collaborative Forest Landscape Restoration Program

Superior and Chippewa National Forests

In collaboration with

The Nature Conservancy and

Members of the Minnesota Forest Resources Council

May 2010

Section 1 – Proposed Treatment

This project, “Building Resilience in the Mixed Forest Province of Minnesota” (Minnesota Resilience Project), is part of a larger initiative in northern Minnesota to implement complementary, cross-ownership federal, county and state forest restoration projects, to enhance forest habitat and productivity, and protect jobs. We will accomplish this through vegetation management treatments that promote the restoration of conifer trees and forests to the landscape.

Overview

The Chippewa and Superior National Forests (Minnesota’s National Forests) form the core of Minnesota’s northern forest, which historically held vast acreages of red and white pine, white cedar, tamarack, jack pine, and white and black spruce. These species and their supporting habitat types were maintained by frequent surface fires. However, following turn of the century logging, slash burning, and wildfires, these conifer species did not return to pre-harvest levels. Instead, Minnesota’s forests were colonized by aspen and birch at levels far exceeding those found in the natural pre-settlement forest. Although from an economic and recreational perspective we have learned to prosper from this dramatic shift in forest composition, and we do not seek to fully return to historical conditions, the change has brought a long list of economic and ecological challenges from emerging stressors including climate change, unnatural intensity and frequency of wildfire, and an increasing susceptibility to pests and pathogens.

Goal

Minnesota’s National Forests have the potential to grow more fiber, produce a wider range of forest products, sequester more carbon, and provide a greater diversity and quality of plant and animal habitats than current levels. This project is aimed at improving upland forest habitat and increasing productivity and diversity of forest products through restoration of commercially and ecologically important species, and reforestation of under-stocked stands. The Minnesota Resilience Project will be guided by the goals of the Superior and Chippewa National Forest Land and Resource Management Plans, the Minnesota Forest Resources Council’s (MFRC) Northeast and North Central Landscape Plans, and will complement the goals of State of Minnesota’s Subsection Forest Resource Management Plans, and The Nature Conservancy’s (TNC) Superior Mixed Forest Ecoregional Plan. The project will engage partners of the Minnesota Forest Resources Council including the Minnesota Department of Natural Resources (MNDNR), County land departments, University of Minnesota, Tribal governments, TNC, private landowners, and members of forest products industry, conservation organizations, and resort and tourism industry.

This Minnesota Resilience Project will address four of the most practical and widely accepted needs in Minnesota’s National Forests: hazardous fuels reduction through prescribed fire and fuels removal, long-lived conifer restoration, improvement in forest diversity, and improvement in forest productivity. The project’s goal is to enhance the resiliency of Minnesota’s National Forests so that they can better face the challenges of climate change, invasive species and changing markets.

Outcomes

The desired outcome of this proposal is to create a naturally diverse landscape that is more resilient, and can stabilize and maintain itself more effectively through time. Our efforts will:

- Reduce wildfire management costs through hazardous fuels reduction
- Build resilience to ecosystem stressors
- Improve habitat quality
- Improve diversity of forest products and support local economies

Treatment Objectives

The following are the treatment objectives for the project.

- Utilize prescribed fire, mechanical treatments, pruning, planting, and other tools to establish, maintain, and improve the condition of conifer ecosystems.
- Increase the amount of native forest vegetation restored to, or maintained in, a healthy condition to reduce risk of and damage from wildfire, pests and pathogens.
- Improve both terrestrial and aquatic habitat for a wide variety of species, including threatened species and Species in Greatest Need of Conservation.
- Restore large old conifers for the aesthetic enjoyment of visitors to the Forests.

Landscape Delineation

This proposal focuses on the portion of the Ecological Classification System (ECS) province within which Minnesota’s National Forests fall: The Laurentian Mixed Forest Province. The ECS system defines a province by its climate, geology, hydrology, topography, soils, and vegetation. The Mixed Forest Province of Minnesota is characterized as a broad area of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps with landscapes ranging from rugged lake-dotted terrain with thin glacial deposits to hilly or undulating plains with deeper soils to large, flat peatlands. The climate is moist and cool-temperate. The Laurentian Mixed Forest Province is approximately 650 million acres and covers all of Northeastern to North Central Minnesota (approximately 23 million acres), Northern Wisconsin, and Northern Michigan.

Minnesota’s National Forests are comprised of a patchwork mix of ownerships including state, private, county, tribal and national forest system lands. The Superior National Forest boundary encompasses 3,452,369 acres and the Chippewa National Forest boundary encompasses 1,600,227 acres. Acreages within Minnesota’s National Forests’ proclamation boundaries are distinguished by ownership in tables PT-1 and PT-2.

Ownership	Acres	%
National Forest	2,172,710	63
State of Minnesota	537,497	15
County	180,741	5
Private	561,421	17

Ownership	Acres	%
National Forest	671,435	42
State of Minnesota	274,643	17
County	79,928	5
Private	574,221	35
Tribal	21,201	1

NEPA Decisions

Activities for years 1-5 have had NEPA analysis conducted and decisions made on them. Activities for years 6-10 are in project areas where the NEPA is currently being developed and will be completed with decision notices in the next 2 years.

Past Restoration Treatments

Both the Chippewa and Superior National Forests have promoted and conducted conifer restoration treatments over the last 50 years on tens of thousands of acres. Our focus has shifted from establishing conifer for commercial products to promoting restoration of composition and patterns of conifer that mimic natural forests for all their ecological, economic, and social benefits. Other members of the MFRC have also contributed to the restoration of conifer species. For example, the Minnesota DNR does 21,400 acres of thinning, 3,900 acres of harvesting and converting to conifer, and 4,000 of conifer planting a year. Most recently, Minnesota’s National Forests also have partnered with county land departments, tribal interests, the MNDNR and TNC to conduct ecological restoration projects within collaborative landscape boundaries on an additional 4,000 acres. These projects involved Forest Service staff assisting with treatments on other ownerships adjacent to national forest system land.

Proposed Treatments

Treatments will be focused on restoring conifer composition and mimicking natural processes. Historically fires would have burned with mixed severity. On drier sites and in drier years, up to 75% mortality could be expected. These fires would allow for partial stand replacement. On more mesic sites, and in wetter years, as little as 10% mortality might occur. These primarily would have been maintenance types of fires that would have removed understory species and created small patch openings. Mortality would have been concentrated in areas where the understory fuels had built up. With both low intensity and moderate intensity fires, the duff layer would have been removed and mineral soil exposed, allowing for natural regeneration.

Several different types of treatments which mimic natural disturbances and restore composition are planned. To accomplish the restoration goal, all treatments will focus on either restoration or maintenance of conifer habitat. Following is a description of the proposed treatments. Table PT-3 shows the number of acres of each treatment type which is planned for the next 10 years.

Treatment Type	Acres
Harvest with Conversion to Conifer	9,996
Commercial Thinning	9,449
Harvest for Conifer Maintenance	8,760
Slash Disposal	5,678
Mechanical Site Preparation	18,772
Planting	35,762
Seedling Protection	27,911
Survival Surveys	33,388
Timber Stand Improvement (Release)	51,131
Pre-commercial Thinning	1,403
Understory Fuels Removal	11,743
Understory Burn	17,201
Site Prep Burn	1,193
Pruning	1,500
Total Acres	233,887

- Harvesting will occur on sites where pine once was dominant, but that have converted predominantly to hardwood species. The goal is to remove the decadent overstory and restore pine and other conifers to these sites. Remaining overstory pine will serve as a seed source. Harvesting will also occur in stands that are predominately older pine with hardwood and fir species mixed in. Removal of the hardwood and fir species will open up the canopy and the remaining pine will serve as a seed source for natural regeneration. Thinning will take place in the form of pre-commercial and commercial to reduce crown bulk density for fuels reduction and improve tree growth to promote growth of large pine. All regeneration treatments will be followed by site preparation, planting, seedling protection, and timber stand improvement activities. Planting will include a mix of species including red pine, white pine, white spruce, white cedar, birch, tamarack, black spruce and jack pine.
- Prescribed fire will be used in mature pine stands to reduce fuel hazards and prepare sites for regeneration. These types of burns are low to moderate intensity that burn in the understory of the stand, removing dead and downed materials, ladder fuels (such as balsam fir), and the duff layer.
- Prescribed fire will also be used in post-harvest site preparation for restoration planting.
- Interplanting will occur on sites which already have pine established, with the goal of increasing the pine component. Underplanting of pine will also occur in riparian areas to establish large diameter trees for wildlife purposes.
- Understory fuels removal will occur in mature pine stands where dead, downed, and ladder fuels have accumulated to the point of being a fuel hazard. Understory removal will mimic a low intensity fire. This will lessen the fuel load in the understory, while leaving some large coarse woody debris.
- Mechanical site preparation (without harvesting first) and planting will occur where old hardwood overstory is dying or dead but not being replaced by other tree species and where brush species have become the predominant cover. On the Superior in particular, there are many acres that are in this non-productive state where only brush species are regenerating.

The series of treatments required for conifer restoration to be successful requires a significant amount of funding and a commitment to long term management. Where conifer is being restored to the site, removal of the existing overstory, followed by site preparation, planting, seedling protection in the third year, timber stand improvement in years 5-8, pre-commercial thinning in years 15-20, and commercial thinning in years 30-50 will be required to establish a mature stand over the long term. Prescribed burning and/or understory thinning may be used to restore fire and maintain an open

understory throughout this time period. Maintenance treatments are less extensive but can still include pre-commercial thinning, commercial thinning, prescribed fire and understory thinning.

Consistent with the requirement for the proposal, all treatments will be conducted with access from existing forest system roads or temporary roads. No new forest system roads will be established with the project. Temporary roads will be rehabilitated and restored to a vegetated state.

Mechanisms to Accomplish the Work

Timber sales, Service Contracts, Stewardship Contracts, Agreements (TNC), and force account will all be used. The two national forests have done similar projects using the above mechanisms and have a staff that is experienced in using them.

Monitoring

Activities will be monitored immediately after treatment and then on a scheduled cycle to ensure objectives are met. Silvicultural objectives involving reforestation of conifers will be monitored through stocking surveys. Fuel objectives involving the reduction of fuel hazards will be determined using plots that measure fuel loadings, ladder fuels, and overstory crown attributes. Wildfire objectives will be measured in terms of indicator species identified in the Forest Plan.

Monitoring all these efforts is a significant undertaking important to all stakeholders. In addition to monitoring by the Forest Service, the Minnesota Forest Resources Council (MFRC) provides oversight and program direction to several monitoring programs throughout the state of Minnesota including implementation monitoring of Minnesota's voluntary forest management guidelines and evaluation of those guidelines in protecting water quality, wildlife habitat, and soil productivity. MFRC landscape committees monitor activities and outcomes of all implementation projects to inform future efforts and update implementation strategies. Also, Minnesota's National Forests have partnered extensively with TNC in monitoring key forest health indicators.

Measure of Success

The success of the project will primarily be measured by the acres of conifer restoration that takes place on the forest. Other measures of success over time will include: the amount of wildlife habitat created; the reduction of severe wildfires; reduction of fire related costs; reduction of future restoration costs; continued support and possible job creation in the local timber industry; support of the recreation industry; support of a biomass industry; and creation of renewable energy sources for local communities. As collaborative efforts mature and expand under the auspices of the Minnesota Resilience Project, Minnesota's National Forests will continue to work in partnership with MFRC, TNC and other others to maintain a rigorous approach to measuring the success of restoration efforts funded by the Collaborative Forest Landscape Restoration Program.

Section 2 – Ecological Context

Fire Ecology

The historic presence of conifer in Minnesota's National Forests was due to a natural recurrence of fire interacting with soils and landforms on the landscape. Fire scar dates, stand ages, and charcoal evidence indicate that fire was a key factor accounting for conifer establishment in northern mixed forests. Periodic surface fires were important in these stands to keep understory development of shade tolerant conifers and hardwoods, such as balsam fir and red maple, under control. Surface fires also consumed needle and other woody litter to prevent excessive build up of fuel on the forest floor. The more infrequent severe surface or crown fires were just as important. These fires set the stage for stand regeneration by killing large patches of mature conifer-hardwood forest, opening the canopy and reducing duff.

Fire Adaptations

Both red and white pine are well adapted to fire due to thick, fire resistant bark, longevity, and self pruning capabilities that leave a long, branch-free trunk at maturity. Resistance to fire for both species begins to develop at about age 30 to 50 years. Pine species were largely dependent on fire for survival and propagation. Successful natural regeneration in red pine stands requires nearly-exposed mineral soil seedbed which is best prepared by fire. Mature white pine surviving severe fire serve as the seed source for future offspring. Other conifers such as jack pine, white and black spruce, white cedar, and tamarack have lower fire resistance, but also regenerate well on post-fire mineral soil seed beds.

Current Conditions

The abundance of fire-dependent and other long-lived conifers in the northern mixed forest landscape has declined dramatically due to timber harvest and large, severe slash-fueled fire that occurred in the late 1800s and early 1900s. The large, severe fires of this era eliminated much of the conifer seed source and further limited potential regeneration. Forests dominated by aspen, paper birch, and balsam fir regenerated in the post-settlement landscape. In the pre-settlement landscape, conifers comprised 60-70% of stem density, with hardwoods totaling 30-40%. Analysis of current data shows a complete reversal in species abundance, with hardwoods making up 60-70% and conifer 30-40%. The combination of logging, lack of fire, and other disturbances over the last century across the landscape has resulted in the forest moving into a condition class 3 in regards to departure from historic vegetation and fire regime. Condition class 3 represents a landscape that is severely departed from its historic condition.

Fire suppression, beginning in the 1930s, has interrupted the natural fire processes that maintained conifers on the landscape. The lack of fire has led to several negative ecological effects including:

- **Increased Fuel Hazards:** Fire regimes in dry-mesic forests historically supported low to moderate severity fire on short to medium return intervals (20-75 years). This reduced forest floor fuels and maintained a more open understory, lowering the probability of high severity crown fires. Currently, most mature dry-mesic pine stands contain thick layers of duff, needles, and woody litter along with dense patches of balsam fir in the understory.
- **Altered Species Composition:** The lack of fire, along with even-aged forest management practices that favor sprouting hardwood species (mostly quaking aspen and paper birch), forests have become more homogenous as species composition has shifted from conifer to hardwood dominance.
- **Lack of Diversity:** Historically, fire maintained landscape scale diversity in forest age structure including a much higher proportion of late-successional forest than occurs at present. These later successional forests developed both species diversity with pines, spruces, cedar and some hardwoods in the canopy and subcanopy layers as well as structural diversity with multiple layers within a stand.

- **Poor Natural Regeneration:** Fire typically burned in the summer seasons when soil moistures were lower. This removed the duff layer and exposed mineral soil. Fire also burned with varying intensities, creating openings and thinning out denser areas of forest. These conditions allowed for natural regeneration to occur. Currently, there is little natural regeneration of fire adapted conifers. Stands are closed canopy and very little mineral soil is ever exposed to allow for natural regeneration.

In addition to logging and fire suppression, wind has also been an agent for vegetation change on the landscape. In 1999, for example, Northern Minnesota experienced a severe wind storm, effecting over 300,000 forested acres. This resulted in loss of conifer component through the blowdown of large pines and other mature conifers. The subsequent release of understory balsam fir and accumulation of large amounts of dead wood leads to a greater susceptibility of large wildfires (approximately 110,000 acres to date). The conifer seed source was also lost.

Late Successional Forest

Late successional forest occurs on only a small fraction of the area it occupied during the pre-settlement era. Historically, late successional forest made up 50-70% of the forested land area, at present it covers less than 5% of existing forested land. These forests were typically dominated by long-lived conifer species and provided significant compositional and structural diversity across the landscape. Late successional forests provide a multitude of social, ecological, and economic benefits. They are important habitat to a wide variety of species ranging from raptors and songbirds to small mammals, invertebrates, fungi and lichens. The decline in the habitat diversity associated with late successional forest dominated by long-lived conifers has caused a proportional decrease in suitable habitat for many organisms. In addition to the habitat, late successional forest provides valuable timber products and contributes to scenery and sense of place important to forest visitors. Late successional forests store significantly more carbon per acre in biomass and soil carbon than young-mid-seral forests. This project would not remove any late-successional or old-growth forest and emphasizes maintaining it to promote conifer restoration and landscape resiliency.

Wildlife (including Threatened and Endangered Species) Benefits

This project will be consistent with the Minnesota Statewide Conservation and Preservation Plan, which recommends restoration of degraded and rare land features as restoration will "provide benefits for wildlife, Species of Greatest Conservation Need, water quality, and important ecological processes." Consistent with both the State Conservation Plan and Forest Plans this project will maintain and enhance current Upland Coniferous Forest habitat, provide future Upland Coniferous Forest habitat, and restore conifers to Upland Deciduous Forest to improve habitat quality.

Specifically, pine provides the preferred nesting structure for bald eagles, and seeds are favored by many species of birds and small rodents. Snowshoe hare, white-tailed deer, and moose favor pine seedlings and saplings for forage. Porcupines, once more numerous, favor the bark of mature white pines for winter foraging. In decline, large, mature and old-growth pines provide important denning and nesting cavities for pileated, downy, and hairy woodpeckers; chickadees and nuthatches; flickers; red and flying squirrels; chipmunks; saw-whet, boreal, and barred owls; wood ducks and common goldeneyes; pine martens; and large cavities at the base of large trees can provide dens for black bears. Large, rotting trunks on the forest floor provide hiding, travel, and nesting habitat for red-backed voles, deer mice; salamanders; drumming logs for ruffed grouse; seed cash and eating posts for squirrels; and nurse logs for seedling birch, cedar, and more pine. These species also provide more shade to riparian areas that are valuable to cold water species like brook trout.

A number of Species of Greatest Conservation Need (SGCN) (designated in the Minnesota Statewide Conservation and Preservation Plan) depend on conifer forests, or the potential for large blocks of late successional forest that conifer habitats provide, including the gray wolf (also federally threatened), northern goshawk, bald eagle, boreal chickadee, oven bird, and other SGCN listed warblers. Additionally, the fallen tops and trunks of large pine can provide denning sites for Canada lynx (also federally threatened). Also, of concern in Northern Minnesota in the past five years is the decline in moose populations. There are several factors thought to be associated with this decline including climate change and disease. Regardless of the reason, increasing thermal cover will benefit moose by providing needed shade and reducing heat stress. Although these habitats have been in decline for over a century

there is a growing sense of urgency associated with conifer restoration as we inch closer to an ecological tipping point where today's forests no longer resemble those to which our native biodiversity have evolved to thrive in.

Insects and Disease

Historically, ecosystems were composed of a variety of vegetation types and ages, thus limiting the insect and disease occurrences. Presently, insect and disease impacts on forested systems are fairly minor. However, with the lack of species and age class diversity on the landscape, there is potential for insect and disease to become more problematic in the future. Therefore, the efforts to restore structure and age classes will only assist in building resiliency to potential insect and disease outbreaks.

Exotic Species

Relative to other parts of the country, the Mixed Forest Province of Minnesota is relatively free of invasive plant species. That said, invasive species are present on the landscape but have not affected forest restoration efforts. Minnesota's National Forests are well positioned to meet the challenges of invasive species because of their involvement in the Minnesota Forest Resource Council-driven collaborative. Invasive species in the region tend to invade open sites including burn areas and harvest units. Mitigations have been identified for treatments to prevent invasive species from coming into a site. Additionally, sites will be monitored for invasive species post treatment and measures taken to eliminate the species from the site.

Carbon Sequestration

While forests of the Mixed Forest Province of Minnesota currently store significant amounts of carbon, improved management practices could increase the carbon sink capacity while maintaining or enhancing other ecosystem services such as water quality, biodiversity, and wood products. The rate of carbon uptake is high in young, regenerating stands and tends to decline as stand age increases; however, older stands continue to accumulate carbon, and overall, store significantly more carbon than young forests. As such, the restoration of long-lived conifer and hardwood species through ecological forestry practices could increase the long-term carbon storage potential in this region.

Climate Change

Recent work suggests that many characteristic northern forest species (paper birch, balsam fir, spruce species, jack pine, red pine) may decline significantly over the next 50 to 100 years even under moderate greenhouse gas emissions scenarios. However, ecologically-based management strategies may be useful for maintaining more diverse forests that may have greater resilience of function in the face of climate change. Climate change may lead to increased mortality due to fire, insect outbreaks, drought stress, and wind storms. In addition, high deer populations and non-native earthworms likely will limit tree growth and establishment.

In light of these forecasted changes, there is a great need for forest management approaches that maintain ecosystems. Resilience-based strategies, those that can promote ecosystems that can respond to change and disturbance without a state change and continue to function and provide ecosystem services, will be an important approach in this region. Current forestry practices in the region are primarily focused on even-aged management, an approach that generally perpetuates homogenous conditions and simplified structure, and may leave forests vulnerable to a variety of stressors. Ecologically-based forestry that better emulates natural disturbance regimes and maintains or restores compositional diversity and structural complexity is one strategy that can create resilience and buffer forest ecosystems against these many stressors.

Section 3 – Collaboration

Minnesota Forest Resources Council

Under the umbrella of the Minnesota Forest Resources Council (MFRC), the National Forests in Minnesota collaborate extensively with local, county, state, and tribal agencies and governments, as well as other conservation organizations, industrial and non-industrial forestland owners, research and higher education institutions, and forest stakeholders such as loggers, labor organizations, and resorts. The MFRC promotes the long-term, sustainable management of Minnesota's forests under the 1995 Sustainable Forest Resources Act, and advises the Governor and federal, state, and local governments on sustainable forest resource policies and practices.

The MFRC provides a framework to:

- Pursue sustainable management, use and protection of Minnesota's forests.
- Encourage cooperation and collaboration between public and private sectors in forest management.
- Recognize and consider forest resource issues, concerns, and impacts at the site and landscape levels.
- Recognize the broad array of perspectives regarding the management, use, and protection of Minnesota's forest resources; establish processes and mechanisms that seek these perspectives; and incorporate them into planning and management.

MFRC Regional Landscape Committee

Of particular significance to the goals of the Collaborative Forest Landscape Restoration Program is the fact that MFRC has collaboratively developed landscape level visions and specific goals for each of Minnesota's six forested landscape regions. MFRC's Landscape Program is recognized nationally as a model for the coordination of sustainable forest management. The Landscape Program consists of six citizen-based regional committees that have developed resource management plans for Minnesota's major forested landscapes. The landscape-level forest resource management process employed in Minnesota involves four distinct phases: planning, coordination, implementation, and monitoring and evaluation.

To work toward long-term desired future conditions, each committee has prepared a landscape plan that informs implementation. Committees meet regularly to guide coordination and implementation of the landscape plans. In addition to serving on the overarching MFRC Council in rotating terms over the past 14 years, the Chippewa National Forest and the Superior National Forest are active members of the North Central and Northeast Landscape Committees.

Northern Minnesota Forest Collaboratives

A key initiative of the landscape committees has been the creation of site-based and landscape-level collaboratives. The collaboratives are vehicles to implement cross ownership projects designed to unify management to meet the desired outcomes of MFRC Landscape Plans. Current collaborative efforts in northern Minnesota include:

- Manitou: Established in 2000, the Manitou Collaborative works within a 102,000 acre landscape in Lake County, Minnesota. This landscape encompasses numerous natural features, including 44% of the designated old growth in the North Shore Highlands area near Lake Superior. The Manitou Collaborative has conducted extensive forest restoration, completed joint timber sales, established a 6,000+ acre county forest, completed a land exchange to consolidate ownership, assisted in the protection of an important recreation trail, and agreed on approaches related to property taxes and road maintenance/access issues. Members of this collaborative include TNC; the MN DNR's Divisions of Parks, Forestry, and Fisheries; Wolf Ridge Environmental Learning Center; MFRC; Lake County; and the Superior National Forest.
- Sand Lake/Seven Beavers: Organized in December 2002, the Sand Lake/Seven Beavers Collaborative is located in the Superior National Forest and consists of a 100,000 acre landscape. It is unique in the size and complexity of its vast peatlands, and the large lakes and river systems it encompasses. The collaborative works to sustain and enhance water quality, the integrity of terrestrial and aquatic systems, native wildlife diversity, recreational opportunities, forest

products, and scenic beauty. Members include: Lake and St. Louis counties, MN DNR, TNC, and the Superior National Forest.

- **Echo Trail/Vermillion:** Established in 2004, this collaborative provides a forum to manage long term access to conduct vegetation management necessary to meet landscape goals. Coordination of road maintenance and ensuring access on roads that are critical for fire protection and forest management are current priorities of the collaborative. Members of this effort include MN DNR, Potlatch, Forest Capital Partners, St. Louis County, and the Superior National Forest.
- **Leech Lake Pines:** Established in 2008, the primary goal of this collaborative is to improve forest conditions within a 75,000 acre area on the south side of Leech Lake by increasing long-lived conifers and increasing forest diversity. In 2010, the Leech Lake Pines Collaborative will begin projects on about 300 acres. The Leech Lake Band of Ojibwe, a key partner in this project, ensures that treaty rights, trust responsibilities, and traditional values are upheld. Along with the Leech Lake Band, the Chippewa National Forest works in partnership with MFRC, Cass County, MN DNR, TNC, and the Minnesota Forestry Association.
- **Landscape Scale Restoration of Critical Forest Habitat in Northeast Minnesota:** This year the Superior National Forest, TNC, MNDNR, MFRC, and Lake and St. Louis Counties are initiating an \$800,000 forest restoration project in northern Minnesota. Work is being conducted in various priority conservation areas. Treatments include prescribed fire, site preparation, and planting of long lived conifers.

Community Wildfire Protection Plans

Within Northern Minnesota, Community Wildfire Protection Plans (CWPP) have been developed on a county-wide basis. Planning for these began in 2004; the following year Cook County of far northeastern Minnesota was the first to complete a CWPP in the eastern region. To date, three counties in northeastern Minnesota have CWPP in place. In north central Minnesota, Itasca County has a CWPP that covers half of the Chippewa National Forest. All are community-based and were developed by a core group of staff from county, state, federal and tribal land management agencies, volunteer fire departments, County Emergency Management, and individuals.

Community Wildfire Protection Plans were developed by identifying areas with wildland-urban interface, then prioritizing areas needing urgent attention to hazardous fuels mitigation. The planning groups conducted interviews with local fire departments to gather information on items such as access, homes and businesses, local emergency response preparedness, fire department needs, and risk to infrastructure. Interagency fire staff provided technical information on fire occurrence, fuel hazards, and potential fire behavior.

Implementation of CWPP is on-going. Each county has a core group consisting of the County Emergency Manager, a MN Department of Natural Resources Firewise representative, MN DNR foresters, fire staff from the US Forest Service, County Land Commissioners and County Foresters, and fire department representatives. This group is responsible for identifying fuel mitigation projects across the county, obtaining partners, and securing implementation funding. The main objective and success of Community Wildfire Protection Plans is to get the community and landowners actively involved finding a solution to wildland-urban interface issues across all land ownership boundaries.

Section 4 – Wildfire

Fire potential

Wildfires on Minnesota’s National Forests are generally suppressed except for on the Superior National Forest where fire is allowed to burn naturally in the BWCAW under condition in which there is little probability of fire effecting values at risk. With fire suppression reducing the presence of fire on the landscape, hazardous fuels have built up to levels beyond what would have naturally occurred. The aspen and birch component has reached maturity and is now dying off. Additionally, wind events have significantly increased the amount of dead and down fuels. This means there is a significant amount of surface fuels to carry a fire, ladder fuels to carry fire into the crowns, and decadent overstory to support continuous crown fire runs. Due to these conditions, uncharacteristic wildfire can be expected and is reflected in recent fire history. One recent example of this is the Cavity Lake of July 2006, burning 30,000 acres in heavy conifer blowdown fuels. Post-fire severity analysis indicates 45% of the area burned with high severity, 41% with moderate severity, and only 10% with low severity. Other wildfires that burned in the early 1990’s show less than 5% of the area as high severity with the rest of the area being a split between the low and moderate severity fires. These severity numbers are displayed in Table W-3.

Fire Behavior

Using fire modeling, fire behavior in the pine ecosystems, with the current fuel profile during high fire danger, is projected to be beyond the capabilities of ground crews (4’ flame length). These fires could easily transition to, and sustain, continuous crown fire. Resources required on this type of fire would include heavy equipment and aircraft which come at a high cost. The restoration treatments proposed in this proposal would help decrease fuel loadings, and expected fire behavior would be reduced to a surface fire, with some torching of individual trees, and limited crown fire runs. In this scenario ground resources would be effective and fire could be allowed to burn more naturally, without the risk of impacts to values at risk.

Table W-1: Fire Behavior Comparison of Pre and Post Treatment

Treatment	Flame Length (feet)	Flame Length for Crown Fire (Feet)	Can Transition to Crown?	Potential Active Crown Fire	Fire Type
Pre	11	9	Yes	Yes	Crowning
Post	4.5	15	No	No	Conditional Crowning

Suppression Costs

The Superior and Chippewa National Forest managed 679 wildfires from 2004 thru 2009. All but 6 of these fires were either suppressed with initial attack resources or local incident management teams. Incident management teams were brought in to manage the 6 larger fires for a cost of \$24,054,209.

Table W-2: Fire Costs

Fire Size	Total Spent	Number of Fires	Acres Burned	Cost/ Acre
1-10,000 acre	\$5,125,995	679	1007.1	\$5,089.86
10,000 + acre	\$24,054,209	6	113205	\$212

There are many other costs caused by these large fires that could be reduced by conducting fuels treatments. Personal property and investments are often destroyed by fire. The most recent and large wildfire was the Ham Lake fire of May, 2007. The fire burned approximately 75,000 acres over the course of several days. In the Ham Lake Fire destroyed 133 structures including 61 residences and 17 commercial buildings. There are additional costs associated with economic impacts to the local economy, ecological impacts such as soil degradation and wildlife habitat loss, impacts to aesthetic values, and health impacts associated with poor air quality. Both of Minnesota’s National Forests have small communities that rely on wood products and recreation to support the economic base. Wildfire could

have major impacts to these communities, including: damaging timber value; destroying outfitting businesses; reducing the number of visitors purchasing goods and services; and damaging urban interface homes and cabins. Intangible costs in the broader picture of fire costs are often times 2-30 times what is reported for suppression related costs.¹ Most important is the safety of firefighters who are conducting the suppression efforts and for which there really is no value that can be assigned.

Fire Regimes

There is a clear recognition within Minnesota's National Forests that natural fire regimes need to be reestablished to promote forest resilience, reduce hazardous fuels and the costs of wildfire, and return the forest to its historic patterns and processes. Minnesota's National Forests currently conduct prescribed fire in an attempt to restore fire to red and white pine stands. By design, these are low intensity burns, that burn in the understory of the stand, removing dead and downed materials, ladder fuels, and duff layer. However, it is difficult to conduct prescribed fire on the same landscape scale and with the same return intervals that occurred historically. This is due to lack of personnel and funding to conduct large landscape scale prescribed burn projects; and the presence of a developing and expanding urban interface; and the high recreational use of the forest that can occur during the time of year when conducting prescribed fire is optimal. Therefore, Minnesota's National Forests are beginning to use additional mechanical treatments that mimic the natural fire regimes (refer to the proposed treatment section).

Fuel Treatment Placement

The priority for fuels treatments in Minnesota's National Forests is around the wildland urban interface (WUI) areas. The Community Wildfire Protection Plans covering both of Minnesota's National Forests have prioritized the WUI areas. The prioritization of WUI areas is based on a rating system that takes into account proximity to hazardous fuels; ability to take suppression action; number, type, and social and economic importance of values at risk; and ecological values. This prioritization is often referred to when deciding where conduct treatments and has been used in identifying where treatments will occur for this project. When working in WUI areas, treatments are placed adjacent to private property to extend the amount of defensible space; adjacent to road corridors which can be used as control lines and as primary egress and ingress roads; and adjacent to other values at risk such as communication towers, recreation sites, and Fire Department facilities. Fuel treatments near WUI areas (1/2mile radius) are often mechanical treatments due to the risk of conducting prescribed fire near urban interface. Sometimes these mechanical treatments are followed with prescribed fire. Prescribed fire is used on the outer edge of WUI areas to create additional fuel breaks and for fire restoration purposes.

Fuel Treatment Effectiveness

The use of fuel reduction treatments has been shown to be effective in Minnesota's National Forests. One example is the Ham Lake which burned in an area that had been heavily impacted by the 1999 blowdown event where fuel reduction treatments had been conducted to reduce fuel hazards near the urban interface area. Treated areas were used to conduct burn outs and other suppression tactics. Additionally, homes near treated areas were more defensible due to decrease fire behavior and thus the ability for suppression resources to work around them. The Cavity Lake Fire is another example where spread of the fire to the east into a heavy urban interface area was stopped by prescribed fire treatments.

¹ Western Forestry Leadership Coalition. 2009. The True Cost of Wildfire in the Western U.S. www.wflcenter.org/news_pdf/324_pdf.pdf

Section 5 – Utilization

Biomass

Currently, very little small diameter materials are being used as a biomass product for energy or other by-products. However, the use of biomass for energy and other by-products has been slowly gaining momentum in northern Minnesota. Table U-1 displays a summary of the current and planned biomass facilities in Minnesota. There are 39 operating facilities that use biomass for a variety of uses including heat, electricity, pellets, hardboard, and bio-fuel.

Operational Facilities	Number	Annual Wood Needs (green tons)
Small Scale	31	<50,000
Mid-Range	2	50,000-200,000
Large Scale	6	>200,000
Planned Facilities	4	>200,000
Proposed Facilities	19	>200,000

The remoteness of the forests has created barriers to full development of the industry because of the costs of transportation. Thus far, only a portion of Minnesota's National Forests are close enough to biomass facilities to make utilization economically feasible. Minnesota's National Forests see the Minnesota Resilience Project as an opportunity to further explore the potential for biomass utilization as an outcome of ecological restoration in northern Minnesota.

Over the past several years Minnesota Forest Resource Council and its membership have been actively pursuing the potential for biomass utilization within, and around, the communities surrounding Minnesota's National Forests. At the local level, both the cities of Grand Marais and Ely in Minnesota have developed plans and are seeking funding to install biomass facilities. As a result of this, Cook County and the City of Grand Marais have committed to supporting the project financially through bonds and a 1% sales tax. This project is driven by a non-profit, volunteer group called the Cook County Local Energy Project. Additionally, the local sawmill has committed to being the distribution site for biomass. This effort has also been supported by the Superior National Forest and the MNDNR. This collaborative has moved along quickly, and with some financial support a biomass facility is expected to be in Cook County in the next couple of years.

Minnesota's National Forests see the Minnesota Resilience Project as an opportunity to further explore the potential for biomass utilization as an outcome of ecological restoration in northern Minnesota. The type of materials being crushed, piled, burned, mulched, or chipped as part of the Minnesota Resilience Project could be utilized for biomass, thereby helping to offset the costs of treatments. Biomass is plentiful in Minnesota's National Forests.

For example, on the Superior National Forest, it is estimated there are currently 438,005 acres of forest with available biomass in the form of small diameter materials related to fuel reduction activities. This does not include commercial timber products used for pulpwood or saw timber. In addition to the potential to generate biomass as a product, Minnesota's National Forests are mechanically treating approximately 5,000 acres per year, as much as 55,000 tons per year would be available for a biomass market. With small scale biomass energy units utilizing up to 16,500 tons/year, there is clearly an adequate supply of biomass being generated in Minnesota's National Forests to support increased utilization of biomass, if transportation costs can be overcome.

With current and planned conifer restoration treatments, the volume of biomass being removed will vary based on treatment type. If proposed biomass facilities are established, harvest slash and understory balsam fir species would become merchantable, offsetting current costs of \$300 per acre per treatment, and providing value from biomass materials of \$25 per acre. Table U-2 shows values and costs of treatments.

In the Mixed Forest Province of Minnesota, conifer restoration focuses on removing encroaching hardwoods, preparing sites for planting, and follow-up stewardship and maintenance. After the extensive logging at the turn of the 20th century, former conifer forests succeeded to hardwood forest types. These hardwoods reached maturity at 80-100 years. Consequently, areas proposed for conifer restoration currently consist of an abundance of old aged, declining hardwoods mixed with remnant pine. Therefore, species targeted for removal by the Minnesota Resilience Project include aspen, birch, diseased pine, and balsam fir. The general size of hardwoods being removed is 6-10" DBH (diameter at breast height), pine 8-12" DBH, and balsam 4-8" DBH. Additionally, understory balsam fir (<4"DBH) would be removed to reduce hazardous fuels. Residual slash and balsam fir is piled and burned or chipped and taken to biomass facilities, where feasible. Commercial thinning in existing pine stands removes 4-8" DBH material primarily used for saw timber. Much of the merchantable material could be used to support a biomass industry. However, with current markets, the value is much higher other woods products. Table U-2 shows values of materials.

Table U-2: Value and Costs of Treatments			
	Volume Removed (per acre)	Value (per acre)	Costs of Treatment (per acre)
Primary Treatments			
Full Harvest with Conversion to Conifer	20 CCF	\$406	\$225
Commercial Thin	10 CCF	\$70	\$400
Partial Harvest for Conifer Maintenance	13 CCF	\$195	\$295
Biomass Removal	15 tons	\$25	\$30-800
Secondary Treatments			
Slash Disposal			\$300
Understory Fuels Removal			\$300
Site Preparation			\$250
Planting			\$300
Seedling Protection			\$350
Release			\$250
Total Secondary Costs			\$1750

Currently the wood products industry of Northern Minnesota utilizes aspen and birch for pulp, pine and spruce for saw timber, and small diameter biomass for energy facilities. The wood products industry in this region has declined significantly over the past three years, creating challenges for forest managers. Many of the secondary restoration treatments associated with timber sales cannot be funded in the current economy. To compound this, conifer restoration treatments require several entries (including: harvest, slash disposal, site preparation, planting, seedling protection, and release). In other words, Minnesota's National Forests are struggling to fund critical conifer restoration projects as part of their restoration and management strategy. Funding of this proposal is critical in assisting with the ability of Minnesota's National Forests to conduct conifer restoration as part of its restoration and management strategy.

Section 6 – Investments

Funding

There are a variety of funding sources available to aid in implementation of the project. The current key source is appropriated funds. However, several other funds will assist with the required 50% matching, including trust and partnership funds. Additionally, forest product values are expected to contribute as funding. Table I-1 shows the amount of funding from various sources for the 10 year life of the project.

Existing Funding Sources	Amount
Appropriated Funds	\$16,664,000
Permanent and Trust Funds	\$8,415,000
Partnership Funds (includes FY10)	\$225,000
Forest Product Value (includes FY10 collections)	\$7,000,000
AARA Funds and Other	\$3,025,000
Total	\$35,329,000
Total Cost of Treatments	\$65,457,000
Total CFLR Funds Requested	\$30,128,000

Federal Investments

Landscape Restoration of Critical Forest

Habitats in Northeast Minnesota’s Matrix Forest: The Superior National Forest is collaborating with TNC in a project entitled “Landscape Restoration of Critical Forest Habitats in Northeast Minnesota’s Matrix Forest.” This is an \$800,000 forest restoration project funded by federal economic stimulus, a state grant, and private dollars. This project is complementary to the Minnesota Resilience Project and is expected to create 12 positions over the next three years. In addition, the Minnesota Conservation Corp will be providing substantial support for implementation of this project. The Minnesota Conservation Corp provides youth with training in resource management, job-readiness, and technical skills. The project is funded with \$500,000 of Federal Recovery Act funds.

Other Economic Stimulus: The Minnesota’s National Forests are currently conducting restoration treatments with federal Recovery Act funds. The forests were awarded approximately 2.5 million dollars to conduct these treatments. The treatments are complementary to the Minnesota Resilience Project in that they will restore conifer species through planting, timber stand improvement, and understory fuel reduction activities.

Non-Federal Investments

Landscape Restoration of Critical Forest Habitats in Northeast Minnesota’s Matrix Forest: Approximately \$300,000 of state and private funding is being applied to the Superior National Forest and TNC’s collaborative project.

Great Lakes Restoration Initiative: The goal of this regional multistate initiative is the restoration, protection and sustainable use of the Great Lakes. The Superior National Forest is within the Great Lakes Area and was awarded \$1 million for projects in FY2010. These projects restore conifers to enhance habitat for threatened and endangered species, migratory birds, and species associated with wetland and aquatic habitats. We will have the opportunity to apply for additional money (up to several million dollars) in 2011-2014 and would use this to support the Minnesota Resiliency Project.

University of Minnesota Boreal Forest Project: The University of Minnesota recently was awarded funding (\$800,000) to support the development of a project to increase the resilience of the Boreal Forest in Minnesota. The project will inform and support the Minnesota Resilience Project.

Leech Lake Pines Restoration Project: The Leech Lake Pines Collaborative was awarded a grant of \$51,000 by the State through the constitutional amendment (habitat funding) for forest restoration projects. Partners are matching this with over \$10,000 match plus significantly more in-kind time over several years.

Minnesota Forest Legacy Grants: A voter-approved sales tax is estimated to raise \$240.5 million in FY 2010. The funding approved by voters included the following uses:

- Restore, protect and enhance wetlands, prairies, forest and habitat for fish, game and wildlife (33.00%).
- Protect, enhance, and restore water quality in lakes, rivers, and streams with at least 5 percent of the fund to be spent to protect drinking water sources (33.00%).
- Support parks and trails (14.25%).
- For arts and cultural heritage (19.75%).

The advisory legislative council on habitat funds requested the MFRC in conjunction with the Minnesota Forest Resources Partnership (MFRP) develop a long range implementation vision for the implementation of forest habitat funds throughout the state. Recommendations for forest habitat initiatives in landscapes around the two national forests have been integrated into the vision document.

The forest habitat funds through the constitutional amendment, which are intended to be used on state and county owned lands as well as private industrial and non-industrial lands with permanent conservation protection, will be actively pursued to compliment the CFLRP investments made through this grant. They will also be used to leverage significant local, private, tribal, and foundational funding. In addition, efforts are underway to coordinate the coordination with clean water funding as well.

Future Restoration Costs

By conducting treatments in the near future, restoration costs long term will be reduced in several ways including:

- As capacity within Minnesota's National Forests and its collaborative partners is increased, restoration unit costs are expected to decrease. This will primarily be the result of increased efficiencies due to the larger landscape scale of the project.
- A healthier forested landscape will be more resilient to ecosystem stressors, and therefore cost for responding to negative changes from those ecosystem stressors will be reduced.
- Intensively managing conifer stands now will restore the historic conditions which can be maintained with less costly maintenance treatments in the future.
- Reducing the fire behavior associated with wildfires and promoting longer lived species will reduce the severity of fires and the costs associated with rehabilitation and reestablishment of vegetation after severe wildfires.

Environment and Training

This type of a project has the potential to provide job and training opportunities for private, nonprofit, cooperative entities in the following ways:

- The Minnesota Resilience Project will create new jobs and expand existing businesses engaged in forest restoration. Minnesota's National Forests currently work with its collaborative partners, the Minnesota Conservation Corp, and private contractors to implement on the ground restoration. It is expected that the amount of work that will be created by the Minnesota Resilience Project will necessitate that current contractors will have to expand their capacity, or new businesses will have to be created. The local private forest industry businesses can develop skills through conducting activities which have not been done on the forests before.
- Small local community groups will have the opportunity to collaborate and be part of projects they have not in the past, becoming further educated on forest ecology and restoration concepts.
- Local private homeowners will have the opportunity to see the options for fuels reduction and restoration treatments and learn about wildfire protection concepts they can apply to their own private property.
- By improving the aesthetics of the forests, this proposal could potentially bring more visitors to the area, supporting the local recreation businesses.
- It is integral to pull in collaborators to assist in the implementation and monitoring treatments. CFLRP funds for these projects will be used to fund collaborative efforts with other partners to implement the proposed treatments. As demands to do more on Forest Service lands with less funding are being placed on the Forests, the capacity to implement projects is stretched.

Section 7 – Funding Estimate

Fiscal Year 2010 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2010 Funding for Implementation	\$3,647,500
FY 2010 Funding for Monitoring	\$10,000
1. USFS Appropriated Funds	\$1,057,000
2. USFS Permanent & Trust Funds	\$585,000
3. Partnership Funds	\$200,000
4. Partnership In-Kind Services Value	
5. Estimated Forest Product Value	\$700,000
6. Other – AARA	\$775,000
7. Other – Grants	\$340,000
FY 2010 Total (total of 1-6 above for matching CFLRP request)	\$3,657,500
FY 2011 CFLRP request (must be equal to or less than above total)	0*
Fiscal Year 2010 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

*No Funds being requested in 2010 due to how late in the year it is – could not get contracts awarded or work completed.

Fiscal Year 2011 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2011 Funding for Implementation	\$5,012,500
FY 2011 Funding for Monitoring	\$10,000
1. USFS Appropriated Funds	\$0
2. USFS Permanent & Trust Funds	\$730,000
3. Partnership Funds	\$12,500
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other – AARA	\$1,170,000
7. Other – Grants	\$400,000
FY 2011 Total (total of 1-7 above for matching CFLRP request)	\$3,012,500
FY 2011 CFLRP request (must be equal to or less than above total)	\$2,010,000
Fiscal Year 2011 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2012 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2012 Funding for Implementation	\$5,887,500
FY 2012 Funding for Monitoring	\$10,000
1. USFS Appropriated Funds	\$970,000
2. USFS Permanent & Trust Funds	\$585,000
3. Partnership Funds	\$12,500
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other – AARA	\$90,000
7. Other – Grants	\$250,000
FY 2012 Total (total of 1-6 above for matching CFLRP request)	\$2,607,500
FY 2012 CFLRP request (must be equal to or less than above total)	\$2,592,000
Fiscal Year 2012 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2013 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2013 Funding for Implementation	\$6,570,000
FY 2013 Funding for Monitoring	\$15,000
1. USFS Appropriated Funds	\$1,800,000
2. USFS Permanent & Trust Funds	\$800,000
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2013 Total (total of 1-6 above for matching CFLRP request)	\$3,300,000
FY 2013 CFLRP request (must be equal to or less than above total)	\$3,392,500
Fiscal Year 2013 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2014 Funding Type - On NFS Lands	Dollars/Value Planned
FY 2014 Funding for Implementation	\$7,487,500
FY 2014 Funding for Monitoring	\$15,000
1. USFS Appropriated Funds	\$2,140,000
2. USFS Permanent & Trust Funds	\$947,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2014 Total (total of 1-6 above for matching CFLRP request)	\$3,787,500
FY 2014 CFLRP request (must be equal to or less than above total)	\$3,715,000
Fiscal Year 2014 Funding Type - Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2015 Funding Type - On NFS Lands	Dollars/Value Planned
FY 2015 Funding for Implementation	\$7,527,500
FY 2015 Funding for Monitoring	\$20,000
1. USFS Appropriated Funds	\$2,126,250
2. USFS Permanent & Trust Funds	\$947,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2015 Total (total of 1-6 above for matching CFLRP request)	\$3,773,750
FY 2015 CFLRP request (must be equal to or less than above total)	\$3,723,750
Fiscal Year 2015 Funding Type - Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2016 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2016 Funding for Implementation	\$7,307,500
FY 2016 Funding for Monitoring	\$20,000
1. USFS Appropriated Funds	\$2,030,00
2. USFS Permanent & Trust Funds	\$977,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2016 Total (total of 1-6 above for matching CFLRP request)	\$3,707,500
FY 2016 CFLRP request (must be equal to or less than above total)	\$3,620,000
Fiscal Year 2016 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2017 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2017 Funding for Implementation	\$7,527,500
FY 2017 Funding for Monitoring	\$25,000
1. USFS Appropriated Funds	\$2,180,000
2. USFS Permanent & Trust Funds	\$947,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2016 Total (total of 1-6 above for matching CFLRP request)	\$3,827,500
FY 2016 CFLRP request (must be equal to or less than above total)	\$3,725,500
Fiscal Year 2017 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2018 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2018 Funding for Implementation	\$7,527,500
FY 2018 Funding for Monitoring	\$25,000
1. USFS Appropriated Funds	\$2,180,000
2. USFS Permanent & Trust Funds	\$947,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2018 Total (total of 1-6 above for matching CFLRP request)	\$3,827,500
FY 2018 CFLRP request (must be equal to or less than above total)	\$3,725,000
Fiscal Year 2018 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Fiscal Year 2019 Funding Type – On NFS Lands	Dollars/Value Planned
FY 2019 Funding for Implementation	\$7,527,500
FY 2019 Funding for Monitoring	\$25,000
1. USFS Appropriated Funds	\$2,180,000
2. USFS Permanent & Trust Funds	\$947,500
3. Partnership Funds	\$0
4. Partnership In-Kind Services Value	\$0
5. Estimated Forest Product Value	\$700,000
6. Other	\$0
FY 2019 Total (total of 1-6 above for matching CFLRP request)	\$3,827,500
FY 2019 CFLRP request (must be equal to or less than above total)	\$3,725,000
Fiscal Year 2019 Funding Type – Off NFS Lands	Dollars Planned
USDI BLM Funds	\$0
USDI (other) Funds	\$0
Other Public Funding	\$0
Private Funding	\$0

Section 8 – Regional Funding Plan

Monitoring all these efforts is a significant undertaking important to all stakeholders. In addition to monitoring by the Forest Service, the Minnesota Forest Resources Council (MFRC) provides oversight and program direction to several monitoring programs throughout the state of Minnesota including implementation monitoring of Minnesota's voluntary forest management guidelines and evaluation of those guidelines in protecting water quality, wildlife habitat, and soil productivity. MFRC landscape committees monitor activities and outcomes of all implementation projects to inform future efforts and update implementation strategies. Also, Minnesota's National Forests have partnered extensively with TNC in monitoring key forest health indicators. Multi-party monitoring efforts associated with this proposal will continue for at least 15 years after project implementation begins.

The Chippewa and Superior National Forest's in Minnesota receive approximately \$15.5 million dollars annually in appropriated funding and trust fund authorizations typically utilized for planning, implementing and monitoring of vegetation management and prescribed burning. The Regional Forester has been using regional funds for planning, implementation and monitoring in the Mixed Forest Province project area for over many years. The Regional Forester expects to continue funding the Minnesota National Forest's at levels similar to the past, exclusive of CFLR funds. The Regional Forester is committed to continued support for out-year planning efforts to insure that the entire 10 year program of work is completed consistent with the schedule of work submitted with this proposal.

The two Minnesota National Forests have the capacity to use any CFLR funds allocated in FY 2011 and beyond. Even though \$3.7 million dollars are being spent within the project area on restoration in FY 2010, no CFLR funds are being requested because Agency purchasing and contracting cutoff dates potentially would prohibit obligation or expenditure in the same fiscal year.

Landscape Strategy Links

Landscape planning for this project includes components from several different types of landscape plans that affect the project. The following is a description of these plans and links to sites where these plans can be referenced.

Minnesota Forest Resources Council Plans

The Minnesota Forest Resources Council has developed plans for each of Minnesota's major forest landscapes. The Chippewa National Forest and the Superior National Forest are active members of the North Central and Northeast Landscape Committees. The plan focuses on sustainable forest management and achieving that by bringing all stakeholders to the table.

http://www.frc.state.mn.us/initiatives_llm.html

Forest Service Plans

Both the Superior and the Chippewa National Forest completed revised forest plans in 2004. These plans provide guidance on vegetation management to promote resiliency, diversity, and productivity. The objectives for vegetation composition, age classes, and spatial patterns were developed to ensure that native vegetation is representative of the spectrum of conditions that would have resulted from natural ecosystem processes and disturbances under which current forest systems evolved. The goals of Forest Plans are consistent with the goals of the North Central and Northeast Landscape Plans.

http://www.fs.fed.us/r9/forests/superior/projects/forest_plan/2004_forest_plan.php

Community Wildfire Protection Plans

Community Wildfire Protections plans have provided guidance on where priority treatments should occur. Each CWPP identifies the high fire risk areas and provides suggestions on how to reduce the fuel hazards in those areas.

Cook County CWPP

<http://www.co.cook.mn.us/index.php/wildfire-protection-plan>

Lake County CWPP

http://www.co.lake.mn.us/index.asp?Type=B_BASIC&SEC={9F79DFFE-D039-49B3-8066-594E2C2A1987}

St. Louis County CWPP

<http://www.co.st-louis.mn.us/slcportal/Portals/0/Departments/Sheriff/Documents%20-%20Homeland%20Security%20and%20Emergency%20Management/SLC%20%20CWPP%20-%2018%20June%202008.pdf>

Itasca County CWPP

<http://www.co.itasca.mn.us/Land/CWPP.pdf>

Maps



