

(1) Overview

During the fall of 2004 and 2005 over 1,832 acres were treated for hazardous fuels reduction outside the BWCAW. Within the BWCAW approximately 20,615 acres were treated. Parts 2, 3, & 4 of this report pertain to non BWCAW activities only. However, this report will also document highlights of the BWCAW fuel reduction program for reference. More detailed information on burning within and outside the BWCAW can be found in Appendix H1. These programs/projects contribute to and/or are integrated with the National Fire Plan, HFI/HFRA, the BWCAW fuels reduction EIS, and the BWCAW wilderness management plan. The BWCAW Wilderness Plan was validated or affirmed through the Revised Forest Plan. Following is an overview on (1) status of the BWCAW fuel reduction EIS, (2) Implementation of HFI/HFRA, (3) Wildfires and (4) Use of fire for ecological objectives.

Fuel Reduction Associated with 1999 Blow down

During 2002, almost all salvage logging associated with the 1999 windstorm was completed while the prescribed burning program within the BWCAW was accelerated. Table 1 displays acres salvaged to date.

| Table 1. Salvage Accomplishments | | | |
|--|---|----------------------------|---|
| Decision Documents | Area Planned to be Treated in Decision Document* | Complete by 9/30/05 | Remaining Acres - (Prescribed Burns Planned)** |
| Alternative Arrangements from the Council on Environmental Quality | 2,280 | 1,637 | 0 |
| Crescent Lake Fuel Treatment EA | 1,023 | 994 | 29 |
| Griddle Lake Supplement | 498 | 538 | 0 |
| Gunflint Corridor Fuel Treatment EIS | 5371 | 4952 | 419 |
| Little East Creek Fuel Treatment EIS | 2,611 | 1,978 | 0 |
| Total | 10,645 | 8552 | 448 |

Each year, the acres burned for fuel reduction within the BWCAW is roughly twice the acres treated the previous year with close to 14,000 acres treated during 2005. See Table 2. This is partially attributed to larger treatment unit size. During the first 2-3

years, treatment unit sizes were from 100 to 1000 acres. During the past two years, treatment unit size ranged from 3,000-10,000 acres. The Superior NF is approximately 1/3 complete of the projected 85,000 acres outlined in the BWEIS.

| Table 2. BWCAW EIS Accomplishments | | |
|---|--------------|----------|
| Year | Acres | % |
| 2001 | 291 | |
| 2002 | 2274 | |
| 2003 | 3,744 | |
| 2004 | 6,643 | |
| 2005 | 13,972 | |
| Status-Total | | |
| Total Project Acres | 84,812 | |
| Total Completed | 26,924 | 32% |
| Dropped | 3,465 | 4% |
| Incomplete | 54,423 | 64% |
| Status-Zone | | |
| WZ Acres | 30,842 | |
| WZ Completed | 12,939 | |
| WZ Incomplete | 17,903 | |
| EZ Acres | 53,970 | |
| EZ Completed | 13,985 | |
| EZ Incomplete | 39,985 | |

Prescribed Burn Monitoring

During 2005 the Forest Monitoring crew working in conjunction with fire and other resource specialists visited 23 Burn Units in the BWCAW. Approximately 14 pre burn and 8 post burn visits were made respectively. The intent of these visits was to document burn mitigation compliance and fire effects outlined in the 2000 BWEIS. Moreover, fire severity and burn patterns were assessed in the Alpine Lake Fire. Other observations included pine establishment, topographic and lighting practice influence on burn patterns, influence of conifer succession & new blow-down on fire risk, and effects of treated and non treated blow down on big game use. Following are brief summaries on fuels, vegetation, soils, wilderness values, fire risk, and fire severity. A more thorough discussion can be found in Appendix H1.

Fuel Reduction

-Burn Unit's Visited-**8**.

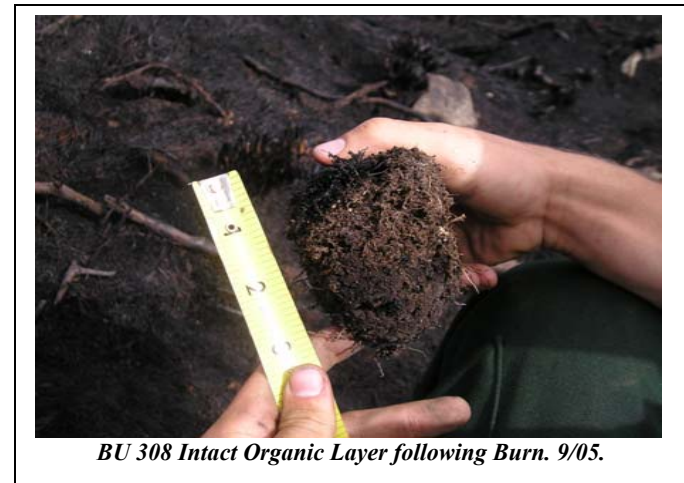


BU 307 After. 9/05.



BU 307 Before. 9/02.

Soils (Organic Layer) Post Burn Only



BU 308 Intact Organic Layer following Burn. 9/05.

| Table 3. Duff & Fuel Reduction | | |
|---|-----------------------------|-----------------------------|
| Criteria | Duff Depth Reduction | Fuel Depth Reduction |
| Range | 0 to 100% | 40 to 100% |
| BU's W/Highest Reduction | 307 & 308 | 307 & 308 |
| BU's W/Lowest Reduction | 36,66,89 | 36 & 42 |
| Average Duff Reduction | 40% | |
| Average Fuel Reduction | | 68% |

| Table 4. Soil Reduction Summary | | | |
|--|----------------------------------|------------------------------|---------------------------------------|
| Criteria | Fermented Depth Reduction | Humus Depth Reduction | Total Organic Matter Reduction |
| Range | 0 to 100% | 0 to 99% | 0 to 100% |
| BU's W/Highest Reduction | 36 & 87 | 89 | 36, 87, & 89 |
| BU's W/Lowest Reduction | 66 & 308 | 36,66,308 | 36,66,308 |
| Average OM Reduction | 55% | 26% | 41% |

Vegetation (Plant Succession) Pre-Burn Only



Balsam Fir Establishment. BU 302. 7/05

Sixteen vegetative plots were established in 10 burn units to assess vegetative succession (particularly conifer establishment) following burning. This data is important because it relates to: (1) Prolonged Fuel Risk and (2) Pine (particularly white pine) occurrence following the blow down. Our surveys revealed a substantial release of ladder fuels (primarily balsam fir) within unburned blow-down. This conifer establishment represented both release of trees present prior to the wind storm and seedling establishment following the blow-down. White pine observed was also a result of both post blow-down release and seedling establishment.

| Table 5. Conifer Establishment | | |
|---------------------------------------|-------------------|----------------|
| | # of Plots | Percent |
| All Conifer Establishment | 15 | 94% |
| Pine Establishment | 9 | 56% |

Vegetation (Old Growth) Summary

Immediate Post burn surveys indicate that neither shoreline nor interior old growth was consumed in the flaming front. However, future surveys will have to be done to assess if old forest mortality over time.

| Table 6. Old Forest Mortality | | |
|--------------------------------------|------------------|----------------------------|
| Category | # of BU's | Immediate Mortality |
| Old Forest Shoreline | 9 | No |
| Old Forest Interior | 5 | No |



Shoreline Survival. Knife Lake Burn. 9/05

Prolonged Fire Risk

Recent (2004 & 2005) blow down was observed within or adjacent to several burn units. This in conjunction with release of conifers (see

above) may be contributing to prolonged fire risk in the BWEIS. Further, more extensive assessments will need to occur to validate this.



Knife lake. Recent R. Pine blow down over 99 fuels



Knife lake. Recent Cedar blow down over 99 fuels.

Fire Effects based on Topography, lighting pattern, etc

Over the past several years we have documented fire patterns as influenced by topography, time of year, fuel loadings, and lighting patterns. We

continued to make observations this year. The intent is to provide this information to resource specialists for use in planning landscape treatments outside of the BWCAW and to assist in the management of wildland fire use (WFU) within the BWCAW.



Knife Lake Burn. Note Burn pattern as influence by lighting pattern & topography.



Knife Lake Burn. Note Burn pattern as influence by lighting pattern & topography.

Minimum Tool Use for BWCAW Treatment Units

Two criteria used to assess effects of management actions on wilderness character include constructed control line and use of motorized equipment. Both criteria were addressed as part of a minimum tool analysis associated with the BWEIS. To date line construction mileage is significantly less than what was projected in the BWEIS. Currently there has been only 25 miles of line

constructed instead of the 72 miles projected in the BWEIS. In addition the amount of time using hand tools has been 2 ½ times more than the amount of mechanized tools used for implementation of the prescribed burn units. The majority of mechanized tool use has been with pumps during the burn operations. Table 7 displays Control Line & Mechanized Use.

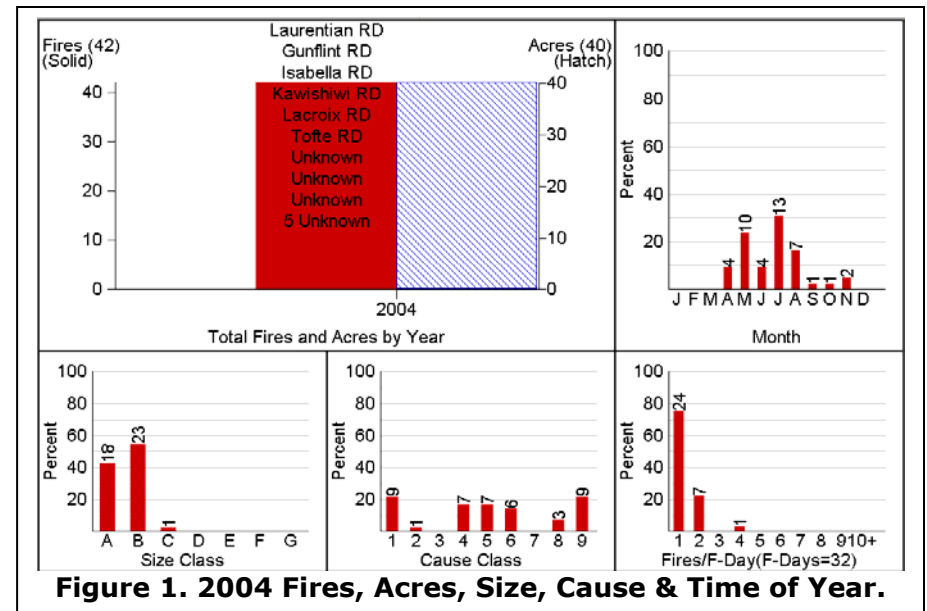
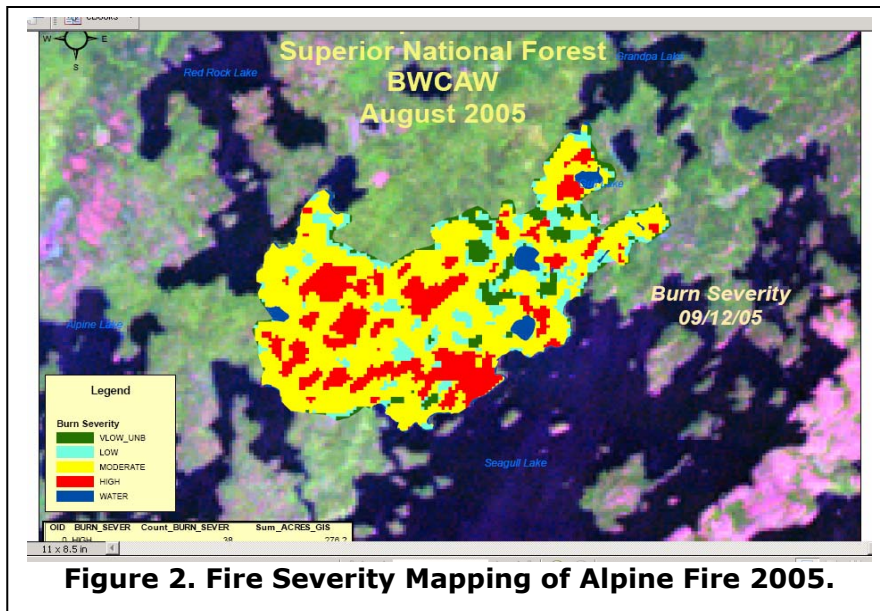
| Control Line | | Mechanized Use | |
|-------------------------------|---------------|-----------------------|---------------------------|
| Planned vs Actual | Amount | Mechanized Use | Non Mechanized Use |
| 2000-2005 Planned | 72 Miles | | |
| 2000-2005 Actual | 25 Miles | | |
| Difference (Miles) | 47 Miles | | |
| <i>Actual as % of Planned</i> | 35% | | |
| Hours | | 411 | 1021 |
| Percentage | | 29% | 71% |

Wildland Fire Management

During 2004 & 2005 there were 42 and 61 wildfires respectively. Approximately 40 acres burned in 2004 and 1,548 acres in 2005. Table 8 displays fire cause for years 2001-2005, as well as a 5 year

average. Figure 1 shows total fires, size, and month of fires, and cause for 2004. The largest fire (Alpine) during this reporting period occurred in August 2005. Alpine encompassed 1,335 acres and partially burned within blow down fuels in the BWCAW. Because this fire occurred within blow down it provided a "reference point" to compare with prescribed burning fire effects.

| Cause | 2001 | 2002 | 2003 | 2004 | 2005 | 5-Year Avg |
|------------------|------|------|------|------|------|------------|
| Lightning 1 | 4 | 15 | 10 | 9 | 20 | 11.6 |
| Equipment 2 | 4 | 0 | 4 | 1 | 0 | 1.8 |
| Smoking 3 | 1 | 0 | 0 | 0 | 3 | 1 |
| Campfire 4 | 14 | 9 | 11 | 7 | 22 | 12.6 |
| Debris Burning 5 | 7 | 10 | 7 | 7 | 6 | 7.4 |
| Railroad 6 | 8 | 4 | 6 | 6 | 0 | 4.8 |
| Arson 7 | 5 | 0 | 6 | 0 | 3 | 2.8 |
| Children 8 | 2 | 0 | 5 | 3 | 4 | 2.8 |
| Misc. 9 | 6 | 10 | 16 | 9 | 5 | 9.2 |
| TOTALS | 51 | 48 | 65 | 42 | 61 | 53.4 |



Fire Severity

During the past several years, the SNF has worked with various cooperators including the Remote Sensing Lab out of Salt Lake Utah (RSAC), USGS, and Minnesota DNR researchers to document and map prescribed burn and wild fire burn severity. Using RSAC satellite imagery managers can qualitatively asses fire severity immediately following burning (BARC analysis). Although field data has not yet been reported, the researchers concluded there was an extremely high correlation between the BARC analysis and field plots. Fire severity ranges are color coded based on vegetative or fuel consumption. (See figure 2). This can provide a rapid assessment as to whether burn unit objectives are achieved. Moreover fire severity documentation can provide better understanding of potential fire effects on vegetative successional pathways, soils, and watersheds. Following are some excerpts from fire severity documentation. See Appendix B1 for a more detailed description of fire severity.

| Burn Severity | Acres |
|----------------------|--------------|
| HIGH | 276.2 |
| MODERATE | 687.5 |
| LOW | 142.2 |
| VLOW_UNB | 87.9 |
| WATER | 39.3 |
| Total | 1233.1 |

Alpine Fire Burn Severity w/Land type Ecosystem (acres)

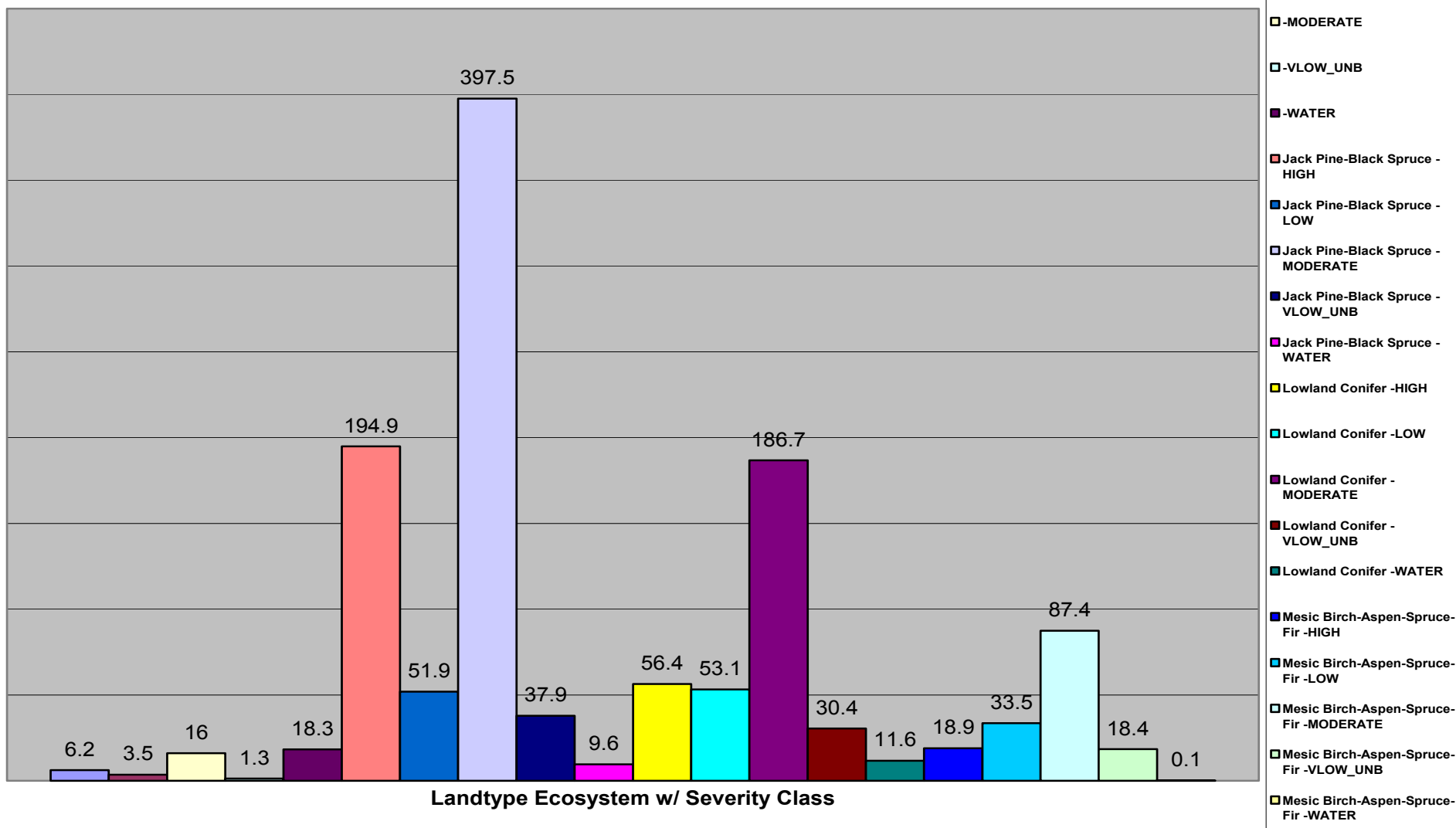
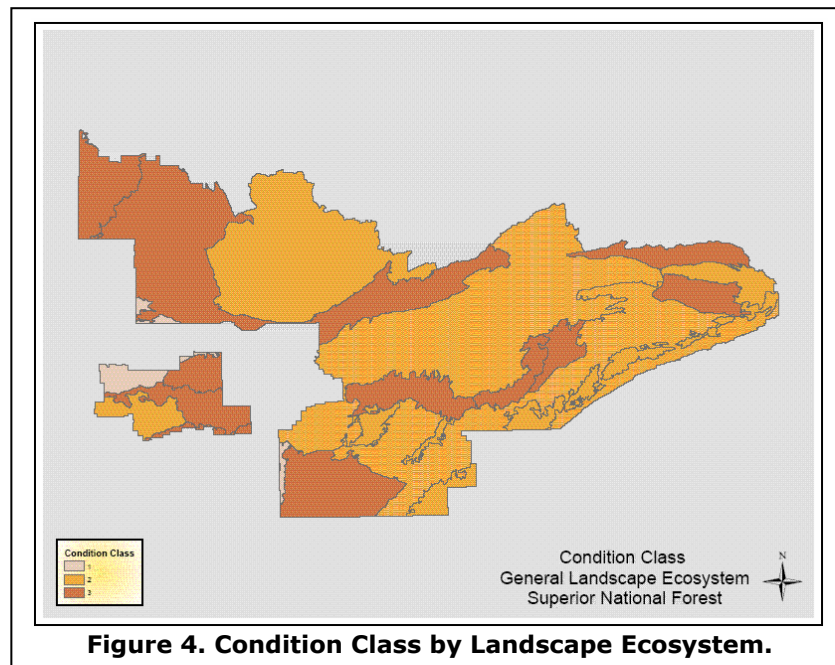


Figure 3. Landscape Ecosystem By Severity Class

HFI/HFRA and Fire Regime Condition Class (FRCC)

During the past year personnel have been involved in developing models that determine historic fire and vegetation conditions for the forest. This information has been compared to current fire and vegetation conditions to assign condition classes to the various Landscape Ecosystems on the forest (See Figure 4). The forest is currently in the process of refining the condition class assessments based on new information that has been released this fall. Condition Class improvements are reported yearly in the National Fire Plan Reporting System (NFPORS) for all vegetation treatments that improve condition class.



(2) Monitoring Activities

Monitoring Question

What level of wild land fire on the landscape is appropriate and desirable and, to what extent is unwanted wild land fire on the landscape suppressed?

Monitoring Driver(s): Desired Condition D-ID-6. The presence of wildland fire on the landscape is appropriate and desirable, but unwanted wildland fire is actively suppressed where necessary to protect life, investments, and natural resources. The full range of appropriate management responses are considered for unwanted wild land fires.

| Applicable Monitoring Activity, Practice, Or Effect Measured | Methods | When Monitored | Location or Project Area |
|---|--------------------|--------------------|--------------------------|
| Prescribed Fire activity (acres ignited) | End of year report | End of Fiscal Year | Forest wide |
| Number of unwanted wildland fires suppressed (number and acres) | End of year report | End of Fiscal Year | Forest wide |

Monitoring Driver(s): Objective.O-ID-2. Establish, maintain, or improve the condition of vegetation using prescribed fire, mechanical treatments, and other tools AND **Objective.O-ID-4.** Reduce fuels and control vegetation in the understory of stands that had naturally occurring low intensity surface fires.

| Applicable Monitoring Activity, Practice, Or Effect Measured | Methods | When Monitored | Location or Project Area |
|--|--|-----------------------|---|
| Acres treated with fire and mechanical methods | (1) Tomahawk EA Ch2. Objective. Methods Complete a Prescribed Burn Evaluation. (2) BW Fuels EIS. Ch2. 2.6.2. Fuel Reduction. Vegetation & Wildlife Habitat Changes. Conduct veg surveys on rep sites during 1st growing season & at year 5. Include photo documentation. | During growing season | (1) Tomahawk Project Area. (2) BWEIS '05 Burn Units. |
| Acres treated by harvest activities (also see Timber O-TM-1) | Review Timber TIM report, NFPORS Table II, and proposed actions in approved NEPA. | End of Fiscal Year | Forest wide |

Monitoring Driver(s): Desired Condition O-ID-3. Treat areas of highest fire risk (based on Fire Regime and Condition Class) to minimize effects of unwanted wildland fire.

| Applicable Monitoring Activity, Practice, Or Effect Measured | Methods | When Monitored | Location or Project Area |
|--|------------------------|--------------------|--------------------------|
| Number of Community Wildfire Protection Plans | Number of signed plans | End of Fiscal Year | Forest wide |

Monitoring Driver(s): Objective.O-ID-2. Establish, maintain, or improve the condition of vegetation using prescribed fire, mechanical treatments, and other tools AND **Objective.O-ID-4.** Reduce fuels and control vegetation in the understory of stands that had naturally occurring low intensity surface fires.

2005 Accomplishments

Acres treated do not include BWCAW acres. Decade One fuels treatment acres were determined by calculating the number of acres available for treatment modified by a reduction factor determined by the FPIDT.

2005 Accomplishment Contribution Towards Desired Conditions & Objectives

| A. FOREST PLAN DIRECTION/FEIS CONDITION | | | | |
|--|---|---|--|--|
| Record of Decision (7/04) | (DECADE 1) | | 2005 Accomplishments and/or Condition | |
| Existing Condition | FP Desired Condition, Objective, or S&G's | FEIS Projected or Proposed Condition | Actual Accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions |
| Avg Annual 7,778 acres treated with fire Avg Annual 7,800 acres treated with timber harvest | | Avg Annual 7,900 acres treated with fire Avg Annual 13,000 acres treated with timber harvest TOTAL for DECADE 1=200,900 | 1,832 acres treated with fire and 193 acres treated w/timber harvest= 2025 Total Acres | Timber=25,217 Fire=2115 =27,332 Acres |

| B. ACHIEVEMENT OF FOREST PLAN DIRECTION/FEIS CONDITION | | | |
|---|--|------------------------------------|--|
| % Achievement of Decade 1 Direction/Condition | | Trend | |
| Actual accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions | Actual accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions |
| 2025 Acres /200,900 = 1% | 27,332/200,900 = 14% | Flat | Up |

Monitoring Driver(s): Desired Condition O-ID-3. Treat areas of highest fire risk (based on Fire Regime and Condition Class) to minimize effects of unwanted wildland fire.

2005 Accomplishments

Forest emphasis has been placed on treating the highest risk acres within or adjacent to wildland urban interface areas. A Community Wildfire Protection Plan (CWPP) is a collaborative effort between land management agencies and the local communities to prioritize areas that need to be treated and design and implement treatments for high hazard fuels. The Cook County CWPP was completed in FY 2005. The Lake County CWPP was initiated in FY 2005 and is scheduled to be completed in FY 2006. The St. Louis County CWPP is scheduled to be initiated in FY 2006 completed in FY 2007.

2005 Accomplishment Contribution Towards Desired Conditions & Objectives

| A. FOREST PLAN DIRECTION/FEIS CONDITION | | | | |
|--|---|--------------------------------------|--|--|
| Record of Decision (7/04) | (DECADE 1) | | 2005 Accomplishments and/or Condition | |
| Existing Condition | FP Desired Condition, Objective, or S&G's | FEIS Projected or Proposed Condition | Actual Accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions |
| NA | | NA | 1 Community Wildfire Protection Plan. | 2 Community Wildfire Protection Plans |

| B. ACHIEVEMENT OF FOREST PLAN DIRECTION/FEIS CONDITION | | | |
|---|--|------------------------------------|--|
| % Achievement of Decade 1 Direction/Condition | | Trend | |
| Actual accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions | Actual accomplishments implemented | Actual Accomplishments & Approved NEPA Decisions |
| NA | NA | NA | NA |

Standards and Guides

| Standard & Guide Descriptor | Standard & Guide Description | Compliance | Remarks |
|--|--|-------------------|----------------|
| G-ID-1 | Minimum Impact Management Tactics (MIMT) will generally be used in managing wildland fire and prescribed fire to reduce adverse effects. MIMT will be applied in both operational and logistical functions. | YES | |
| G-ID-2 | Avoid delivery of chemical retardant, foam, additives, or gray water to all surface waters and riparian areas. A line officer or designee may grant an exception when there are overriding and immediate unsafe conditions. In life threatening emergencies, the Incident Commander can grant exception to this guideline. | YES | |
| G-ID-3 | Utilize existing natural or man-made barriers, such as drainages, cliffs, streams, roads, and trails instead of constructed fire lines for prescribed fire and suppression activities where practical and safe for firefighters and the public. | YES | |
| G-ID-4 | Urban Interface and have vegetation conditions that are in Condition Class 2 or 3 will be given highest priority for hazardous fuels treatment. | YES | See CWPP |

(4) Necessary Follow-up and Management Recommendations

| Monitoring Driver | Follow-up Actions |
|-----------------------|---|
| G-WS-8 | Table G-WS-8. Reach agreement on "where appropriate" statement in Activity Limit Code E applies and does not apply. <u>Supporting rationale.</u> (1) Difficult to retain or return slash following prescribed burning on these ELT's. Monitoring shows that to date PB's have not affected soils. Also burning returns nutrients back to the site. 2) Returning/retaining slash after every harvest increases fire risk near private property, recreation sites, or high use roads. It is difficult to demonstrate fuels reduction when 2-4' of slash remains following harvesting. . See SOILS O-WS-10. |
| O-ID-2. O-ID-4 | Increase the use of prescribed fire (underburning) in the red and white pine types. Increase mechanical treatments where feasible. |
| O-ID-3 | Use Fire Regime Condition Class and Prioritization exercise with other resource groups to determine highest priority areas for treatment |
| S-VG-4 | FIDT interpret S-VG-4 & G-VG-2 to determine flexibility to diverge from 60% canopy closure within patches 100 ac or greater. <u>Supporting rationale.</u> This standard precludes fuel treatments that may affect the red and white pine over story within stands below 60% canopy closure. Ramifications of this standard include: (1) It is contrary to historic disturbance patterns that were necessary to establish & maintain pine ecosystems. (2) May limit implementation of hazardous fuels reduction projects in areas of heavy under story fuel accumulation. (3) May limit pine regeneration. (4) May limit under story vegetative diversity. |

(5) Collaborative Opportunities To Improve Efficiency And Quality Of Program

The Community Wildfire Protection Plan (CWPP) efforts with Cook, Lake, and St. Louis counties are an efficient way to increase collaboration and cooperation with our neighbors and partners. Substantial efforts have been ongoing to define, develop, and complete unique CWPPs for each county. These CWPPs will describe and define what the local residents and cooperators view as fuel hazards as well as drive prioritizations WITHIN the WUI areas.

| Collaborator/Partner | Monitoring Activity | Accomplishment |
|----------------------|---------------------------|-----------------------------------|
| CWPP | Number of CWPPs completed | 1 is completed. 2 are in progress |