

2. Timber

There are three subsections within this section. The first section addresses timber outputs which include targets, harvest treatments, and payments to counties. The second section focuses on regeneration success five years after harvest. The third section on compliance contains information on results from monitoring trips to harvest units where implementation and effectiveness of standards, guidelines, and mitigation measures were evaluated.

A. Timber Outputs

Key Points

- Volume offered and sold has steadily increased since FY 2005. The Forest's unit costs today are among the lowest in the Region, a shift from among the highest prior to FY 2005. Additionally, the Forest has sold the highest percent of their annual maximum allowable sale quality of any forest in R9.
- Uncut volume has increased annually from 43 MMBF to 103 MMBF since FY 2005.
- Revenues have been and continue to be below Forest Plan expectations.
- Ratio of sawtimber to pulpwood harvested since 2005 has been lower than proposed in the Forest Plan perhaps due to increased thinning acres in red pine.
- *Percentages* harvested by treatment method are not in line with Forest Plan projections. Thinning is over accomplished, while uneven-aged management, clearcutting, and shelterwood treatments are under accomplished.
- *Acres harvested* by treatment method are approaching the decadal number for thinning but are well below the proposed numbers for clearcutting, uneven-aged, and shelterwood treatments.
- Biomass utilization has emerged since Forest Plan revision. The Forest has adopted a biomass policy to ensure site protection. Demand is currently limited.
- The Forest defers harvest treatments for a variety of reasons: due to poor access, to allow natural conversion (succession) of aspen stands to another forest type, to achieve mature/older forest objectives, to protect natural origin stands of red pine, to provide 50-70% canopy closure (e.g., for patches, goblin fern, red shouldered hawk, goshawk, riparian areas and wetlands), to address tribal high interest areas and tribal concerns, due to low volumes or sensitive species in lowlands, due to poor economics, and due to limited budgets.
- Modeling in the Forest Plan did not account for reduced harvests and volumes in Tribal High Interest areas.
- Changes to payments to counties resulted from the 2008 Secure Rural Schools Act. Monies are now available for projects recommended by local resource advisory committees (RACs).

Monitoring Question

To what extent does output levels and location of timber harvest and mix of sawtimber and pulpwood compare to those levels projects?

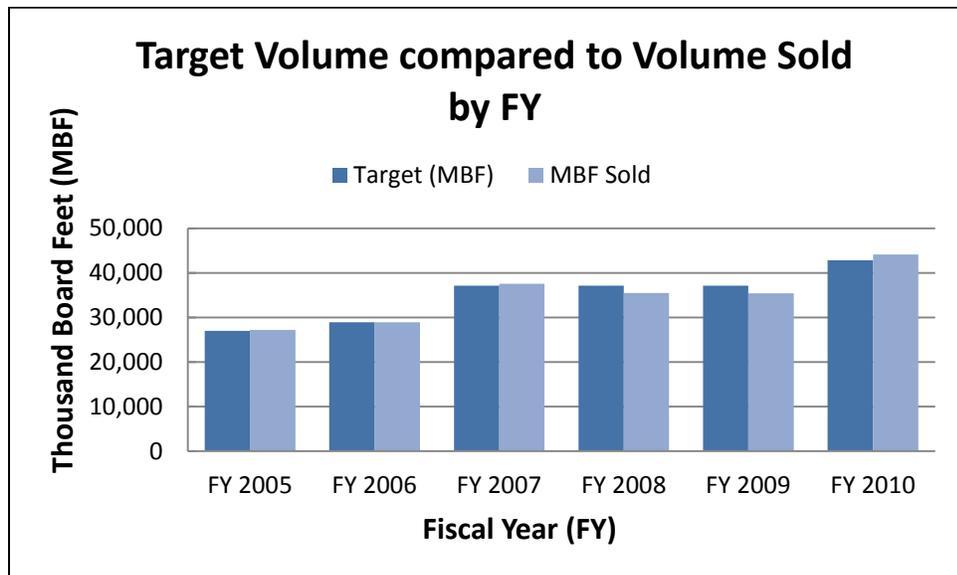
Results

Timber Targets, Volume Harvested and Uncut Volume

Types of information monitored include the amount of volume offered, amount of volume harvested, amount of uncut volume under contract, and the number of acres offered. It is a reflection of the Forest's ability to satisfy demand for wood products both in terms of total amount, species and product amount and distribution of sales across the forest.

Table 2 -1. Timber Target, Volume Offered & Sold, Volume Harvested, and Uncut Volume under contract, and acres offered by FY

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Timber Target (MBF)	27,000	28,900	37,163	37,095	37,110	42,810
Volume Offered & sold (MBF)	27,184	28,929	37,557	35,497	35,414	44,156
Volume Harvested (MMBF)	26.8	20.6	21.4	19.6	25.6	35.7
Uncut volume under contract (MMBF)	43.2	53.1	68.8	84.7	94.5	102.9
Acres offered	3868	3523	5500	4654	3379	4866



The target assigned to the Forest has steadily increased since 2005 going from 27,000 to 42,810 MBF in 2010, a 158% increase. Volume sold has kept pace rising from 27,184 MBF in FY 2005 to 44,156 MBF in 2010, a 162% increase. With the exceptions of FY 2008 and 2009, volume sold has been slightly above the assigned target.

In FY 2010 the Forest sold the highest percentage of their annual maximum allowable sale quantity of any forest in R9. In addition, unit costs are among some of the lowest in the Region, a significant decrease after being among the highest a few years ago. Lower costs were realized due to several factors: changing to marking timber during the leaf off period, higher volumes per acre, increased acres per decision, and few appeals of vegetation management decision.

Volume harvested has increased for the second year in a row after a decline that was first experienced in 2006 and bottomed out in FY 2008. The decline corresponded to poor economic conditions, the closure of an area mill, and a drop in the housing market. Other mills continued to operate with periodic temporary shutdowns.

Uncut volume under contract increased in FY 2010 for a sixth year in a row. The increase in uncut volume under contract can be attributed to several factors that include a soft market, contract extensions, and weather conditions. As a result of the declining market, prices paid for delivered materials were less than loggers paid for the stumpage. Under those circumstances, there is no incentive to harvest.

The number of acres harvested in a year is a reflection of the economy. Contract extensions were offered to qualifying purchasers and many of them took advantage of this offer. Due to the extended termination dates, the additional time allowed purchasers to wait until mill delivered prices improved. In 2008 rate re-determinations were offered to qualifying purchasers. This reduced the rates paid for timber by as much as 70% for uncut portions of sales and enabled purchasers to hold timber until market conditions improved. While this has permitted purchasers to wait out a poor economy, it has also decreased the number of acres harvested.

Seasonal weather variations can also affect the amount of timber harvested. Warm winters have prevented harvests on sites requiring frozen ground conditions. Wet conditions, such as experienced during the summer of 2010, also made it difficult to operate where dry soil conditions were required.

In 2010 there was an increase in acres treated. This trend should continue because many of the contracts no longer qualify for additional time and are nearing their termination date. In 2011 approximately one-third of the current contracts will terminate. This should substantially increase the number of harvest acres in the near future.

In FY 2010 markets for housing materials, oriented strand board (OSB) and lumber, improved slightly. There were fewer mill shutdowns in 2010. In the future, volume under contract should decrease due to a slowly improving economy and contracts reaching the termination date. At that point, volume under contract should stabilize and reflect amounts seen in the early part of the decade.

Revenues

Since FY 2007, overall revenues have consistently been lower than those estimated in the Forest Plan analysis. Revenues projected in the plan were developed at a time when the economy was strong thus revenues were projected to increase. Since then, the general economy has declined. In recent years the demand for raw paper has declined which has affected the aspen and hardwood markets, although in FY 2010 there was more aspen and hardwood sold. Demand for oriented strand board declined with a depressed housing market. In addition, pine harvested has been mainly smaller diameter pine from thinning operations rather than higher valued sawtimber.

Prior to 2010, there had been a continual decline in sawtimber and pulpwood prices, although there have been variations for specific species. In FY 2010, prices bid for timber increased for the first time in four years. The increase in revenues was greatest in the aspen markets. Revenues for conifer species remained steady or increased. This is due to a lack of pine being offered by other entities. The price for pine pulpwood has remained strong mainly because much of this product while sold as pulpwood is actually sawn into dimensional lumber.

In spite of the sluggish market, competition for timber has remained strong. The Forest has successfully sold all their timber sales since FY 2005. Since FY 2009, sales with a high pine component and sales with good access have had the highest number of bidders.

The Forest is offering a mix of sales, from small sales to larger ones in terms of volume. Due to the mix of state, county and federal wood, there does not appear to be a shortage of wood delivered to the mills or to meet the needs of the purchasing public.

Ratio of sawtimber to pulpwood

Table 2-2. Ratio of sawtimber to pulpwood volume sold

	Decade 1 (Proposed)	Actual Ratio FY 2005	Actual Ratio FY 2006	Actual Ratio FY 2007	Actual Ratio FY 2008	Actual Ratio FY 2009	Actual Ratio FY 2010
Sawtimber:Pulpwood	32:68	15:85	18:82	21:79	19:81	6:94	23:77

As shown above, the ratio of sawtimber to pulpwood is quite a bit lower than what was predicted in the Plan. The reasons for this are not clearly understood. Perhaps the amount of thinning in pine stands and the removal of small diameter material contributes to the shift. The ratio of product size is less of a concern to industry than is percentage of pine.

Acres Harvested by Treatment Method

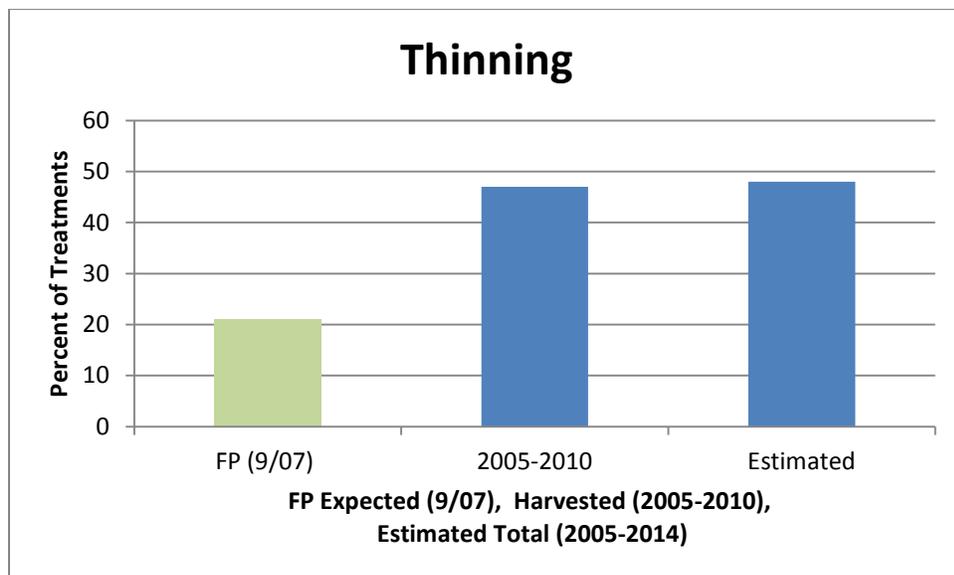
The Forest Plan includes a table in Appendix D with estimates of harvest by treatment type for Decade 1 and 2. The Forest has tracked the acres and percentages by treatment type so that comparisons can be made for Decade 1. The table below compares the acres harvested by treatment method to the acres Proposed for Decade 1 (Table APP-D2: Forest Plan, D-3, Estimate of Acres of timber harvest by treatment method (Forest Wide)).

Table 2-3. Comparison of FP proposed acres and percent of treatment methods, to acres and percent harvested, to total acres harvested and sold, to percent of decadal acres by treatment expected to be accomplished by the end of Decade 1.

Treatment Method	Decade 1 (Proposed) Corrected 9/07		Total Harvested (FY 2005-2010)		Estimated Total For Decade 1 (harvested & sold)		Estimated percent acres accomplished in Decade 1
	Acres	Percent	Acres	Percent	Acres	Percent	
Thinning	16000	21	9040	47	14000	48	88
Clearcutting	29866	39	5554	29	8111	28	27
Shelterwood/ Partial Cut 30	11149	14	2728	14	3237	11	29
Uneven-aged (all types)	20124	26	1768	9	3918	13	19
Totals	77139	100	19090	100	29266	100	--

Decade 1 Forest Plan numbers are from the 09/07 Administrative Correction. *Total harvested* acres are those acres by treatment method that were harvested during 2005-2010. The numbers include acres harvested since FY 2005 and include harvest units covered by the 1986 Forest Plan and the 2004 Revised Forest Plan. *Estimated total* reflects the acres harvested plus those acres sold that are now under contract but have not been harvested yet. For the purposes of this exercise, it is assumed that these acres will be harvested by the end of the decade and contribute to the totals. The *estimated percent acres* accomplished in Decade 1 reflects the proportion of the treatment method acres that are expected to be harvested by the end of the decade. For example, it is anticipated that 14,000 of the 16,000 thinning acres, or 88%, are expected to be harvested by the end of Decade 1.

Thinning

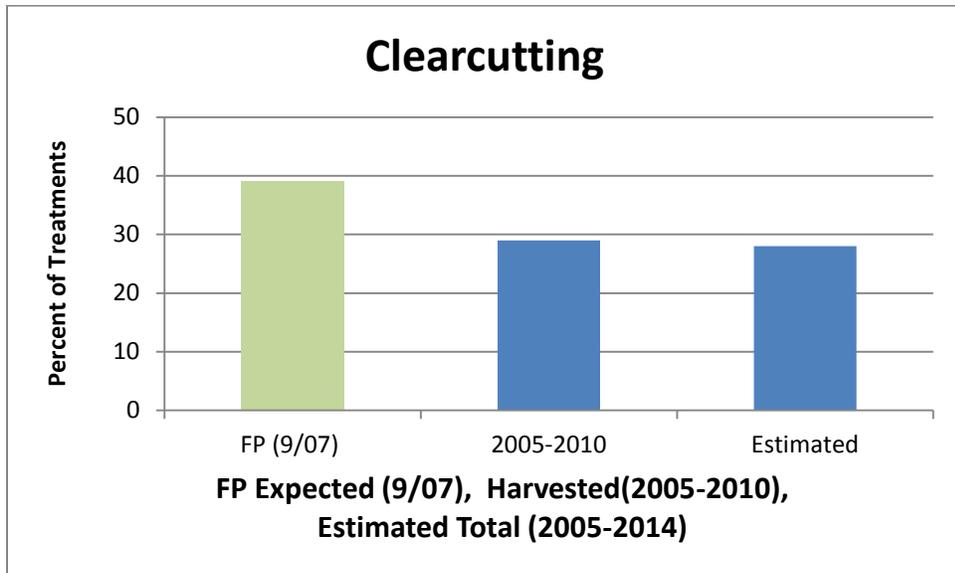


The Forest Plan proposed that thinning would comprise about 21% of the treatments by the end of Decade 1. Thinnings harvested up to this point (47%) have exceeded what the Forest Plan proposed by 26 percentage points. A minor increase (to 48%) to the total is projected by the end of Decade 1.

With the 2007 administrative correction, proposed thinning acres increased from 6749 acres to 16,000 acres. The 14,000 acres of thinning already harvested or sold is within the 16,000 acres proposed in the Forest Plan but the percent thinning doesn't come close to matching the 21% projected by the Forest Plan. There are several contributing factors to the distribution of acres and percentages.

- Since the 2004 Forest Plan was completed, common stand exams have been done on thousands of acres. This data more accurately depicts the stocking levels, growth, and volume which is much higher than older data suggested. Consequently, more stands are being included for thinning during the project planning process.
- The Forest Plan assumption was that productive stands would be thinned at intervals of 15 – 20 years (FEIS, 3.4-1). In reality, to maintain a healthy stand and increase growth in these stands, stands need to be thinned more frequently; stands thinned as recently as 7-10 years ago are being considered for thinning again in recent projects.
- There was a large conifer thinning project that was implemented in the first two years of the decade (FY 2005 & 2006). Many of the sales in this project were harvested in 2008.
- The Dry Mesic Pine-Oak and the Dry Mesic Pine landscape ecosystems (LE) are two of the largest LEs on the Forest. Red pine is a significant component on these LEs and has been a focus for treatment.
- In addition, there has been a better market for pine than aspen/hardwood. Consequently, sales with pine have been harvested first. Most pine stands in current projects have a thinning prescription. In 2010, harvest treatments evened out because the economy improved slightly and the demand for aspen/hardwood increased.
- There are a lot of pine stands still in need of intermediate treatment thinning which will increase the percentage of thinning acres in future projects.
- Thinning is also being applied in aspen and other hardwood stands.

Clearcutting



For total harvested (2005-2010), clearcutting is ten percentage points lower for FY 2005-2010 than Forest Plan projections (29% vs. 39%). Based on what is currently under contract, those numbers are not expected to change much by the end of Decade 1. It is estimated that clearcutting would make up approximately 27% of harvested acres by the end of the decade.

Interestingly, numbers for FY 2010, show that 40% of the harvested acres were clearcut. This increase can be explained by looking at market conditions. For the past several years, pine which is typically thinned has been in higher demand than aspen. Because of market conditions, sales with pine have been harvested first. In 2010 the economy improved slightly and thus the demand for aspen, which is more apt to be clearcut, increased.

During Forest Plan revision it was recognized that there would be less regeneration in the initial years of Forest Plan implementation as the youngest vegetation age classes were over-represented in most LEs. Projects planned in the first few years did not focus on creating 0-9 age class or clearcutting. Recent planning projects recognize the need to create more acres in the 0-9 age class. Most of these acres are not under contract yet and would not be harvested until sometime in Decade 2.

Other factors that may contribute to the decline in clearcutting:

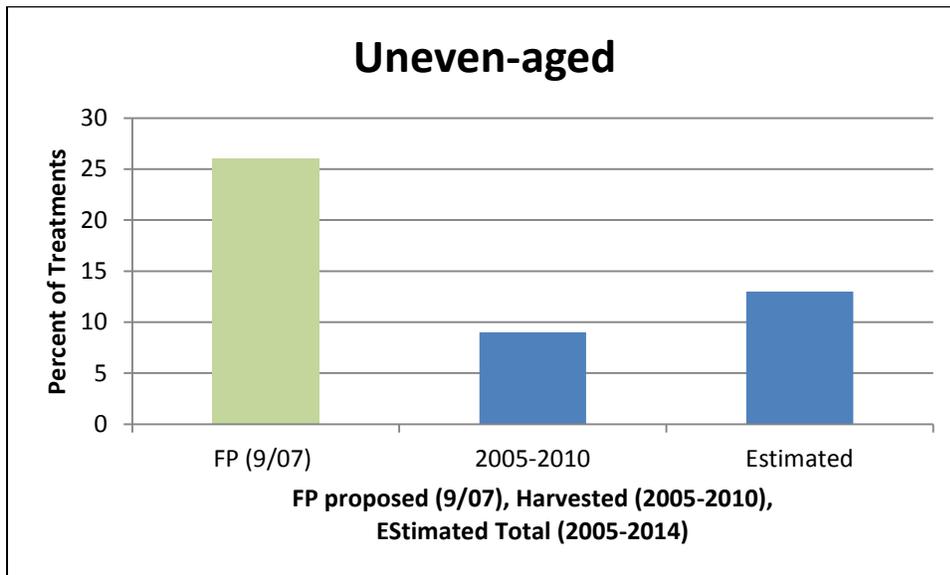
- There is an over abundance of aspen on the landscape. Rather than clearcutting aspen, stands are being deferred for a variety of reasons or other treatments such as thinning are being applied.
- The Forest has had several projects in high tribal interest areas where clearcutting is not an acceptable practice.

- The Forest Plan indicates that clearcutting is an appropriate treatment in red pine and lowland conifer but this is not occurring for several reasons. The Forest Plan indicates the need to increase the amount of mature and older red pines on the landscape so many of these stands have been deferred to meet that objective. Mature red pine is considered to have spiritual value by the Leech Lake Band of Ojibwe (LLBO) and often is not harvested. In some projects, natural origin red pine stands are considered to be a rare and unique feature and are deferred from harvest consideration. Although some clearcutting has been done in lowlands it is limited due to low volumes and sensitive species presence.

Shelterwood and Partial Cut 30

As of FY 2010, the percentage for shelterwood is in line with FP projections. Based on what is uncut and under contract, this number is expected to decline by the end of Decade 1.

Uneven-aged



For total harvested (2005-2010), the uneven-aged harvests were 15 percentage points lower than Forest Plan proposed (9% vs. 26%). Uneven-aged harvest prescriptions decreased in FY 2010 to 9% of the treatments. This number could increase by the end of Decade 1 to 13% but still would be half of what was proposed in the Forest Plan for Decade 1.

Uneven-aged treatments are generally applied to some of the red or white pine stands and hardwood stands. Low volume hardwood stands are being deferred due to marginal economics and canopy cover requirements.

Acres of Harvest Treatment

The Forest target reached 74% of the annual estimated timber volume outcome (58MMBF) in FY 2010. The percentage is based on the volume sold during the fiscal year. The least was 47% in FY 2005.

According to FP projections, if the Forest was producing timber at 100% of its capacity, approximately 7700 acres per year would be harvested. Since FY 2005, the acres harvested have ranged from 2182 to 3997 acres. Acres sold since FY 2005 range from 3379 to 5500 acres.

The Forest Plan projected that 77,139 acres would be harvested at the end of Decade 1. From FY 2005-2010 approximately 25% of the acres have been harvested. Currently, there are 10,211 uncut acres under contract. If everything currently under contract is harvested by the end of the decade, the overall percentage would increase to 38%.

The Forest defers harvest treatments for a variety of reasons: due to poor access, to allow natural conversion (succession) of aspen stands to another forest type, to achieve mature/older forest objectives, to protect natural origin stands of red pine, to provide 50-70% canopy closure (e.g., for patches, goblin fern, red shouldered hawk, goshawk, riparian areas and wetlands), to address tribal high interest areas and tribal concerns, due to low volumes or sensitive species in lowlands, due to poor economics, and due to limited budgets.

Payment to the Counties

The federal government makes payments to states to cover some of the cost of local government services on tax-exempt National Forest System lands. The states pass those payments on to the counties in which national forests are located. Payments in Lieu of Taxes (PILT) payments are calculated and made by the Department of Interior, Bureau of Land Management. These payments are appropriated annually by Congress based on available funding and formulas that take into account the population in the affected counties, the number of acres of federal land in those counties, and other payments received by the counties based on federal land payments.

On October 3, 2008, the Secure Rural Schools and Community Self-Determination Act (SRS) of 2000 was reauthorized as part of Public Law 110-343. The new Secure Rural Schools Act has some significant changes. To implement the new law, the FS requested states and counties to elect either to receive a share of the 25% rolling average payment or to receive a share of the Secure Rural Schools State (formula) payment. A county electing to receive a share of the State payment that is greater than \$100,000 annually was required to allocate 15-20 percent of its share for one or more of the following purposes: projects under Title II of the Act, Projects under Title III; or return the funds to the Treasury of the United States. Under the Secure Rural Schools Act additional money was made available to be used for projects recommended by local resource advisory committees (RAC) to maintain infrastructure, improve the health of watersheds and ecosystems, protect communities, and strengthen local economies. On the Chippewa National Forest, a total of approximately \$800,000 was brought to the Resource Advisory Committee. A Resource Advisory Committee was selected in 2010 to recommend use of these funds to the National Forest.

Table 2-4 . Payments to Counties for 2010.

FY 2010		Payment in Lieu of Taxes (PILT)	SRS	SRS Title II Funds	Grand total
County	Acres	Total \$	Total \$	Total \$	Total \$
Beltrami	64,722	78,581	134,178	20,126	232,885
Cass	290,696	428,262	467,712	70,156	966,130
Itasca	311,123	411,719	603,660	90,549	1,105,928
Total	666,541	918,562	1,205,550	180,831	2,304,943

Table 2-5. Summary of total payments to Counties from FY 2006 – FY 2010.

	FY 2010	FY 2009	FY 2008	FY 2007	FY 2006
County	Total \$	Total \$	Total \$	Total \$	Total \$
Beltrami	232,885	265,744	\$281,334	\$130,322	\$123,881
Cass	966,130	900,335	\$922,201	\$754,937	\$754,284
Itasca	1,105,928	1,074,560	\$1,116,367	\$811,411	\$811,197
Total	2,304,943	2,240,639	\$2,319,902	\$1,696,670	\$1,689,362

Implications

Volume offered and sold, and acres harvested are within the Forest Plan expectation levels. The Forest is meeting assigned timber targets.

With regard to total harvest acres (2005-2010) it appears at this point in Decade 1 that neither treatment percentages nor total acres treated are in line with Forest Plan projections. Thinning acres are within Forest Plan projections but the percent relative to other treatment methods is being over accomplished. Clearcutting and uneven-aged treatments are well below projections for percent by treatment methods and acres. The clearcutting percentage (29% rather than 39%) is the basis for frequent requests by forest industry to increase the amount of clearcutting on the Forest. On the other hand, some sectors of industry have also requested more pine sales which the Forest has been able to offer because of the high level of thinning that is planned. Increased clearcutting and increased pine generally work against each other. Typically the more pine offered the lower the clearcutting percentage and the more clearcutting offered the lower the pine offered.

Treatments planned are out of sync with Forest Plan projected acres and percentages. When considered in conjunction with harvests completed, the Forest Plan projections are not achievable without a shift.

Because of budgetary and other constraints, the total number of acres currently listed in the plan (7700 acres annually) will not be treated. The Forest average from 2005-2010 is 3,182 acres.

Since 2005, the ratio of sawtimber to pulpwood is lower than proposed in the Forest Plan.

Revenues generated from timber sales contribute to trust funds such as KV and salvage sale fund. A decrease in revenues generated from timber sales means less money in trust funds which limits the amount of work that can be accomplished.

New Issues

Common Stand Exam (CSE) and stand re-delineation

Over 200,000 acres have been inventoried since Forest Plan revision replacing data that was several decades old. As a result, forest types for many stands have changed. The largest impact is that the volumes for red pine plantations are much higher than earlier indications. Consequently, more stands are available for thinning. To retain growth rates, thinning should be conducted on 7-15 year intervals rather than the 15-20 intervals the Forest Plan indicated.

Retention of Adequate Canopy Cover

The Forest Plan standards and guidelines require 50-70% canopy cover for large patches, goshawk, goblin fern, wetlands in northern hardwood stands, and riparian areas. Although TES locations were considered and included in the modeling for the revision process (FEIS, Appendix B, p. B-4), the number of RFSS locations has increased. It is unclear how much this has impacted harvest treatments and acres or how this compares to the outputs modeled. In addition, wetlands in northern hardwood stands are a common occurrence resulting in stands being dropped during project planning or implementation. Some of these stands were dropped from treatment during the revision modeling process but again it is unknown how planned verses actual numbers dropped compare.

Multi-aged Red and Jack Pine Stands

The Forest Plan assumed that establishment of multi-storied stands of red pine (uneven-aged) would be an appropriate treatment practice because historically they occurred on the landscape. At this time, it appears that establishment of multi-storied red and jack pine stands is limited and has a low probability of success. Research has noted that red pine was relatively free of serious damaging diseases prior to 1960 (Ostry, et. al, 2002). Since then, studies have documented shoot blight infections from the overstory and/or infected nursery stock can kill regeneration making it very difficult to get it established in the understory. It also appears that shoot blights are more extensive than previously thought.

The Forest has planted and re-planted red pine and jack pine under canopies of red pine, without success, on numerous sites across the Forest. As an alternative, it may be possible to plant white pine under overstories of red pine to develop multi-storied stands.

Mature and older red and white pine

The Forest Plan indicates that clearcutting of red pine is a viable treatment option (FEIS, Vol II, p. B-15), but thus far the Forest has done very little clearcutting in red pine. Mature and older stands of red and white pine are being deferred from harvest for a number of reasons: to meet the MIH direction to maintain at least 40,000 acres of mature or older red and white pine forest types (FP, p.2-32); to maintain or increase patch acres and number of patches of mature or older upland forest (FP, p. 2-23); to retain natural origin stands which are considered by some to be a rare or unique feature on the forest; to protect and honor tribal spiritual values associated with these trees.

Tribal interests and rights

The Forest Plan identifies areas of high interest to the Leech Lake Band of Ojibwe (p. 2-37) within the Reservation boundary. These areas were identified by the tribe during Forest Plan revision because of their value or high use by tribal members. Of the 160,516 acres identified as high interest areas, approximately 107,378 acres are suitable for timber. Roughly 23% of the Forest's timber suitable lands fall within the high interest areas. The Forest identified 459,313 acres of lands suitable for timber (FEIS, Volume I, p. 3.4-13).

The Forest Plan did not modify or adjust its treatments or outcomes in tribal high interest areas. Consequently, harvest acres and volumes within tribal high interest areas are less than in the Forest Plan.

Some tribal members do not support clearcutting. Red pine stands over 100 years old have spiritual value for some tribal members. As a result, clearcutting mature red pine is opposed particularly in the high interest areas. Projects planned in recent years (Kitchi, Portage, Steamboat, Lydick, Lower East Winnie, Upper East Winnie, and Cuba Hill) have been in high interest areas and treatments have been modified to address tribal concerns. Modifications include changing prescriptions from intensive harvest such as clearcutting or seedtree to uneven-aged treatments to dropping stands entirely.

Biomass

Nationally, with the recent emphasis on renewable energy there has been an increased awareness of and demand for wood to be utilized as biomass to replace coal to generate electricity. In FY 2010, the Chippewa NF adopted a biomass policy to ensure site protection while making biomass available for purchasers.

On the Chippewa NF there has been modest interest in utilizing tops and limbs (slash) for biomass. This is due in large part to the distance between the timber sales that generate biomass and the facilities that utilize biomass for energy production. Transportation costs play a large role in determining whether or not it is economical for biomass to be utilized. Currently any site farther than 50 miles from the energy facility is uneconomical for purchasers. Until there is a fully functioning energy facility close to the Chippewa NF, biomass demand is expected to be minimal.

Currently there are two purchasers with the capability of utilizing biomass. Both remove a small amount of biomass from Forest timber sales.

Recommendations

- The Forest is meeting assigned timber targets even though revenues, sawtimber/pulp ratios, treatment method percentages and acres are not aligned with Forest Plan estimates. No shifts or corrections are recommended at this time, however will be considered in the future. Some possibilities include:

Conduct an analysis to determine:

- Acres of red pine thinning available in the next decade and how that compares to Forest Plan projections;
- Review the age class distribution for aspen. Determine when young stands would be available for harvest and types of treatments. Evaluate the locations of goblin fern in aspen stands and potential impact to harvesting in these stands.

Using the above analysis, determine if Table APP- D2 which displays the treatment percentages and acres is achievable, needs to be corrected, or if a shift is needed during planning to meet the expected outputs.

Additional information on “Acres of Harvest Planned” and more details in the full timber report are available upon request.

References

Ostry, M.E., J.O'Brien, and M. Albers. 2002. Disease considerations in red pine management. In *Proceedings of the Red Pine SAF Region V Technical Conference*, eds., Gilmore, D.W., and L.S. Yount, 107-111. Staff Paper no. 157. St. Paul, MN: University of Minnesota, College of Natural Resources, Department of Forest Resources.