

**Alaska Dept. of Natural
Resources**

**Division of
Forestry - Delta
Area Five Year
Schedule of
Timber Sales**

**Fiscal Years 2014-18
Adopted September 10,
2013**

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INTRODUCTION

This Five-Year Schedule of Timber Sales (FYSTS) provides information to the public concerning development and use of the state's forest resources for the period July 2014 – June 2018. The FYSTS meets the Forest Resources and Practices Act requirements and acts as a basis for budgeting.

A FYSTS provides a basis for Department of Natural Resources (DNR) to decide where to pursue timber sale planning. It provides the public, timber industry, and local governments with an overview of proposed timber activities on state lands throughout the Delta Area for the next five years. The schedule solicits input on whether or not to proceed with sale planning, and on concerns to be addressed in sale design. Listing a proposed sale does not mean a decision has been made to go forward with the sale.

It is the policy of the Alaska Department of Natural Resources (DNR) that: 1) All sales, including salvage sales and sales less than 160 acres, will be included in the two Five-Year Schedules preceding the sale whenever possible. 2) All sales, including salvage sales and sales less than 160 acres, will appear on at least the Five-Year Schedule preceding the sale unless waiting for the Schedule will: a) cause substantial losses of economic value on salvage sales under AS 38.05.117, or, b) for sales less than 160 acres, preclude a local economic enterprise or forest management project that is in the State's best interest.

After adopting the Schedule, the Division of Forestry (DOF) will do more detailed fieldwork to assess and design proposed sales. Before any commercial timber sale of ten acres or larger is offered, DOF must make a finding that the sale is in the State's best interest (Best Interest Finding or BIF) and prepare a detailed Forest Land Use Plan (FLUP). The BIF is the action document that decides whether or not the Division of Forestry (DOF) will offer a timber sale and is subject to agency and public review. The FLUP describes specific location, estimated timber volume, harvest methods, reforestation plan, access, and multiple use considerations for each sale.

Based on fieldwork, agency comments and public input, DOF may make changes to individual sales previously listed in the schedule. Any changes from the Schedule's description will be incorporated into the FLUP. DOF reviews each FLUP with the public and other agencies prior to adopting it. If a sale has been through the Schedule, BIF and FLUP processes, and was offered as scheduled but not purchased, or was sold as scheduled and returned to the State uncompleted, it can be re-offered within two years of the scheduled sale year without being included in the schedule again.

DELTA AREA MARKET DEMAND ANALYSIS

The demand for forest resources in the Delta resource area has significantly increased in the last two years. Fuelwood, both residential heating cordwood and chipped biomass, has eclipsed the sawlog market demand in the Delta Junction area. If current trends continue and proposed commercial biomass facilities become a reality, the production of forest biomass for fuel will significantly change the forest industry in interior Alaska.

Currently, the forest products industry in the Delta area is undergoing some fundamental market adjustments. Lumber manufacturing has remained static or weakened slightly. Fuelwood demand/production has increased substantially in the last two years. Considering the current market, significant industrial queries and environmental events (wind and fire) a change in sale planning and scheduling by the Division of Forestry is needed.

New industrial scale biomass project proposals, such as the Ft Greely Combined Heat and Power (CHP), Horizon Bioenergy torrefication project, and Superior Pellets production expansion have created additional planning opportunities and challenges. These industrial requests for timber resources as well as the salvage timber volume available in the Delta area have necessitated an increase in proposed biomass sales for the 2014-18 FYSTS. Additionally, demand for residential cordwood is also predicted to increase as heating oil prices continue to rise.

Due to the severe wind event, September 16-17th, 2012, significant and unanticipated salvage timber volume exists in the Delta resource area. A high percentage of the blow down timber is comprised of aspen, birch, and black spruce volume. Utilization of these species is dependent upon development of industrial biomass fuelwood facilities such as industrial fuelwood and pellet manufacturing. Stands of large white spruce were severely impacted as well; these volumes could be utilized for lumber or fuelwood.

DOF anticipates that the sawtimber industry, at the current capacity, will only be able to utilize a minor percentage of the available white spruce sawtimber before degradation occurs. The time horizon to utilize the blow down timber for sawtimber is expected to be two years; thereafter it would be considered only viable for fuelwood uses. DOF anticipates that if proposed industrial biomass facilities materialize, these sawtimber volumes will be converted to fuelwood chips due to the lack of sawtimber demand. DOF will prioritize harvest of salvage timber, both wind throw and fire salvage, in order to maximize utilization of this timber resource, to the maximum extent possible, before degradation occurs.

Use of the blow down timber for residential fuelwood is expected to be limited due to accessibility and the availability of dry firewood from burnt acreages. Currently, commercial harvests of residential fuelwood are being supplied from burn areas accessed via the Pogo Road. Residential fuelwood will be made available in the salvage areas and priority will be given to meeting the local residential fuelwood demand as areas are accessed for industrial biomass needs.

WIND STORM SALVAGE AREAS

The DOF Delta Area Office is proposing to offer for sale approximately 28,843 acres of blown down white spruce, birch and aspen sawtimber and fuelwood from state lands within the September 16-17, 2012 wind event impact area.

This FY 2014-2018 FYSTS applies to wind thrown timber stand acreages in the Johnson, Little Gerstle, Gerstle, and Delta River areas. Additionally, wind throw areas have been

identified and included in the Quartz Lake area, Delta River, Delta Creek and Shaw Creek drainages.

The proposed sale areas are dispersed over the Tanana River valley within the State of Alaska Delta Resource Area. Due to the large scale of the blow down impact area, prioritization based on impacts to community safety, infrastructure, accessibility, and forest health will be used to determine harvest area priority before degradation of merchantability occurs of the forest resource. Existing roads will be used to the extent possible. New roads will need to be constructed to access the timber and are shown with the proposed salvage areas on the attached maps.

ALLOWABLE HARVEST

In order to achieve consistent and coordinated management of timber harvest on a landscape level within each management area, the sustained yield on nearby state land that is classified for forestry use is consolidated with that of the Tanana Valley State Forest (TVSF). Sustained yield has been calculated to achieve a high level of periodic output and to maintain long-term productivity of the land. Since sustained yield is based on variable factors such as forest age, site productivity, reforestation, fire occurrence, and harvest levels, the sustained yield will be recalculated on an ongoing basis as new data are acquired.

The annual allowable cut modifies the sustained yield estimate to reflect the guidelines and objectives in the Tanana Valley State Forest Management Plan. First, not all of the State Forest is available for harvest. For example, the six research natural areas, the Chatanika River corridor, and the Bonanza Creek Experimental Forest are not included in the timber base. Second, other reductions may be made from time to time as it is determined that an area should not or cannot be harvested. Approximately 655,000 acres of forested State lands in the Delta Area are excluded from the evaluation because of their classification or poor quality.

The annual allowable cut for the TVSF is incorporated in the DNR Division of Forestry's Tanana Valley Allowable Cut Determination. This report is written by DOF staff and includes the allowable cut for the TVSF and state lands in the Tanana Basin Area Plan available for timber management. Land classifications, which designated forestry or timber management as a primary or secondary use, were included in the evaluation.

The report, "Tanana Valley Allowable Cut Determination", January 30, 2001, indicates about 480,667 acres are capable of producing a commercial quality forest on lands with a primary or secondary forestry classification in the Delta Area. The rotation lengths vary for each species and the site quality. Generally, rotation lengths averaged at 70 years for deciduous trees and 110 years for white spruce. An additional 10 years was added to provide a spruce reforestation period, raising the rotation to 120 years for white spruce.

The report calculated the sustained yield over a 10-year period. Based on the report, the Delta Area can be expected to support a sustained yield of 4,873,600 cubic feet of white spruce and 5,412,700 cubic feet of hardwoods on roughly 5,092 acres per year. The

report reduced the biological sustained yield to accommodate various harvest constraints in the TVSF plan. This report establishes the Delta Management Area allowable cut. A revision of the “Tanana Valley Allowable Cut Determination” report is currently underway. The revision will incorporate the impacts of pest and environmental damages to the forested areas that have occurred since 2001. With the revision, additional unaccounted forest volumes may be acquired due to more intensive sampling techniques and updated geospatial data.

Some of the areas that were originally excluded due to classification or poor quality have been or are being reevaluated due to significant biomass harvest interest and/or resource management implications due to the September 2012 wind event. Fire hazard and insect outbreak potential in the wind throw areas are the primary management concerns being evaluated. Salvage harvests in these areas could be used to minimize these potential hazards.

When considering the proposed harvest amounts it is important to understand how it relates to the entire land base of the Delta Management Area. The land base in the Delta Management Area is categorized by ownership as follows:

ACRES	
500,580	Tanana Valley State Forest Lands
333,237	Commercial Forest Classified State Lands
1,679,116	Other State Lands
436,597	Military Lands
387,679	BLM Lands
291,343	Other Federal Lands
235,886	Native Corporation Lands
151,096	All Private Lands
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4,015,534	TOTAL LAND BASE

The majority of all commercial forest land in Delta is comprised of deciduous species. These birch, aspen, and poplar stands are naturally converting to white spruce. If this trend continues, the Delta Area is expected to have more white spruce available for harvest in future years than exists presently because of natural stand conversions.

HARVEST PLAN

Environmental impacts from wildland fires and wind events have significantly impacted the Delta Resource Area in the last two years. Several large fires have occurred in the Delta Area since the “Tanana Valley Allowable Cut Determination” report, burning an estimated 186,000 acres of commercial forest. The poorer quality commercial stands comprise the preponderance of burned acreage. Valuable components of the sawtimber resource volumes, dominant and co-dominant stand classes, were severely impacted in the Delta Resource Area during the September 2012 wind event.

DOF is anticipating increasing harvests in the Delta area due to the need to respond to the resource impacts of the September wind event as well as proposed biomass demands on the resource base. Management strategies will prioritize harvests within salvage areas,

wind throw and fire, in order to capitalize on the damaged resource volume before it is lost to degradation.

Spruce stands in the Delta Area are often uneven-aged because of the slow succession from deciduous birch, aspen and poplar and eventually to white spruce. White spruce sawtimber average between 90-220 years of age in most Delta area stands. Except for salvage sales, harvests are generally selective or partial cuts, usually leaving 20 or more trees/acre after sale completion. Leave tree specie, density and size are based on specific timber and land management objectives.

All harvests, including salvage harvests, will be subject to the State of Alaska Forest Practices Act requirements as well as Best Management Practices. The Tanana Valley State Forest Management Plan and the Tanana Basin Area Plan will guide management decisions regarding salvage harvests as well.

Current markets for timber resources have established the Sawtimber Schedule (Appendix A). This schedule lists 6-10 commercial sawtimber sales that could be offered annually in years 1-5. The Sawtimber Schedule is relatively unchanged from the previous 2012-2016 FYSTS. This five-year harvest plan proposes an average annual harvest of 3,193,200 cubic feet of spruce and 374,000 cubic feet of hardwoods sawtimber. This harvest level is 41.5% of the total estimated sustained yield for all species. Due to available salvage sawtimber, standing “green” timber sales listed in the FY 2014-2018 FYSTS may be held in reserve until sawlog demand necessitates sale of this volume.

Proposed or pending market queries have established the Biomass Schedule (Appendix B). This schedule proposes a total five-year harvest of 37,870,050 cubic feet of spruce and hardwoods volume. Over 90% of this volume is derived from salvage harvests and/or poor quality sawtimber and poletimber, including black spruce. Additionally, emphasis will be placed on harvesting underutilized hardwood stands. This five year harvest level is 73.6% of the total estimated sustained yield for all species.

(A DOF Delta Area report, State Forest Biomass Inventory Availability, August 14, 2012 (Reggear, Hanson), evaluated the biomass availability for a proposed 6.5 MW CHP facility located on Ft Greely. This inventory analysis examined the potential supply of biomass fuelwood available from state lands within a two hour transportation radius of Delta Junction, Alaska. This report can be found in Appendix F.)

Public firewood harvests are expected to increase as home heating costs escalate. The Delta DOF has implemented small, 2.5-10 cord, “personal lot” timber sales of fuelwood derived from right-of-way timber cut during road construction projects as well as small sub - 50 cord timber sales. In addition, all firewood permits are sold in person, providing opportunity for education and guidance to the permit purchasers. These strategies have minimized unregulated firewood harvest, road degradation and have protected sensitive environmental areas.

The Fuelwood Schedule (Appendix C) proposes small fuelwood sales within the Gilles Creek and Camp Creek burns for “dry” fuelwood. Successive fiscal year harvests of “dry” fuelwood are expected to decrease at approximately 15% annually in the fire salvage areas due to degradation over time. Additional “green” cordwood sale areas are anticipated in the Quartz Lake, Delta River, Tenderfoot and Gerstle river areas. Small fuelwood sales will be considered as a high priority activity by the Delta DOF in order to maintain a steady supply of residential firewood to the local area. Small commercial fuelwood harvest is not expected to exceed 4% of the five year total estimated sustained yield for the Delta Area.

Actual harvest schedules will be determined by industry demand and biological sustainability. The combined Sawtimber, Biomass and Fuelwood sale scheduling volumes could exceed the Annual Allowable Cut for the Delta Area for this FYSTS by approximately 17% annually if all sales are sold as scheduled. This accelerated harvest is in response to the volume of salvage timber available in the Delta Resource Area. Delta Area Forestry does not anticipate all of the timber sales selling as per the Schedule due to the current resource demand, primarily due to the current low demand for spruce sawtimber. But, a confluence of events, September 2012 wind event combined with Industrial requests for biomass fuelwood has created a natural resource supply/ demand scenario that is unique and evolving.

AGRICULTURE LANDS

Merchantable timber on vacant agriculture tracts may be sold through a negotiated sale process in Year One of the plan. No sales are currently planned on agriculture tracts but this could change with ownership status or windthrow management needs. Timber sale and harvest operations are contingent upon approval by the Division of Agriculture. The farm conservation plan requirements will need to be met. Timber volumes to be sold from agriculture tracts are not part of the timber base for State lands in the Tanana Basin Area Plan (TBAP) or the Tanana Valley State Forest (TVSF).

The Division of Forestry could facilitate and manage timber harvests on these public lands in order to expand harvest opportunities for the industry. Additionally, the Division could collaborate with private agricultural tract owners through stewardship projects and by providing technical assistance via Cooperative Forestry. Timber management activities on these agricultural tracts may be subject to the State of Alaska Forest Practices Act requirements as well as Best Management Practices.

Commercial agricultural lands could potentially provide a significant volume of biomass fuel through agroforestry. This potential volume could decrease the direct consumption of State forest biomass required by a large biomass fuelwood facility. Actual market impacts would be determined over a longer time horizon than is considered in this FYSTS.

TRANSPORTATION

The 2014-2018 Transportation Schedule (Appendix D) details the proposed road projects in the Delta area. Timber sale access development will continue to pioneer roads into the

surrounding forests of the Delta Area. DOF will address each timber sale access in the respective Forest Land Use Plan submitted for agency and public review. Road construction and maintenance is usually completed by the purchasers of timber sale contracts. Permits for road easements will be requested from the Division of Mining Land and Water (DMLW) prior to construction beginning.

The schedule anticipates new road construction to access sawtimber sales at Rosa Creek, Quartz Lake area, Indian Creek, Rapid Creek, Gerstle River and Black Lake area, as well as the west side of the Delta River and along the Tanana River.

In conjunction with salvage harvesting, access development may significantly increase in the Delta area. This increase in road construction is predicated on establishment of an industrial biomass facility in the Delta area capable of utilizing the wind throw salvage volume. The Delta Area is anticipating construction of 20-25 miles of all-season and winter roads annually during the 2014-18 schedule, dependent on actual salvage sales sold. New areas of construction are anticipated near the Craig Lake area, Little Gerstle River, Gerstle River, Delta Bison Range, Tenderfoot hill, Bert Mtn., west of the Delta River, Delta Creek area, Glacier and Caribou Creek drainages.

Some road construction projects may be funded by State of Alaska Capital Improvement Project (CIP) funds. At this time, evaluation is underway to determine possible CIP road project areas. All CIP road construction is dependent on funding authorization by the State Legislature.

The Transportation Schedule is dependent on harvest operations occurring as projected and /or legislative appropriations. The type of access constructed, all-season or winter, is dependent on available funding, market requirements and management plan stipulations. All forest road construction is subject to Alaska Forest Management Statutes & Regulations, Alaska Forest Resources and Practices Act, Best Management Practices and subject to provisions in area management plans or special use restrictions.

REFORESTATION

The majority of the harvested areas are reforested naturally. Reforestation is completed through sale design which promotes natural seeding through seed trees, protection of existing saplings and pole timber during harvest operations, sale scarification, roller chopping where appropriate, and direct spot seeding. Spruce seedlings are planted to augment the natural regeneration on specific sites when necessary. The Reforestation Schedule (Appendix E) details the proposed reforestation projects for FY 2014-2018 in the Delta area.

Areas needing additional stocking are planted during the 6th year after harvesting has been completed. Due to the variability of the reforestation needs, the reforestation schedule is projected for only the first two years. Harvest demands for biomass will also significantly change the reforestation needs in the Delta Area. DOF is evaluating reforestation strategies for Aspen, Birch and White Spruce with the University of Alaska Fairbanks, as well as reviewing research from outside agencies.

Scarification is utilized where deemed necessary to ensure reforestation. The increase in scarification acreage may be a result of the increase of harvest acreage due to timber salvage operations. Actual scarification acreages will vary depending upon site suitability and management constraints.

DOF has also been studying the effectiveness of regeneration in aspen stands where roller choppers have been used. Roller chopper use is a method of site preparation whereby a large diameter steel drum with shear plates affixed around the circumference is utilized to chop up debris to minimize fire hazard and cut aspen roots in the soil. By cutting aspen roots, regeneration is accomplished via. coppice sprouting thereby reducing the need for artificial regeneration.

Prescribed fire may be utilized within the harvest units to facilitate Birch seedling establishment or where potential archeological concerns rule out the use of mechanical scarification for seed bed establishment.

Sale areas, almost without exception, reforest to a mixed stand of white spruce, birch, aspen and poplar. Overstocking is as much of a concern as under-stocking. Reforestation progress is monitored year by year to ensure adequate stocking. All harvest areas rely on natural seeding to some degree. Final determination of site and sale specific regeneration requirements will be addressed in the FLUP specific to the sale area. All sale areas are examined frequently after harvest to evaluate reforestation success.

CONCLUSION

This FYSTS is a scoping document that provides agencies and the public with information regarding resource management activities within the Delta resource area. The actual implementation of resource management activities is dependent upon market demands, project funding and completion of specific Forest Land Use Plans (FLUP) for the management activity as required. Due diligence pertaining to specific management concerns, Delta Junction Bison Range, Quartz Lake view shed, Craig Lake Alaska Highway segment, etal., will be undertaken when completing the Best Interest Findings and FLUP decision documents on all resource management projects. All resource management projects are subject to Alaska Forest Management Statues & Regulations, Alaska Forest Resources and Practices Act, Best Management Practices and subject to provisions in area management plans or special use restrictions.

COMMENTS

Agency and Public comments were solicited during the summer of 2013. All of the comments are incorporated into the Delta Area FY 2014-18 FYSTS file at the Delta Area Office. These comments will be kept on file so that they may be considered during the Forest Land Use Planning process that will be undertaken for each specific timber sale proposed in the FYSTS.

Statement of Adoption Delta Resource Area Fiscal Year 2014-18 Schedule of Timber Sales

Alaska Statute 38.05.113 specifies that the state shall annually prepare a five-year schedule of timber sales planned on all lands managed by the department. This statement summarizes the procedures taken and adopts the schedule for the Delta Area of the Alaska Division of Forestry.

The Delta Area of the Division of Forestry sent its Agency Review Draft of the Five-Year Schedule of Timber Sales (FYSTS) to nine state agencies on April 19, 2013. Three agency comments were received from Division of Mining, Lands and Water (2); Alaska Department of Fish and Game (1) before the comment period closing at 4:00p.m. May 22, 2013. Alaska State Historic Preservation Office provided two comments, one the 30th and another the 31st of May. (*See file.*) The comments from the agencies were considered, and appropriate changes were made which resulted in the preparation of a Public Review Draft.

The public comment period began on July 25, 2013 and ended August 23, 2013. Display ads were published on the Department of Natural Resources Public website on July 25, 2000. In addition, thirty-five notices of the FYSTS revision were mailed to local governments, Federal agencies, community service organizations, advisory groups, and interested citizens. Pertinent comment was received until August 23, 2013. Public comment was received from ten individuals. (*See file.*)

On September 10, 2013 a reply was sent to all individuals providing public comment.

“Every two years the department must prepare a five-year schedule of timber sales planned on all land managed by the department. The timber sale schedule must provide a time line that identifies timber sales, their volumes, and their locations and must contain sufficient information to provide the public and the forest products industry with a basis to comment on the proposed offerings. A proposed sale may not be held unless it has been included in one of the two five-year schedules immediately preceding the sale unless the sale acreage is less than 160 acres or is an emergency sale. (AS §38.05.113 Five Year Sale Schedules) As such, the FYSTS is a scoping document and is not in and of itself a action or decision document.

If the department decides to proceed with any timber sale listed in the FYSTS that does not already have a completed Forest Land Use Plan (FLUP), opportunity for the Public to comment will occur during the FLUP process. During the FLUP comment process State and Federal land management agencies will be consulted to provide comments regarding specific components or impacts of the proposed project. Public comment will also be taken during the FLUP process. If a significant adverse impact is found during the FLUP process that cannot be mitigated the project will not proceed.”

All of the comments provided for the FY2014-18 FYSTS will be considered during the FLUP process for projects or resource management activities that may arise in the locales specified by commenters as well as within the Delta Resource Area. Comments provided shall be kept on file and will be reviewed during the development of a Best Interest Finding for FLUPs detailed in the FYSTS.

The FYSTS notice was mailed to the Tanana Valley State Forest Citizens' Advisory Committee Chairman and individual members on July 25, 2013. No comments were received from the Committee or its' members individually.

STATEMENT OF ADOPTION

This Five Year Schedule of Timber Sales is the result of both the agency and public review process and describes the Divisions intent to offer the sales shown in the Five Year Schedule of Timber Sales. Prior to any sale described in the Five Year Schedule of Timber Sales actually being offered for sale, a Forest Land Use Plan will be developed specifically for a sale area described in the Five Year Schedule of Timber Sales. The opportunity for Agency and Public comments will be provided during the Best Interest Finding process for a Forest Land Use Plan.

Actual timber sale offerings listed in the Five Year Schedule of Timber Sales are contingent upon the specific Forest Land Use Plan being adopted per State of Alaska Forest Management Statues and Regulations.

We hereby adopt the Delta Area Five Year Schedule of Timber Sales for Fiscal Years 2014 through 2018 in accordance with the provision of AS 35.05.113.



Al Edgren
Delta Area Forester



Date

**Appendix A
Delta Area
Northern Region**

**FY 2014-18 Sawlog Harvest Schedule
State of Alaska, DNR, Division of Forestry
FYSTS July 1, 2013 to June 30, 2018**

Fiscal Year	Sale Name	Legal Description	2001 AAC %	Acres	Species	Volume in cubic feet	Volume in MBF	Access	Area Plan
14	Cliff Hanger NC-1395	Sec. 7 T12S, R15E FM	1.35%	26	W.S. Sawlog	66,000	220	All-Season	TVSF 10C
14	Indian Creek No.1 NC-1183	Sec. 13, 14, 22 & 23, T8S R10E Sec. 18, 19, T8S, R11E, FM	12.31% 1.39%	200 50	W.S. Sawlog Birch	600,000 75,000	2,000	All-season	TBAP 7C1 TVSF 9A
14	Gerstle High Water #1 NC-1396	Sec. 18,19, 28, 29, & 30, T12S, R15 Sec. 2, 11-14, 23, 24 T12, R14E FM	5.54%	150	W.S. Sawlog	270,000	900	All-season	TVSF 10C
14	Rowland No. 1 NC-1374	Sec. 1 & 12, T7S, R9E, Sec. 6, NW1/4 Sec. 7, T7S, R10E, FM Sec. 25, 35, 36, T6S, R9E, FM	14.36% 2.77%	320 100	W.S. Sawlog Birch/Aspen	700,000 150,000	2,333	All-season	TVSF 8C TBAP 7A2
14	Blowdown No. 1 NC-1375	Sec. 15, 22, 28 & 33 T12S, R15E, FM	3.08%	62	W.S. Sawlog	150,000	500	All-season & Winter	TVSF 10C
14	Rapid Creek No. 1 NC-1195	Sec. 28, 29, 32 T7S, R11E, FM	9.23% 1.39%	230 50	W.S. Sawlog Birch/Aspen	450,000 75,000	1,500	All-season	TVSF 9A
6	Sales	Subtotal	51.42%	1188	FY14	2,536,000	7,453		
15	Volkmar Crossing	Sec. 3, 4, 9, & 10 T10S R13E FM	3.90%	80	W.S. Sawlog	190,000	633	Winter	TVSF 10A
15	Quartz Lake No. 1	Sec. 14-16, 21-23, 28-30, 32 T8S, R10E, FM	1.64% 2.77%	40 100	W.S. Sawlog Birch/Aspen	80,000 150,000	267	All-season	TBAP 7B1, 7C1
15	Bison Range No.4	Sec. 8, 9 & 16, T12S, R13E, FM	1.03%	20	W.S. Sawlog	50,000	167	All-season	TBAP 7K1
15	Moose Acres NC-673 & NC-984	Sec. 13, 23, 24, & 26 T7S, R7E FM Sec. 17-21, 27-30, 33 T7S, R8E FM	5.54%	200	Birch & Aspen	300,000		All-season	TVSF 8A
15	Johnson Slough No. 6	Sec. 11-14, T14S R16E FM Sec. 4-10 T22N R5E CRM	3.08%	50	W.S. Sawlog	150,000	500	Winter	TVSF 10C
15	Steele Deal No. 2	W1/2SE1/4 Sec. 23, W1/2NE1/4 Sec. 26, T11S, R14E, FM	3.08%	80	W.S. Sawlog	150,000	500	All-season	TVSF 10C
15	Newby Mill Salvage #6 NC-1368	Sec. 9, 10, & 16 T12S, R15E, FM	1.85%	50	W.S. Sawlog	90,000	300	All-season	TVSF 10C
7	Sales	Subtotal	22.88%	620	FY15	1,160,000	2,367		
16	Surprise Side	Sec. 5, 6, N1/2 Sec 8, N1/2 Sec. 9, T8S, R8E, FM	6.16%	180	W.S. Sawlog	300,000	1,000	Winter	TVSF 9A TBAP 7G4, 7F1
16	Cummings Road Extension No. 2	Sec. 11-14, 24 T10S R13E FM Sec. 18-20, 29, & 33 T10S R14E FM	2.56%	60	W.S. Sawlog	125,000	417	All-season	TVSF 10C
16	Lower Gerstle Salvage	Sec. 4, 9, 16, 21, 22, 23, 26, & 35 T11S, R14E, FM	4.10%	90	W.S. Sawlog	200,000	667	All-season	TVSF 10C
16	Cliff Hanger No. 2	Sec. 5- 8, T12S, R15E, FM	1.64%	30	W.S. Sawlog	80,000	267	All-season	TVSF 10C
16	Bert Mnt. No. 1	Sec. 25 & 36, T8E, R9E, Sec. 31, 32 T8S,R10E, Sec. 5, 6 T9S, R10E, FM	3.49%	60	W.S. Sawlog	170,000	567	All-season	TBAP 7B1, 7B2
16	Hollembaek	Sec. 9 - 11,14 - 16 T 10S R13E FM	2.46%	50	W.S. Sawlog	120,000	400	Winter	TVSF 10A & C
16	Shaw Creek No. 6	Sec. 2, 9, 10, 11, & 15 T8S R10E FM	3.08% 0.74%	100 30	W.S. Sawlog Birch	150,000 40,000	500	Winter	TBAP 7C1 TVSF 9A
16	Fowler Creek NC-652	Sec. 21, W1/2 Sec 22, T7S R8E FM	2.87%	70	W.S. Sawlog	140,000	467	All-season	TVSF 8A TBAP 7A2
16	MS7	Sec. 10, 11, 14 & 15, T7S, R9E, FM	3.08%	50	W.S. Sawlog	150,000	500	All-Season	TVSF 8C TBAP 7A1, 7A2
16	Black Lake No. 4	Sec. 1 & 12, T13S, R15E, FM Sec. 17, 18, & 20, T13S, R16E, FM	6.16%	130	W.S. Sawlog	300,000	1,000	Winter	TVSF 10C
10	Sales	Subtotal	36.34%	850	FY16	1,775,000	5,783		

**Delta Area
Northern Region**

**FY 2014-18 Sawlog Harvest Schedule
State of Alaska, DNR, Division of Forestry
FYSTS July 1, 2013 to June 30, 2018**

Fiscal Year	Sale Name	Legal Description	2001 AAC %	Acres	Species	Volume in cubic feet	Volume in MBF	Access	Area Plan
17	Birch Hill	Sec. 21, 22, 28, T12S R15E FM	1.85%	60	Birch/ Aspen	100,000		All-season	TVSF 10C
17	Upper Delta Creek	W 1/2 Sec 14 Sec. 15, 21, 22, 23, 27 & 28 T8S R7E, FM	5.95%	120	W.S. Sawlog	290,000	967	Winter	TBAP 7G1 7G1
17	Just in Time	Sec. 7, 8, 15, & 17 T9S, R9E, FM	2.87% 1.11%	60 40	W.S. Sawlog Birch	140,000 60,000	467	Winter	TBAP 7G2
17	Delta Creek No. 3	Sec. 32, 33, 34 T7S, R7E, FM Sec. 2, 3, 11, 14 T8S, R8E, FM	5.95%	120	W.S. Sawlog	290,000	967	Winter	TBAP 7G1, 7F1
17	Back N Black No.1	Sec. 1&12 , T13S R15E, FM	12.93%		W.S. Sawlog	630,000	2,100	Winter	TVSF 10C
17	Dick's Bluff	Sec. 31 & 32, T7S, R8E, FM Sec. 5, N1/2 Sec. 6, T8S, R8E, FM	0.62% 2.96%	30 100	W.S. Sawlog Birch	30,000 160,000	100	All-season	TVSF 8A
6	Sales	Subtotal	34.23%	530	FY17	1,700,000	4,600		
18	Strike & Spare	Sec. 9,15-17,21,22 T8S R10E FM	4.39% 1.39%	98	W.S. Sawlog Birch	214,000 75,000	713	All Season	TBAP 7B1, 7C1
18	De'ja View	Sec. 12& 13 T8S R10E FM	6.16% 0.92%	109	W.S. Sawlog Birch	300,000 50,000	1,000	All Season	TBAP 7C1
18	Progressive Ridge	Sec. 16-21 T8S R11E FM	10.26% 1.39%	293	W.S. Sawlog Birch/Aspen	500,000 75,000	1,667	Winter	TBAP 7C1
18	Liscum Face	Sec. 21, 26-29 T8s R11E FM	10.26% 2.03%	336	W.S. Sawlog Birch/Aspen	500,000 110,000	1,667	Winter	TBAP 7C1
18	Santa's Stable No.1	Sec. 2-4 T 7S R9E Sec 33,34 T6S R9E FM	6.16% 2.77%	238	W.S. Sawlog Birch/Aspen	300,000 150,000	1,000	All Season	TVSF 8C
18	Rowland No.2	Sec. 1 & 2 T7S R9E Sec 35 & 36 T6S R9E FM	6.16% 2.77%	194	W.S. Sawlog Birch/Aspen	300,000 150,000	1,000	All Season	TVSF 8C
18	Back N Black No.2	Sec. 25,26,34-36 T12S R15E, FM	5.54%	287	W.S. Sawlog	270,000	900	Winter	TVSF 10 C
18	Seven Ten Split	Sec. 9,10,15,16 T8S R10E, FM	7.18% 2.77%	185	W.S. Sawlog Birch/Aspen	350,000 150,000	1,167	All Season	TBAP 7B1, 7C1
8	Sales		70.14%	1740	FY18	3,494,000	9,113		
		5 yr Sustained Yield Cut Allowance CUFT							
		24,368,000	65.52%		Spruce	15,966,000			
37	Sales	27,063,500	6.91%		Hardwoods	1,870,000			
		51,431,500	41.47%	8,116	Total	21,330,000	29,317		

Note: Bold Sales have FLUPs completed or in progress.

FY 2014-18 Biomass Harvest Schedule

**Appendix B Delta Area State of Alaska, DNR, Division of Forestry
Northern Region FYSTS July 1, 2013 to June 30, 2018**

Sale No.	Fiscal Year	Sale Name	Legal Description	2001 AAC %	Acres	Species	Gross Tons	Cuft volume (50cuft/Gton)	Access	Area Plan
NC-1159	14	Delta River Firebreak No.3	Sec. 4, 9, 10, 15, 16, T10S, R10E, FM Sec. 28, 29, & 33, T9S, R10E, FM	8.18%	382	Spruce Biomass	16,830	841,500	Winter	TBAP 7G1 & 7F1
NC-1492	14	East Volkmar Fire Salvage #1	Sec.1,2,11-15,22-25,35,36 T9S, R14E FM	35.78%	2,591	Mixed Biomass	73,600	3,680,000	Winter	TVSF 10A
	14	Bison Field Salvage	Sec.8-10, 14-18, 21-26 T12S R13E FM Sec. 19, 30 T12S, R14E FM	45.03%	4,933	Mixed Biomass	92,647	4,632,350	Limited All Season	TBAP 7K1
3		Sales		88.99%	7,906	FY14	183,077	9,153,850		
NC-1492	15	East Volkmar Fire Salvage #2	Sec.1,2,11-15,22-25,35,36 T9S, R14E FM	35.78%	2,591	Mixed Biomass	73,600	3,680,000	Winter	TVSF 10A
NC-1181	15	Little Gerstle Biomass Salvage	Sec. 7- 9, 14-22 T13S, R15E, FM	17.59%	2,726	Mixed Biomass	36,181	1,809,050	All-season	TBAP 7K1, 7N1
NC-1393	15	Independent Ridge Salvage	Sec. 19 & 30, T13S R16E Sec 24 & 25, T13S R15E FM	44.12%	2,575	Mixed Biomass	90,767	4,538,350	All-season	TBAP 7N1,7N2
3		Sales		97.48%	7,892	FY15	200,548	10,027,400		
	16	Kilroy's Boiler Salvage	Sec. 12, 13, 24-26, & 36 T10S R9E FM Sec. 7, 18, 19, 28-32 T10S R10E FM Sec. 1 & 2, T11S, R9E, FM	16.95% 6.61%	1,000 320	Birch/ Aspen Spruce Biomass	34,875 13,600	1,743,750 680,000	Winter	TBAP 7G1,7G2
	16	Whitestone Extension Salvage	Sec. 26-29, 32-35 T8S, R9E, FM Sec. 2-4, 9-11 T9S, R9E, FM	22.05%	3,347	Mixed Biomass	45,358	2,267,900	Winter	TBAP 7F1
	16	Dust Bowl Salvage	Sec. 12-14, 22-28, T13S, R14E, FM Sec. 6 & 7, T13S, R15E, FM	2.89%	150	Spruce Biomass	5,950	297,500	Winter	TBAP 7K1,7N1
	16	Quartz Bert Salvage	Sec. 29-31 T8S, R10E, FM Sec. 36 T8S, R9E, FM	2.58%	421	Spruce Biomass	5,313	265,650	All-season	TBAP 7B1, 7B2 7C1, 7F1, 7G3
	16	Gerstle Lookout Salvage	Sec. 2-6,&11, T13S, R15E. Sec. 31-33, T12S, R15E, FM	2.89%	150	Spruce Biomass	5,950	297,500	All-season	TVSF 10C
5		Sales		53.98%	5,388	FY16	111,046	5,552,300		
	17	Rosa Creek Salvage	Sec. 16-21,27, 34 T7S, R8E, FM	16.04%	1,005	Mixed Biomass	33,000	1,650,000	All-season	TBAP 7A2 TVSF 8A, 8C
	17	Keystone Creek Salvage	Sec.11-15, 22 T7S, R8E, FM Sec. 7-10, 15-18 T7S, R9E, FM	38.04%	2,813	Mixed Biomass	78,250	3,912,500	All-season	TBAP 7A2 TVSF 8A, 8C
	17	Rainbow Salvage	Sec.13-15, 22-24, 25-28, 33-36 T9S, R9E, FM Sec. 1-3 T10S, R9E, FM	25.64%	4,996	Mixed Biomass	52,757	2,637,850	Winter	TBAP 7G2 ,G3
3		Sales		79.72%	8,814	FY17	164,007	8,200,350		
	18	Black Lake Salvage	Sec.1-3,11-14 T13S, R15E, FM	6.66%	600	Spruce Biomass	13,692	684,600	Winter	TVSF 10C
	18	Delta Creek Salvage	Sec.33-35 T7S, R7E, FM Sec. 2-4, 9-11, 13-16, 23, 24 T8S, R7E, FM	41.33%	3,365	Spruce Biomass	85,031	4,251,550	Winter	TBAP 7G1 TVSF 8A
2		Sales		47.99%	3,965	FY18	98,723	4,936,150		
Total	16	Sales		74%	33,965	Total	757,401	37,870,050		

Annual Sustained Yield Cut Allowance (Cuft) - 10,286,300 combined or 5,092 acres.

Appendix C
Delta Area
Northern Region

FY 2014-18 Fuelwood Harvest Schedule
State of Alaska, DNR, Division of Forestry
July 1, 2013 to June 30, 2018

Fiscal Year	Sale Name	Legal Description	Acres	2001 AAC %	Species	Volume in cubic feet	Volume in Cords	Area Plan
14	Camp Creek Fire Salvage	Sec. 36 T5S, R11E, Sec. 13-16, 22, 23, 27-29, 31-33 T5S, R12E, Sec. 24, 25 T6S, R10E, Sec. 1-5, 7-12, 14-21 T6S, R11E, Sec. 5-7 T6S,R12E FM	50	2.05%	Spruce Fuelwood	100,000	781	TVSF 8D TBAP 7A2
14	Gilles Creek Fire Salvage	Sec. 14-17, 20-29, 32-36 T6S R11E Sec 30 T6S R11E; Sec. 1-12,16-18, 20 T7S R 10E FM	300 50	6.16% 0.92%	Spruce Birch	300,000 50,000	2,344 391	TVSF 8D TBAP 7A2
2	Sales		400	9.13%	FY14	450,000	3,516	
15	Ground Warmer	S1/2 Sec. 29, NE1/4NE1/4 Sec. 31, NW1/4 Sec. 32, T8S, R10E, FM	42	2.05%	Spruce Fuelwood	100,000	781	TBAP 7B1, 7B2
15	Delta West Firewood #1	Sec. 4 T 10S R 10E FM	80	4.10%	Spruce Fuelwood	200,000	1,563	TBAP 7G1, 7F1
2	Sales		42	6.16%	FY15	300,000	2,344	
16	Quartz Extension Firewood #1	Sec. 14, 22,23 T8S R10E FM	80	4.10%	Birch	200,000	1,563	TBAP 7B1, 7B2
16	Delta West Firewood #2	Sec. 19 and 20 T 9S R 10E FM	80	4.10%	Spruce Fuelwood	200,000	1,563	TBAP 7G1, 7F1
2	Sales		160	8.21%	FY16	400,000	3,125	
17	Tenderfoot Firewood #1&2	Sec. 31 T7S R8E FM Sec 23-24 T7S R7E FM	40	2.05%	Birch	100,000	781	TVSF 8A
17	Gerstle R. Firewood #1	Sec 7-9, 30 T12S R15E FM	80	4.10%	Spruce Fuelwood	200,000	1,563	TVSF 10C
2	Sales		120	6.16%	FY17	300000	2,734	
18	Quartz Highline Firewood #1	Sec. 22 T8S R10E	80	4.10%	Birch	200,000	1,563	TBAP 7B1, 7B2
18	Lil Gerstle R. Firewood #1	Sec. 11, 15 T13S R15E	40	2.05%	Spruce Fuelwood	100,000	781	TBAP 7K1 TVSF 10C
2	Sales		42	6.16%	FY18	300,000	2,344	
10	Sales	5 yr Sustained Yield Cut Allowance CUFT						
		24,368,000	672	4.92%	Spruce	1,200,000	9,375	
		27,063,500	250	2.03%	Hardwoods	550,000	4,297	
		51,431,500	922	3.40%	Total	1,750,000	13,672	

Appendix D
Delta Area
Northern Region

FY 2014-15 Transportation Schedule
State of Alaska, DNR, Division of Forestry
July 1, 2014 to June 30, 2015

Sale No. or Project ID	Location	Type	Activity (miles)		Funding		Remarks
			New	Maint.	Cost	Source	
NC - 1472	Gilles Creek Fire Salvage	All- Season	2	5.00	\$5,000	Timber Sale	Proposed Sales
	Camp Creek Fire Salvage	All-Season	0.5	5.50	\$1,500	Timber Sale	Existing Sale
NC-1395	Gerstle Area	All-Season	0.3	0.25	\$7,000	Timber Sale	Proposed Sale
NC-1375	Gerstle Area	All-Season	0.25	4.00	\$2,000	Timber Sale	Proposed Sale
NC-1183	Indian Creek	All-Season	1	5.00	\$7,500	Timber Sale	Proposed Sale
NC -1396	Gerstle Area	All Season/Winter	0.75		\$5,000	Timber Sale	Proposed Sale
NC -1492	E Volkmar Fire Salvage	Winter	10	1.50	\$35,000	Timber Sale	Proposed Sale
	Bert Mountain	All Season	2.5		\$30,000	CIP funding	
	FY2014 Biomass Sales	All Season/Winter	20	5.00	\$175,000	Timber Sale	Pending Mkt Demand
Totals		Timber Sales	34.8	26.25	\$ 238,000.00		
		CIP	2.5	0	\$ 30,000.00		
		Total	37.3	26.25	\$268,000.00		

Appendix E
Delta Area
Northern Region

FY 2014- 2015 Reforestation Schedule
State of Alaska, DNR, Division of Forestry
July 1, 2013 to June 30, 2015

Sale No.	Sale Name	Operation Type	Acres	Date	Cost	Funding Source	Species	Quantity	Remarks
NC-995	Keystone Bluff #1	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
NC-1371	Keystone Bluff #3	Scarification	20	July 2013	\$3,000	For. Mngt.			
NC-1371	"	Planting	30	July 2014	\$4,650	Reforestation	W. Spruce	4,650	Pending Regen survey
NC-1172	Lost Cabin #2	Scarification	10	July 2013	\$1,500	For. Mngt.			
NC-1172	"	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
NC-1381	Chapman Blowdown #1	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
NC-1387	Chapman Blowdown #2	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
NC-1389	Chapman Blowdown #3	Planting	19.1	July 2014	\$3,000	Reforestation	W. Spruce	3,000	Pending Regen survey
NC-1390	Chapman Blowdown #4	Planting	11.6	July 2014	\$1,800	Reforestation	W. Spruce	1,800	Pending Regen survey
NC-1394	Chapman Blowdown #5	Planting	18.3	July 2014	\$2,900	Reforestation	W. Spruce	2,900	Pending Regen survey
NC-1467	Chapman Blowdown #6	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
NC-1455	Hutto No.2	Planting	10	July 2014	\$1,550	Reforestation	W. Spruce	1,550	Pending Regen survey
*	Biomass Sales	Roller Chopping	860	Sept. 2014	\$57,620	Timber Sale			Pending Market demand
*	Biomass Sales	Scarification	640	March 2015	\$96,000	Timber Sale			Pending Market demand
		Scarification	670		\$100,500	Forest Mngt./ Timber Sale			
		Planting	139		\$21,650	Reforestation	Seedlings	21,650	
		Roller Chopping	860		\$57,620	Timber Sales			
		Totals	1669		\$179,770				

Alaska State Division of Forestry, Northern Region

State Forest Biomass Inventory Availability

**Mike Reggear, Delta Area Resource Forester
Douglas Hanson, Statewide Inventory Forester**

August 14, 2012

Overview

This analysis was prepared to provide an initial estimate of above ground woody biomass available on state land for a proposed 6.5 MW Combined Heat and Power (CHP) wood energy system being considered for Fort Greely (US Army). Woody biomass demand for this facility is estimated to be 110,000 green tons per annum. The expected volume the Ft Greely facility would consume over a 30 year life is expected to be approximately 3,300,000 tons.

This inventory analysis examines the potential supply of biomass fuelwood available from state lands within a three hour transportation radius of Delta Junction, Alaska. The three hour transportation parameter is based upon 0.5 hour to load, 0.5 hour to unload and a transport time limit of 2 hours. A vehicle travel speed of 15 miles per hour along forest roads was applied to the mileage distance to determine operational harvest and transport areas.

The biomass that will fuel the proposed CHP facility will primarily come off of lands managed by Delta Area Forestry but, will also incorporate lands managed by both the Fairbanks and Tok Areas, which are located to the north and east respectively. Due to the scope of the proposed CHP project, lands from the Fairbanks and Tok areas were included for this analysis. All planning and availability of the biomass resource would be produced and managed by the respective management area's office.

Anticipated harvest areas will include both winter only, all season access, and the salvage of biomass from areas affected by wildland fire. Fire salvage areas will be priority harvest areas in order to capture viable biomass volumes before significant degradation occurs. Due to the size and scope of the proposed CHP project, a comprehensive mechanized harvest operation will be necessary to efficiently and economically harvest the associated timber volumes. Harvest operations are anticipated to utilize in-woods chipping to maximize biomass volumes available from the forest land base as only 48% of the total available acreage is comprised of pole or sawtimber forest types.

Figure 1 (Ft Greely Biomass Supply Map) depicts current access points, current transportation routes and Division of Forestry management areas. Woody biomass harvest areas are anticipated to be located in these delineated areas. A detailed analysis utilizing the State of Alaska's Forest Land Use Planning process and Timber and Material Sales (AS 38.05. and 11 AAC 71.) will be the final determining document delineating harvest areas, methods, and volumes available. Forest Land Use Plans are subject to Agency and Public

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review, which may also limit or alter areas available for biomass harvest. Biomass volumes procured from other land holders i.e., Ft Greely, Native Corporation, Agricultural, and Borough lands could reduce the annual acreage harvested from State timber lands.

Inventory Analysis

This forest inventory evaluation is based on known inventory data, regression analysis determined through destructive sampling, and published weight and volume tables from a draft copy of Timber Resources on State Forest Lands in the Tanana Valley Inventory Update 2010. A full and detailed analysis of the Alaska Division of Forestry forest land biomass resources, managed by Division of Forestry- Northern Region, is currently on going. The sustained yield rotational period for Aspen and Birch is 80 years and White Spruce is 120 years in the Tanana Valley.

Parameters used to determine volumes associated with this initial analysis are established as follows: Gross Tons inventory volumes provided in this report are based on trees 5 inches DBH and larger within all Inventory Strata types. These volumes are based on the utilization of bole wood to a 4 inch top diameter. Biomass Ton volumes were determined utilizing complete consumption of all above ground fiber material 3 inches DBH and larger. Timber species included in this analysis are: Aspen, Balsam Poplar, Birch, White Spruce, and Black Spruce.

Anticipated annual harvest acreages will range from 1,000- 5,300 acres, dependent on the volume/acre of the strata to be harvested. Two methods were used to determine the biomass volume availability for this analysis. 1) Gross Tons - 5 inch plus DBH to a 4-inch top (bole wood only). 2) Biomass Tons – 3 inch plus DBH to a 0 inch top (100% tree utilization).

Table 1 depicts the available volume by “Pole & Saw” size classes and “All Strata” (inventory strata 1-16 inclusive) harvest strata based on the projected harvest areas and the respective transportation nodes. Table 2 delineates the volumes per inventory stratum calculated for the Fairbanks and Delta management areas and total strata acreage in the projected harvest areas. Consumption calculations are based on 3,300,000 tons, 110,000 tons annually x 30 year facility life.

Calculating the Gross Tons volume associated with All Strata 5 inch DBH plus results in approximately 23 tons/acre or approximately 4,800 acres harvested annually and consumes 31.5% of the available 10,473,563 Gross Tons. Gross Tons volume associated with Pole/Saw timber strata only, is approximately 42 tons/acre. Based on 42 tons/acre, annual harvest acreages in the DOF management areas would require approximately 2,600 acres and consumes 34.1 % of the available 9,673,018 Gross Tons (Table 1) from the harvest areas analyzed in this report.

Complete utilization of all harvested material down to 3 inch DBH including tops to 0 inches, Biomass Tons, would increase the recoverable biomass volume. Calculating the Biomass Tons volume of All Strata results in approximately 57 tons/acre or approximately 1,900 acres harvested annually and consumes 12.5% of the available 26,453,702 Biomass Tons. Removing Strata 15 and 16, mixed White Spruce/Hardwood Sapling and mixed Black

Appendix F

Spruce/Hardwood Sapling respectfully, from the available Biomass Tons calculations results in 87 tons/acre. The resultant harvest acreage would be approximately 1,300 acres annually and consume 16.3% of the available 20,157,011 Biomass Tons (Table 1) from the harvest areas analyzed in this report.

The biomass feedstock feasibility of the proposed 6.5 MW CHP is dependent upon the type of feedstock required for use. If the facility is wholly dependent upon 5 inch DBH plus bole wood, the resultant sustained harvest duration is 88 years for Gross Tons of Pole and Saw Strata and 95 years for Gross Tons of All Strata. At this harvest level, the feed stock necessary to fuel the facility will exceed the sustained rotational age of the available volume.

Utilizing the available biomass to a higher standard, i.e. complete utilization of 3 inch plus trees, significantly increases the yield per acre as well as the total available harvest acreage. The resultant sustained harvest duration is 183 years for Biomass Tons of Pole and Saw Strata (87 tons/acre) and 240 years for Biomass Tons of All Strata (57 tons/acre). Complete utilization of 3 inch plus would be sustainable based on this inventory analysis.

Table 1 Available Harvest Volumes per Access Node

Access Nodes	All Strata			Pole/Saw Strata Only		
	Acres	Gross Tons	Biomass Tons	Acres	Gross Tons	Biomass Tons
A0.5	36,144	336,086	1,216,415	7,261	251,579	550,992
B0.5	61,717	1,328,280	3,394,223	27,582	1,233,209	2,540,379
C1.0	19,704	581,391	1,360,176	12,492	561,973	1,170,602
D1.0	13,901	408,227	974,964	8,927	395,207	838,878
E0.5	16,760	299,949	886,738	6,399	271,226	625,600
F0.5	55,161	1,674,018	3,827,949	38,514	1,632,756	3,340,209
G2.0	4,619	40,518	166,503	783	30,102	66,877
H1.5	32,596	406,045	1,355,204	8,366	341,198	712,103
I1.0	52,145	897,110	2,571,830	20,075	810,015	1,738,465
J0.5	43,669	1,254,334	2,837,339	29,131	1,217,189	2,427,087
K0.67	40,386	1,366,403	2,903,878	31,577	1,341,776	2,684,785
L0.5	41,021	1,024,887	2,477,884	22,677	973,146	2,028,056
M0.25	6,850	178,326	426,676	3,401	168,654	341,371
N1.0	31,870	587,815	1,750,055	13,057	402,023	981,301
O1.5	6,200	90,174	303,868	1,479	42,965	110,306
Grand Total	462,744	10,473,563	26,453,702	231,720	9,673,018	20,157,011
Tons/ Acre		22.6	57.2		41.7	87.0

Appendix F

Table 2						
<i>Per Acre Summary by Strata and Species</i>						
	<i>Trees</i>	<i>BA</i>	<i>Gross CF</i>	<i>Gross Tons</i>	<i>Biomass Tons</i>	<i>Acres</i>
	<i>>2"</i>	<i>>5"</i>	<i>>5"</i>	<i>>5"</i>	<i>>2"</i>	
<i>Stratum 1</i>	<i>White Spruce Sawtimber</i>					
Aspen	2	1	24	0.52	0.78	
Bals am Poplar	9	1	18	0.4	0.9	
Birch	90	9	178	4.44	8.24	
Black Spruce	3	0	7	0.12	0.27	
White Spruce	225	116	3,079	52.35	100.98	
	329	127	3,306	57.83	111.17	16,252
<i>Stratum 2</i>	<i>White Spruce Poletimber</i>					
Aspen	11	3	59	1.26	2.28	
Bals am Poplar	0	0	2	0.03	0.08	
Birch	48	5	78	1.94	3.86	
Black Spruce	111	15	249	4.23	12.21	
White Spruce	379	93	2,101	35.72	86.86	
	549	116	2,489	43.18	105.29	23,449
<i>Stratum 3</i>	<i>Birch Closed</i>					
Aspen	20	6	143	3.07	5.19	
Bals am Poplar	3	0	6	0.12	0.3	
Birch	481	76	1,478	36.95	67.21	
Black Spruce	13	1	16	0.27	0.91	
White Spruce	118	10	190	3.22	9.61	
	635	93	1,833	43.63	83.22	36,809
<i>Stratum 4</i>	<i>Birch Open</i>					
Aspen	4	3	48	1.04	2.39	
Birch	206	61	1,180	29.49	50.24	
White Spruce	60	7	155	2.64	6.29	
	270	71	1,383	33.17	58.92	3,966
<i>Stratum 5</i>	<i>Aspen Closed</i>					
Aspen	428	94	2,048	44.04	76.5	
Bals am Poplar	7	1	11	0.24	0.65	
Birch	165	12	215	5.38	12.14	
Black Spruce	18	0	3	0.05	0.74	
White Spruce	134	13	242	4.12	10.93	
	752	120	2,519	53.83	100.96	15,968

Appendix F

Table 2		Continued				
<i>Per Acre Summary by Strata and Species</i>						
	<i>Trees</i>	<i>BA</i>	<i>Gross CF</i>	<i>Gross Tons</i>	<i>Biomass Tons</i>	<i>Acres</i>
	<i>>2"</i>	<i>>5"</i>	<i>>5"</i>	<i>>5"</i>	<i>>2"</i>	
<i>Stratum 6</i>	<i>Aspen Open</i>					
Aspen	681	64	1,517	32.61	49.93	
Balsam Poplar	59	2	24	0.51	4.53	
Birch	25				0.83	
White Spruce	1,374	14	210	3.57	19.82	
	2,139	80	1,751	36.69	75.11	664
<i>Stratum 7</i>	<i>Birch-Aspen Closed</i>					
Aspen	167	40	828	17.8	48.01	
Balsam Poplar	1	1	12	0.25	0.43	
Birch	318	49	910	22.75	41.77	
Black Spruce	31	1	13	0.23	1.46	
White Spruce	79	11	217	3.7	9.07	
	596	102	1,980	44.73	100.74	20,282
<i>Stratum 8</i>	<i>Birch-Aspen Open</i>					
Aspen	154	26	567	12.18	21.3	
Birch	119	51	1,015	25.37	36.06	
White Spruce	43	12	264	4.5	9.74	
	316	89	1,846	42.05	67.1	513
<i>Stratum 9</i>	<i>White Spruce-Birch Sawtimber</i>					
Aspen	1	0	8	0.17	0.26	
Balsam Poplar	6	2	45	0.97	1.64	
Birch	106	36	722	18.06	28.62	
Black Spruce	3	1	18	0.31	0.66	
White Spruce	165	68	1,710	29.07	61.12	
	281	107	2,503	48.58	92.3	8,095
<i>Stratum 10</i>	<i>White Spruce-Birch Pole timber</i>					
Aspen	1	1	14	0.3	0.38	
Balsam Poplar	1	1	11	0.25	0.45	
Birch	172	36	594	14.86	28.31	
Black Spruce	77	6	95	1.62	5.72	
White Spruce	170	43	941	16	34.31	
	421	87	1,655	33.03	69.17	19,855
<i>Stratum 11</i>	<i>White Spruce-Birch-Aspen Sawtimber</i>					
Aspen	68	21	474	10.19	15.67	
Balsam Poplar	13	8	166	3.58	6.13	
Birch	58	23	467	11.67	17.71	
White Spruce	237	59	1,374	23.36	49.08	
	376	111	2,481	48.8	88.59	3,555

Appendix F

Table 2	Continued					
<i>Per Acre Summary by Strata and Species</i>						
	<i>Trees</i>	<i>BA</i>	<i>Gross CF</i>	<i>Gross Tons</i>	<i>Biomass Tons</i>	<i>Acres</i>
	<i>>2"</i>	<i>>5"</i>	<i>>5"</i>	<i>>5"</i>	<i>>2"</i>	
<i>Stratum 12</i>	<i>White Spruce-Birch-Aspen Poletimber</i>					
Aspen	40	12	259	5.58	9.16	
Birch	208	31	554	13.84	28.5	
Black Spruce	64	10	181	3.08	7.62	
White Spruce	163	42	931	15.83	34.89	
	475	95	1,925	38.33	80.17	29,113
<i>Stratum 13</i>	<i>White Spruce-Balsam Poplar</i>					
Aspen	13	4	83	1.78	2.91	
Balsam Poplar	147	50	798	17.15	40	
Birch	80	12	217	5.42	10.6	
Black Spruce	26	0	3	0.06	0.84	
White Spruce	388	32	589	10.02	37.61	
	654	98	1,690	34.43	91.96	7,652
<i>Stratum 14</i>	<i>Black and White Spruce-Birch-Aspen</i>					
Aspen	38	8	155	3.33	6.37	
Balsam Poplar	4	3	53	1.13	1.98	
Birch	179	25	388	9.7	20.39	
Black Spruce	77	12	201	3.41	10.04	
White Spruce	146	34	698	11.87	26.95	
	444	82	1,495	29.44	65.73	14,572
<i>Stratum 15</i>	<i>White Spruce-Hardwood Sapling</i>					
Aspen	206				3.55	
Balsam Poplar	17				0.32	
Birch	911	8	85	2.12	29.82	
Black Spruce	33				0.21	
White Spruce	159	1	11	0.18	2.26	
	1,326	9	96	2.3	36.16	73,265
<i>Stratum 16</i>	<i>Black Spruce-Hardwood Sapling</i>					
Birch	71	1	6	0.15	1.78	
Black Spruce	1,379	9	89	1.51	17.54	
White Spruce	207	7	94	1.6	2.24	
	1,657	17	189	3.26	21.56	168,030

