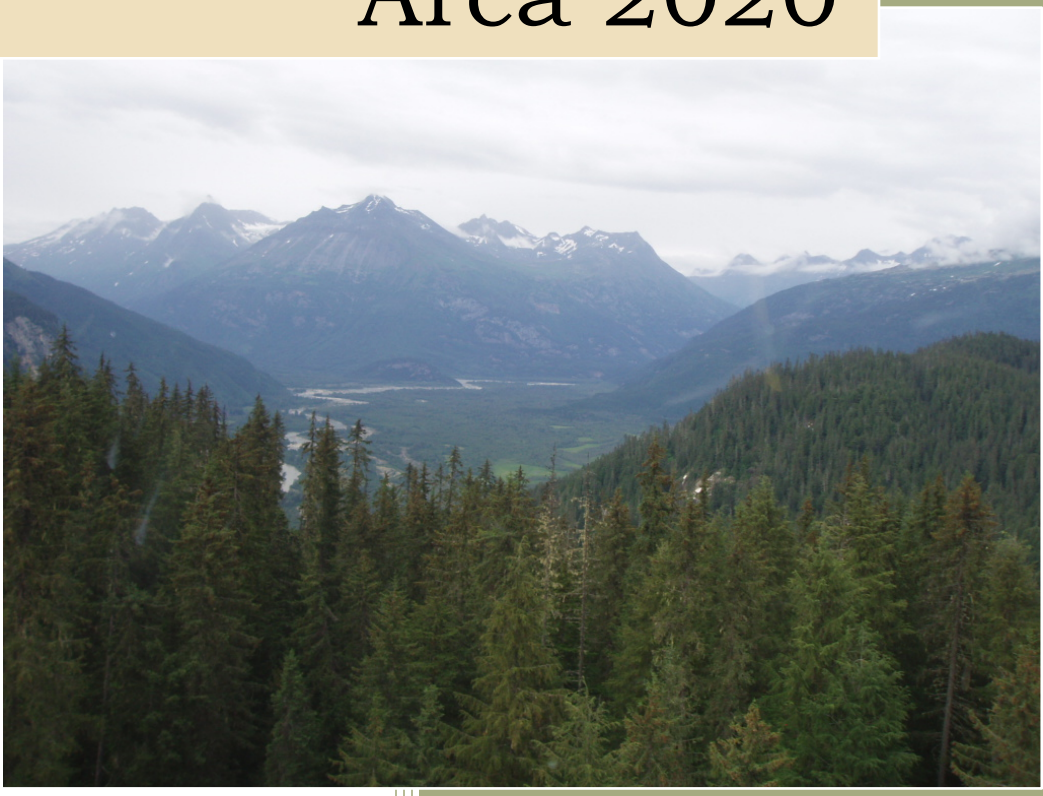
# Timber Inventory of State Forest Lands in the Haines Area 2020



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4/22/2020

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# I. EXECUTIVE SUMMARY

The inventory of timber resources on legislatively designated state forest lands within the Haines area has been initiated to provide a spatially explicit set of data to guide management activities by the State Division of Forestry (DOF). The inventory provides information on a plot, stand and strata basis while also calculating an Annual Allowable Cut. A standalone geodatabase provides volume and individual tree attributes and feeds directly into a publicly available web mapping application that provides plot and stand type information with interactive querying capability. Data can be used by the Division of Forestry (DOF) for general forest and fire management planning. Volume information has been generated from timber stand data collected in 2012 and 2018 as well as from other data sources.

| Strata Number | Strata Description | Acres |
|---|---|---|
| 1 | Conifer High Site | 15,944 |
| 2 | Conifer Medium Site | 24,484 |
| 3 | Conifer Low Site | 21,089 |
| 4 | Cottonwood | 2,134 |
| 5 | Second Growth | 10,830 |
| 6 | Non-Commercial | 13,065 |
| 7 | Non-Forest | 171,750 |
| | Total | 259,295 |

**TABLE 1. TIMBER TYPE STRATA AND ACREAGE SUMMARY.**

# II. OBJECTIVES

The inventory objective is to provide reliable data to assist in the management of forest resources in the Haines area. Determination of an operable land base, sustainable harvest rate and harvest scheduling all require accurate volume data and geographically referenced spatial locations of individual stands. The data, both in spatial and tabular form can be used to assess the availability of timber and biomass resources and determine economic viability of proposed harvest development activities. The inventory provides the following items useful for development and planning:

- Spatially accurate stand polygons overlaid on geographically rectified photo base.
- Accurate acreage determination of forest cover and land ownership.
- Statistically valid sampling design that produces a variety of tree and stand attributes.
- Field sampling of tree and stand productivity variables useful for determining sustainable harvest rates.
- Geographic Information System (GIS) mapping access of spatial data with volume and acreage querying capabilities.
- Timber harvest sustainability data to evaluate potential project development.
- Database generated tree list compatible for growth simulation processing.

## III. METHODS

Forest inventory information was collected by various methods within the project area. Conifer stands were sampled in 2012 by remeasuring permanent sample variable plots established in 1985 and permanent fixed plots established in 1965. Sampling procedures for the remeasure of the 1965 and 1985 plots followed the original sampling methods for plot, tree selection and tree identification used during the initial collection to ensure the remeasure of each tree originally sampled. Second growth stands were sampled in 2018 by temporary fixed plots. Cottonwood stands used volume per acre and other data values published in the 1994 Haines State Forest Inventory (Phillips et al. 1994). Cruise processing for mature and second growth stands in 2012 and 2018 utilized Atterbury Consultants SuperACE software allowing for variable log length cruise practices consistent with current Forestry Pacific Northwest Regional Standards to be applied. Access to the stands was by foot and helicopter. Cruising timber utilizing SuperACE methodology required the forester to estimate log quality throughout the merchantable bole of each tree sampled. Appropriate sort and grade values were assigned to each segment evaluated. A total of 651 plots were sampled across 54 stands. Timber cruise measurements from the sample stands provide estimates of gross and net volume by species, sort and grade as well as site productivity.

### A. IMAGERY SOURCES

Spot 2.5-meter resolution satellite imagery acquired between 2010 and 2012 and Digital Globe .46-meter resolution satellite imagery acquired in 2016 were used for the project. Spot imagery was available through the Alaska Statewide Digital Mapping Initiative. Digital Globe imagery was available through the ESRI GIS software online base map library.

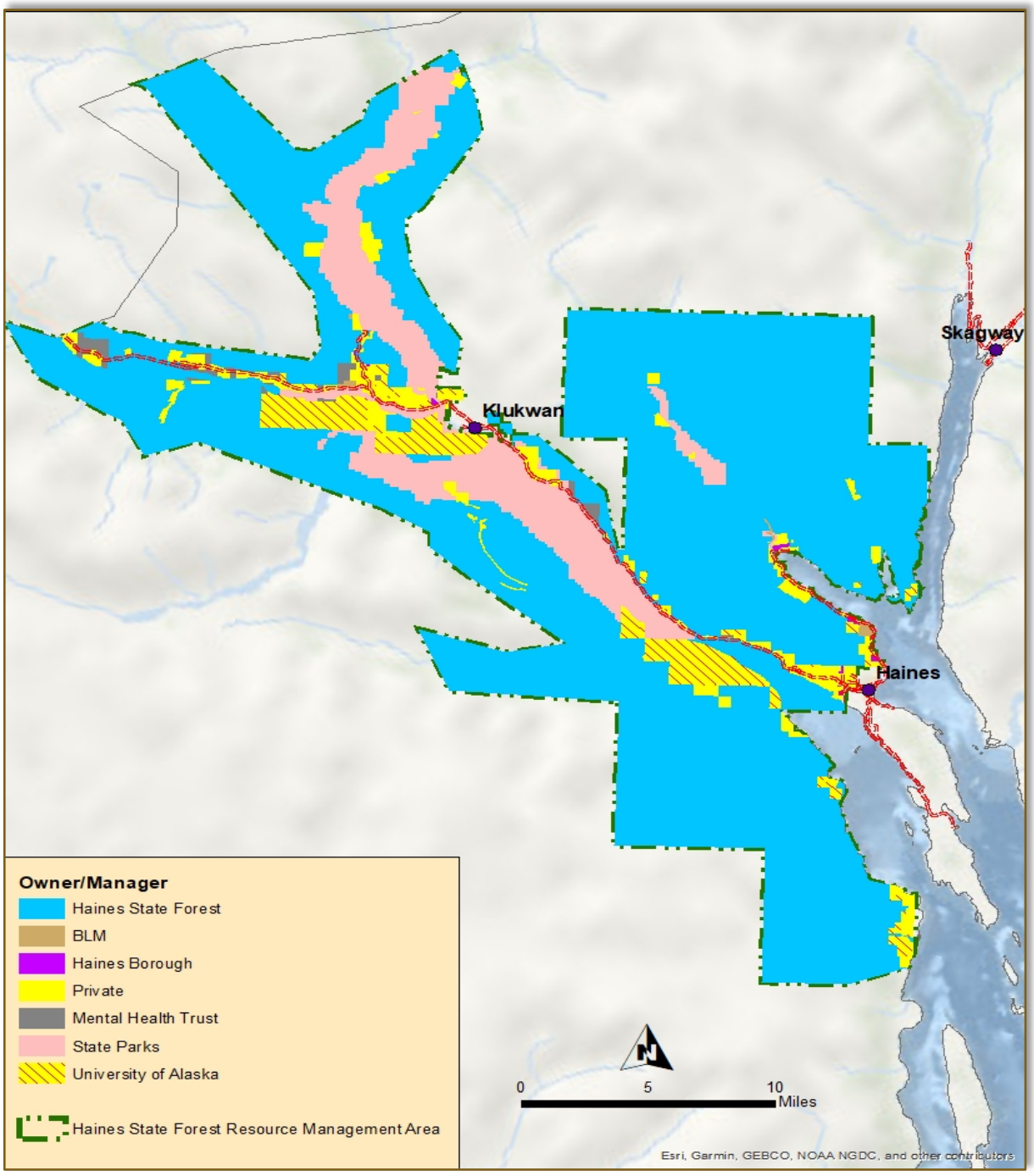


**FIGURE 1. PROJECT AREA MAP.**

## B. Vegetation Typing

An existing digital vegetation type map was updated using ESRI ArcGIS editing tools and saved as a new GIS feature class. Topological errors of overlapping polygons and non-adjacent polygons were repaired. Polygons were re-drawn to align with river and water features and missing attributes re-established. Recent timber sales were merged into the updated GIS data and attributes corrected to identify second growth acres from the original type reference of old and young growth.

## C. Ownership Determination

Within the confines of the overall outer boundary of the Haines State Forest Resource Management Area several landowners and or land managers are present. Legislatively designated state forest lands managed by DOF are only a subset of the acreage. A dataset of these lands was not available and thus had to be created by a process of elimination. Nine Owner/Land Managers were identified within the Haines State Forest Resource Management Area (Table 2). Owner/Land Manager data were acquired from publicly available GIS layers (Table 3). These layers were corrected for alignment between each other and to the section grid.

| Owner/Land Manager | Acres |
|---|---|
| BLM | 462 |
| Haines Borough | 341 |
| Haines State Forest | 259,295 |
| Mental Health Trust | 2,164 |
| Private | 13,567 |
| State Parks Chilkoot Lake Rec Site | 111 |
| State Parks Eagle Preserve | 39,959 |
| State Parks Mosquito Lake Rec Site | 19 |
| University of Alaska | 14,699 |
| **Haines State Forest Resource Management Area** | **330,617** |

**TABLE 2. OWNERSHIP WITHIN THE HAINES STATE FOREST RESOURCE MANAGEMENT AREA.**

| Owner/Land Manager | GIS Source | Last Update |
|---|---|---|
| Haines Borough | https://services3.arcgis.com/pMlUMMROURtJLUZt/ArcGIS/rest/services/Haines_Borough_Parcels_January_11_2018/FeatureServer | 2018 |
| State General Land Status | https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/Ownership_StateTAPatent/FeatureServer | 2019 |
| State Legislatively Designated | https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/SurfaceClassification_LegislativelyDesignatedAreas/MapServer | 2020 |
| Haines State Forest RMA Boundary | https://services1.arcgis.com/7HDiw78fcUiM2BWn/arcgis/rest/services/State_Forest_Boundary/FeatureServer | 2020 |
| State Parks | https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/Recreational_ParkBoundary/FeatureServer | Unknown |
| Native Allotments | https://fire.ak.blm.gov/arcgis/rest/services/MapAndFeatureServices/NativeAllotments/FeatureServer | 2019 |
| Bureau of Land Management | https://fire.ak.blm.gov/arcgis/rest/services/MapAndFeatureServices/NativeAllotments/FeatureServer | 2019 |
| University of Alaska | https://fire.ak.blm.gov/arcgis/rest/services/MapAndFeatureServices/NativeAllotments/FeatureServer | 2019 |
| Mental Health Trust | https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/Ownership_MentalHealthTrustParcels/FeatureServer | 2020 |
| Public Land Survey Section Grid | https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/ReferenceGrid_PLSSgrid/MapServer | 2019 |

**TABLE 3. PUBLICLY AVAILABLE GIS LAYERS.**

## A. Geographic Information System Coverage

A geodatabase was created that contains GIS feature classes created from the ownership and vegetation editing process and from the Haines State Forest Management Plan (ADNR 2002). These feature classes were overlaid with each other and exported into additional feature classes to store and display information by a variety of attributes.

### *a. Ownership Feature Class*

The "HSFRMA_Ownership" feature class contains owner/land manager records by acreage within the Haines State Forest Resource Management Area.

*b. NO TIMBER ALLOWED FEATURE CLASS*

The "NoHarvestUnits" feature class contains those management units designated within the Haines State Forest Management Plan as areas where timber harvest is prohibited to protect other resource values of interest.

*c. VEGETATION FEATURE CLASSES*

The "HainesVegPolys" feature class includes an all owner seamless vegetation cover across the entire Haines State Forest Resource Management Area and beyond. The associated feature class attribute table includes fields that describe operability, vegetation, site, strata and acreage.

The "HainesVegPolys_Ownership" feature class includes vegetation cover clipped to the Haines State Forest Resource Management Area. This feature class also includes an owner field which was produced by a union operation in ArcGIS with the "HSFRMA_Ownership" feature class. The result was the production of vegetation polygons split up by the owner/land manager.

The "HSFVegPolys" feature class is like the first vegetation feature class but only includes vegetation for the Haines State Forest owner/land manager. This layer is used in the online web application.

The "HSFVegPolys_Timber_Allowed" feature class was produced by a union of the "HSFVegPolys" and "No Timber Harvest" feature classes. This produces vegetation polygons that are split up by whether timber harvest is or is not allowed under the Haines State Forest Resource Management Plan. The status field contains this information.

*d. VEGETATION FEATURE CLASS ATTRIBUTES*

The five attribute fields describing vegetation polygons (operability, vegetation, site, strata, acreage) enable various analyses of the inventory data. The operability field contains codes that describe whether the commercial timber vegetation polygons can be harvested with conventional logging equipment. Inoperable timber is designated for areas where harvesting of timber could cause irreversible damage to soils, site productivity and watersheds or where use of conventional logging systems is not physically or economically possible. Inoperable timber is assigned a code of "I". An operable code of "O" is used to describe timber that can be harvested by means of standard cable systems or by ground skidding operations. An operable code of "H" is used to describe timbered vegetation that can be harvested with conventional helicopter logging systems.

The attribute table field vegetation contains codes that describe polygon vegetation. A standardized vegetation key/mapping scheme was used for describing vegetation polygons (Table 3).

| LAND COVER KEY | |
|---|---|
| SPECIES CODES | |
| S Sitka Spruce | AL Sitka Alder |
| H Western/Mountain Hemlock | CW Cottonwood |
| HW Hardwood | C Harvested (followed by year, e.g. C77) |
| LP Lodgepole Pine | |
| | |
| DESCRIPTORS (Forests - Tree Size Class) | |
| 1 Seedling/Sapling | < 5.0 inches DBH |
| 2 Poletimber | 5.0 inches to 8.9 inches DBH |
| 3 Young Growth Sawtimber | ≥ 9.0 inches DBH (<150 years) |
| 4 Old Growth Sawtimber | ≥ 9.0 inches DBH (>150 years) |
| | |
| PERCENT STOCKING | |
| 1 10% | 6 60% |
| 2 20% | 7 70% |
| 3 30% | 8 80% |
| 4 40% | 9 90% |
| 5 50% | |
| | |
| OTHER CODES | |
| W Water | C Harvested (followed by year, e.g. C77) |
| SW Swamp or Wetland | NS Non Stocked |
| NF Non Forested | NC Non Commercial |
| | |
| S46H33 = Spruce old growth(4) 60% stocked(6) / Hemlock young growth(3) 30% stocked(3) | |

**TABLE 4, LAND COVER KEY.**

The attribute table field site contains descriptors that characterize the vegetation polygons in terms of productivity. The site codes that describe the commercial timber polygons have been divided into 5 strata that contain the volume per acre data described below in the Results section (Table 5).

# IV. RESULTS

## A. DATA SUMMARY

Upon completion of the field work, volume attributes were calculated through SuperACE for the individual sampled stands. These stands were then grouped into strata and re-processed. Field data from some sampled stands were similar enough to each other to allow combining of different stand timber types into like strata. For example, timber within the low and very low site designations were combined into one low stratum (stratum 3). The inventory contains seven separate strata (Table 1) including 5 volume strata for which estimates of gross and net volume per acre have been calculated. Total inventory volume was calculated by multiplying the average per acre volume figures for each stratum by the number of acres each sample stratum represents. SuperACE results were imported into Microsoft Access and output reports compiled that display numerous stand attributes from the associated database tables and queries.

| Stratum | Strata Description | Acres | % of Area | GBF/AC | NBF/AC |
|---|---|---|---|---|---|
| | | | | | |
| **1** | Conifer High Site | 15,944 | 21% | 39,457 | 37,616 |
| **2** | Conifer Medium Site | 24,484 | 33% | 26,833 | 25,798 |
| **3** | Conifer Low Site | 21,089 | 28% | 13,936 | 13,762 |
| **4** | Cottonwood | 2,134 | 3% | 18,464 | 14,820 |
| **5** | Second Growth | 10,830 | 15% | 5,850 | 5,754 |
| | | 74,481 | 100% | | |

**TABLE 5. VOLUME PER ACRE BY STRATA.**

## B. CRUISE RESULTS BY SORT AND GRADE

SuperACE summaries for each stratum are shown in the appendix. Sorts used are common descriptors used to evaluate timber quality in southeast Alaska (Table 6). Grades used are standard rules utilized in the Pacific Northwest and Alaska (Northwest Log Rules Advisory Group 1995). The utility sort and grade are given for logs that do not meet the minimum requirements of Peeler or Sawmill grades. Table 7 contains strata volume data summarized by sawmill and utility grades.

| LOG SORT KEY | |
|---|---|
| DO Domestic | Minimum Top Diameter – 6” |
| | Veneer or Sawlog Quality |
| | # 4 Sawlog and better |
| | Maximum Defect 35% |
| | |
| J Japan | Minimum Top Diameter – 17” |
| | Round Clean #2 and Better Quality |
| | Reasonably Straight With No Hooked Butt or Sap |
| | Maximum Defect 25% |
| | |
| K Korea | Minimum Top Diameter – 12” |
| | # 3 Sawlog or Better, No Rough Tops |
| | Relatively Good Sawlog |
| | Maximum Deduction 35% |
| | |
| UT Utility | Minimum Top Diameter – 5” |
| | Does Not Fit into Domestic Sort Due to Quality or Size |
| | Minimum 50 % Net Utility Scale |

**TABLE 6. LOG SORT KEY.**

| Strata | Strata Description | Grade | GBF/AC | NBF/AC |
|---|---|---|---|---|
| | | | | |
| 1 | Conifer High Site | Sawmill | 37,087 | 35,420 |
| | | Utility | 2,370 | 2,196 |
| 2 | Conifer Medium Site | Sawmill | 24,477 | 23,631 |
| | | Utility | 2,356 | 2,167 |
| 3 | Conifer Low Site | Sawmill | 13,414 | 13,240 |
| | | Utility | 522 | 522 |
| 4 | Cottonwood* | Sawmill | 18,464 | 14,820 |
| | | Utility | -- | -- |
| 5 | Second Growth | Sawmill | 5,836 | 5,742 |
| | | Utility | 14 | 12 |
| | * Information by Sort and Grade Not Available | | | |

**TABLE 7. VOLUME PER ACRE BY STRATA AND GRADE GROUP.**

## C. Sampling Error

Sample error was calculated for net board foot, net cubic foot and basal area by strata and combined. The sample error percent is given within one standard deviation of the mean. This means that there is a 68% chance (one standard deviation) that the individual inventory components were within plus or minus the error percentage indicated. An overall net board foot/acre sample error of 10.5% was calculated for all plots combined.

| | | Board Foot | | Cubic Foot | | Basal Area | |
|---|---|---|---|---|---|---|---|
| **Strata** | Acres | Net BF/Ac | % Sampling Error | Net CF/Ac | % Sampling Error | Basal Area/Ac | % Sampling Error |
| **1** | 15,944 | 37,616 | 23.0 | 7,429 | 22.7 | 212 | 25.0 |
| **2** | 24,484 | 25,798 | 13.8 | 5,693 | 13.8 | 200 | 13.9 |
| **3** | 21,089 | 13,762 | 16.0 | 3,343 | 13.8 | 203 | 9.6 |
| **4** | 2,134 | 14,820 | 11.7 | 3,012 | 9.6 | 115 | 7.5 |
| **5** | 10,830 | 5,754 | 6.2 | 1,451 | 5.6 | 105 | 4.2 |
| **Combined** | **74,481** | **21,691** | **10.5** | **4,706** | **10.1** | **187** | **8.9** |

**TABLE 8. PERCENT SAMPLING ERROR.**

## D. Annual Allowable Cut Analysis

DOF is required to manage the harvest of state timber on a sustained yield basis. "Sustained Yield" means the "achievement and maintenance in perpetuity of an annual or regular periodic output of the various renewable resources of the State land consistent with multiple use" (AS 38.04.910). The Division defines "regular periodic output" as the yearly average output over a ten-year period. This is done to allow for market fluctuations and changes in operational and economic considerations. In developing the Annual Allowable Cut (AAC), DOF assumed that most of the timber harvested in the region will be by the clear-cut method. Where this is not the case due to sale design objectives, it was assumed that the timber would eventually be removed over the rotation period.

### *a. Net Timber Base*

The Haines State Forest Management Plan classifies land to provide general management direction for specific uses. Forestry is one of several classifications including public recreation, resource management and wildlife habitat. The Haines State Forest Resource Management Area has been divided into management units to compartmentalize management intent across the forest. Based on the land classification, commercial timber harvest was prohibited in some

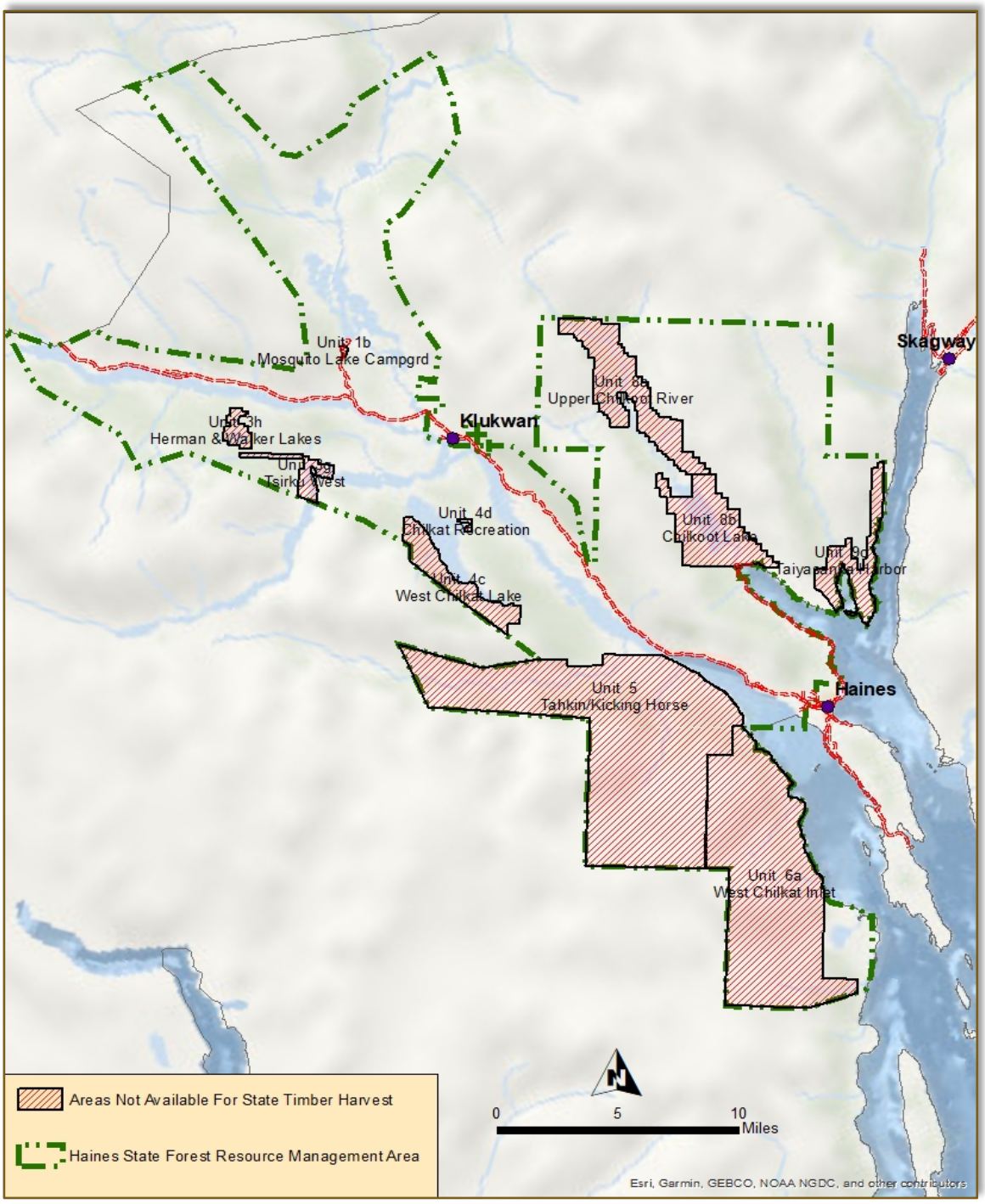


**FIGURE 2. AREAS REMOVED FROM TIMBER HARVEST.**

of the units (Figure 2). To calculate a net timber base, only polygons with a timber allowed status were selected from the "HSFVegPolys_Timber_Allowed" feature class with strata numbers one through five. This resulted in 51,842 acres available for harvest.

*b. AREA REGULATION*

The allowable cut calculation method that best utilizes existing information is the area regulation method. The area regulation method involves determining the forested acres available for harvest and dividing that number by the rotation period.

*c. ROTATION LENGTH*

The rotation period is the average time it takes to grow a commercial stand of trees. A 100-year rotation has been established for Southeast Alaska and was used in this calculation. Growth within the second growth stratum as described below has a culmination of mean annual increment of 100 years.

*d. PROJECTED GROWTH*

Second growth stands sampled were all older than 30 years and averaged 39 years in age and 5,754 net board feet per acre. These stands were harvested beginning in the late 1960s through the late 1980's in support of a medium sized sawmill operating in the community. This sawmill has since gone out of business and current harvest rates are much lower. Older than 30-year-old stands total 9,351 acres. From 1990 through present time (stands younger than 30 years) roughly 1,479 acres have been harvested. Timber available for harvest in strata 5 contains all second growth acres combined (10,419 acres).

The Forest Vegetation Simulator (FVS) was used to grow sampled stands in the second growth stratum additional years to reach the 100-year rotation age. This projected volume was then applied in the annual allowable cut analysis. FVS is a forest growth simulation model that simulates vegetation change in response to natural succession, disturbances and management. The simulator uses appropriate variants depending on the forest area location. Southeast Alaska timber is modeled under the Southeast Alaska and Coastal British Columbia variant (Keyser 2008). The FVS simulation utilized inputs produced from the inventory that included tree species, diameter, height, Sitka spruce site index and 10-year diameter growth. Site index calculations used Forest Service height growth curves for southeast Alaska (Farr 1984). Beginning volume estimates in the FVS were different than SuperACE because of a difference in the volume equations being applied to the data. Volume estimates were adjusted to align with SuperACE figures and then prorated beyond in the 10-year growth increments. Below in Table 9 are the results of the simulation. At the time the second growth stratum is approximately

100 years old its yield would be 29,000 board feet per acre and the merchantable volume would be concentrated in the 12 to 20-inch diameter class (Table 11).

| Year | Age | Trees/ Acre | Basal Area/ Acre | Average Height | Quadratic Mean Diameter | Net CF/ Acre | Net BF/ Acre | Net CF/ Acre Mean Annual Increment |
|---|---|---|---|---|---|---|---|---|
| 2018 | 39 | 545 | 111 | 74 | 6.2 | 1,451 | 5,754 | 37.02 |
| 2020 | 41 | 545 | 116 | 76 | 6.4 | 1,571 | 6,231 | 38.14 |
| 2030 | 51 | 542 | 150 | 87 | 7.2 | 2,338 | 9,422 | 45.68 |
| 2040 | 61 | 533 | 179 | 97 | 8.0 | 3,184 | 13,099 | 52.04 |
| 2050 | 71 | 517 | 203 | 105 | 8.6 | 4,098 | 17,194 | 57.57 |
| 2060 | 81 | 496 | 223 | 112 | 9.2 | 4,968 | 21,309 | 61.19 |
| 2070 | 91 | 818 | 240 | 118 | 8.5 | 5,823 | 25,406 | 63.85 |
| **2080** | **101** | **751** | **256** | **124** | **9.1** | **6,539** | **29,000** | **64.62** |
| 2090 | 111 | 821 | 275 | 128 | 8.7 | 7,144 | 32,203 | 64.25 |
| 2100 | 121 | 753 | 285 | 132 | 9.2 | 7,594 | 34,698 | 62.66 |
| 2110 | 131 | 674 | 292 | 135 | 9.8 | 7,941 | 36,770 | 60.53 |
| 2120 | 141 | 605 | 294 | 138 | 10.3 | 8,302 | 38,873 | 58.80 |

**TABLE 9. STRATA 5 GROWTH SIMULATION.**

| Strata | Year | Species | DBH Class | Trees/Acre | BA/Acre | Adj Net Bd Ft |
|---|---|---|---|---|---|---|
| Second Gr. | 2018 | All | 04 | 391.05 | 18.25 | 0 |
| Second Gr. | 2018 | All | 08 | 94.03 | 29.96 | 318 |
| Second Gr. | 2018 | All | 12 | 41.14 | 30.25 | 1,875 |
| Second Gr. | 2018 | All | 16 | 14.51 | 19.07 | 1,713 |
| Second Gr. | 2018 | All | 20 | 2.8 | 5.8 | 648 |
| Second Gr. | 2018 | All | 24 | 0.54 | 1.64 | 199 |
| Second Gr. | 2018 | All | 28 | 0.27 | 1.2 | 178 |
| Second Gr. | 2018 | All | 32 | 0.27 | 1.56 | 242 |
| Second Gr. | 2018 | All | 36 | 0.09 | 0.68 | 127 |
| Second Gr. | 2018 | All | 40 | 0.05 | 0.36 | 70 |
| Second Gr. | 2018 | All | 44 | 0.18 | 1.93 | 384 |
| Second Gr. | | | | 545 | | 5,754 |

**TABLE 10. STRATA 5 STAND TABLE SIMULATION YEAR 2018.**

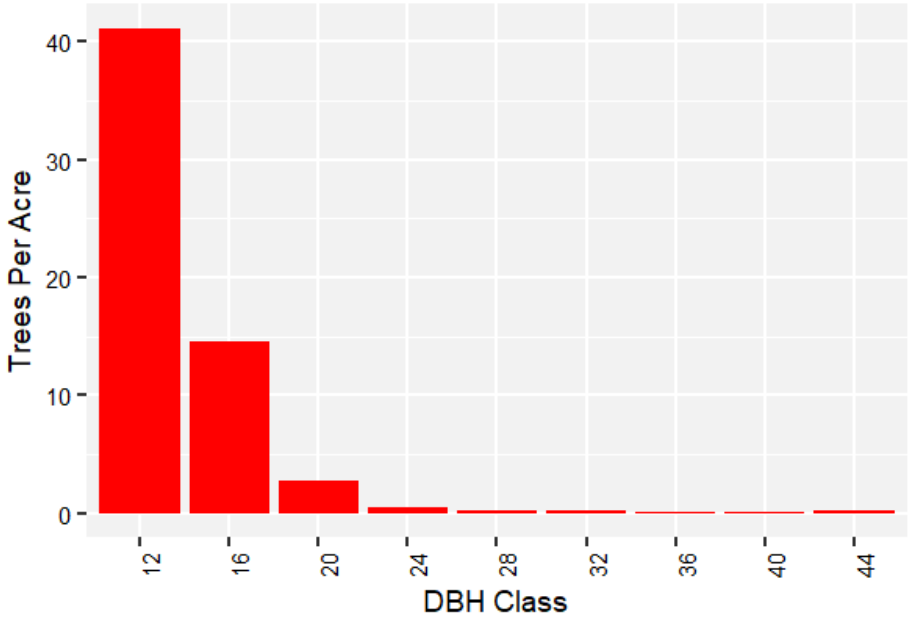


**FIGURE 3. STRATA 5 DBH CLASS 12 AND GREATER START OF SIMULATION 2018.**

| Strata | Year | Species | DBH Class | Trees/Acre | BA/Acre | Adj Net Bd Ft |
|---|---|---|---|---|---|---|
| Second Gr. | 2080 | All | 04 | 502.86 | 33.19 | 0 |
| Second Gr. | 2080 | All | 08 | 122.09 | 38.63 | 731 |
| Second Gr. | 2080 | All | 12 | 60.39 | 46.95 | 4,699 |
| Second Gr. | 2080 | All | 16 | 33.35 | 46.06 | 6,324 |
| Second Gr. | 2080 | All | 20 | 18.71 | 40.27 | 6,936 |
| Second Gr. | 2080 | All | 24 | 9.02 | 27.83 | 5,363 |
| Second Gr. | 2080 | All | 28 | 3.02 | 12.37 | 2,587 |
| Second Gr. | 2080 | All | 32 | 0.67 | 3.67 | 769 |
| Second Gr. | 2080 | All | 36 | 0.4 | 2.84 | 625 |
| Second Gr. | 2080 | All | 40 | 0.17 | 1.49 | 340 |
| Second Gr. | 2080 | All | 44 | 0.04 | 0.44 | 105 |
| Second Gr. | 2080 | All | 48 | 0.17 | 2.17 | 491 |
| Second Gr. | 2080 | All | 50+ | 0.01 | 0.13 | 29 |
| | | | TOTALS | 751 | 256 | 29,000 |

**TABLE 11. STRATA 5 STAND TABLE SIMULATION YEAR 2080.**

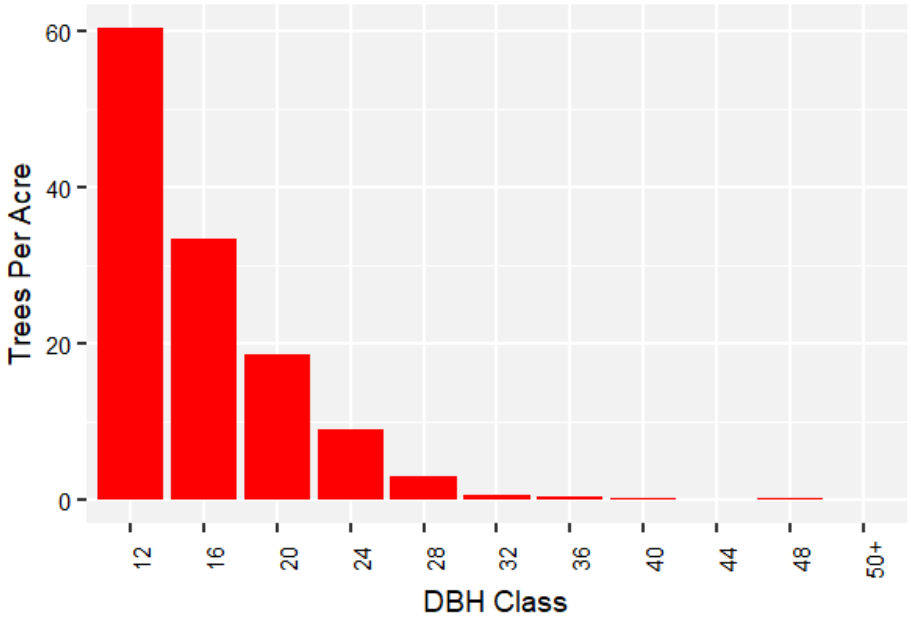


**FIGURE 4. STRATA 5 DBH CLASS 12 AND GREATER SIMULATION YEAR 2080.**

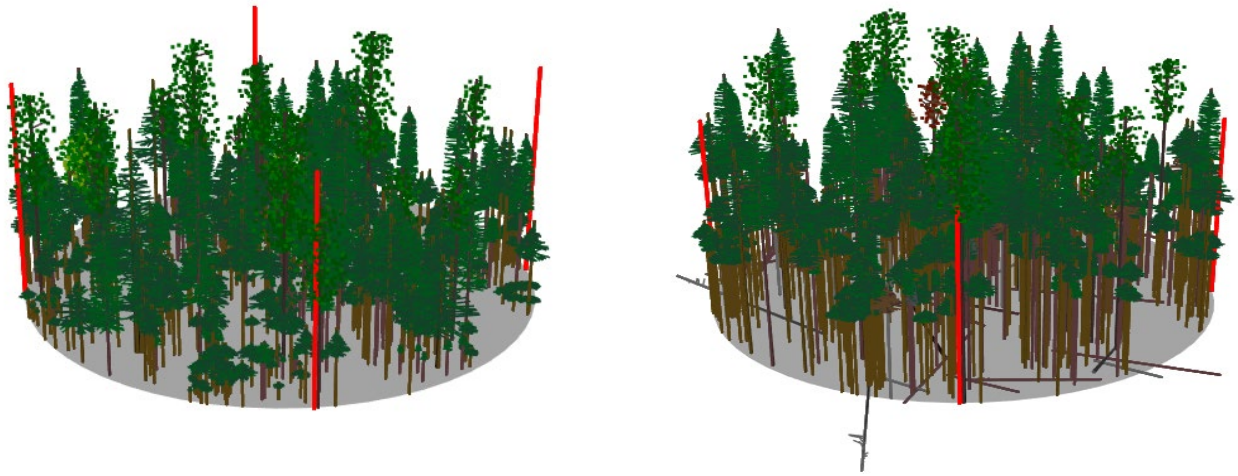

**FIGURE 5. STRATA 5 VISUAL GROWTH COMPARISONS 2018-2080.**

e. *COMMERCIAL OPERABILITY*

The commercial operability of a given area is based on a variety of factors that change over time such as market size and location, demand for various species, harvest methods, timber species and quality, harvesting technology, access and forest practices regulations. Due to the changing nature of commercial operability standards, the Annual Allowable Cut has been calculated with and without operability constraints to allow comparisons with past state forest planning efforts. To calculate a net available and operable timber base, only polygons with a timber allowed status were selected from the "HSFVegPolys_Timber_Allowed" feature class with strata numbers one through five and with an operability code of operable or helicopter. This resulted in 43,682 acres available for harvest.

*f. AAC CALCULATIONS*

Dividing the total estimated available forest land area by 100 results in an annual area of 518 acres available for harvest containing about 13 million board feet. Dividing the total estimated available and operable by ground, cable and helicopter forest land area by 100 results in an annual area of 437 acres available for harvest containing 11,791,441 board feet. As per the Haines State Forest Management Plan, acres available were reduced by 3 percent for habitat maintenance within the harvest units. This results in an annual area of 424 acres available for harvest containing about 11.44 million board feet. Variation in stand age classes will affect log size and merchantable quantities and qualities for specific uses over both AAC time periods.

| Strata | Strata Description | Acres | % of Total Acres | Net BF/Ac | Total Net Board Feet | % of Total Volume |
|---|---|---|---|---|---|---|
| **1** | Conifer High | 9,223 | 18% | 37,616 | 346,938,051 | 27% |
| **2** | Conifer Medium | 17,220 | 33% | 25,798 | 444,249,318 | 34% |
| **3** | Conifer Low | 14,025 | 27% | 13,762 | 193,018,451 | 15% |
| **4** | Cottonwood | 954 | 2% | 14,820 | 14,132,823 | 1% |
| **5** | Second Growth | 10,419 | 20% | 29,000 | 302,159,162 | 23% |
| | | 51,841 | 100% | 25,086 | 1,300,497,805 | 100% |
| | | | | | | |
| **Annual** | | | | | | |
| **Allowable** | | | | | | |
| **Cut** | | **518** | **Acres** | | **13,004,978** | **Net Board Feet** |

**TABLE 12. ANNUAL ALLOWABLE CUT CALCULATION AVAILABLE TIMBER**

| Strata | Strata Description | Acres | % of Total Acres | Net BF/Ac | Total Net Board Feet | % of Total Volume |
|---|---|---|---|---|---|---|
| 1 | Conifer High | 9,180 | 21% | 37,616 | 345,301,704 | 29% |
| 2 | Conifer Medium | 16,572 | 38% | 25,798 | 427,518,196 | 36% |
| 3 | Conifer Low | 6,767 | 15% | 13,762 | 93,124,736 | 8% |
| 4 | Cottonwood | 745 | 2% | 14,820 | 11,040,350 | 1% |
| 5 | Second Growth | 10,419 | 24% | 29,000 | 302,159,162 | 26% |
| | | 43,682 | 100% | 26,994 | 1,179,144,148 | 100% |
| | | | | | | |
| **Annual** | | | | | | |
| **Allowable** | | | | | | |
| **Cut** | | **437** | **Acres** | | **11,791,441** | **Net Board Feet** |
| | **Less 3% habitat maintenance** | **424** | | | **11,437,698** | |

**TABLE 13. ANNUAL ALLOWABLE CUT CALCULATION AVAILABLE AND OPERABLE TIMBER**

## V. LITERATURE CITED

Alaska DNR 2002. *Haines State Forest Management Plan.* State of Alaska DNR Division of Mining, Land and Water. Anchorage, Alaska.

Farr, W. 1984. *Site Index and Height Growth Curves for Unmanaged Even-aged Stands of Western Hemlock and Sitka Spruce in Southeast Alaska.* USFS Research Paper PNW-RP-326, U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. 26 p.

Keyser, C. 2008. *Southeast Alaska and Coastal British Columbia (AK) Variant Overview Forest Vegetation Simulator.* USFS Forest Management Service Center, Fort Collins, Colorado. 40 p.

Northwest Log Rules Advisory Group 1995 *Official Rules for the Puget Sound Log Scaling and Grading Bureau.* 48 p. plus appendices.

Phillips S., R. McMahon, J.P. Zeller. 1994 *Haines State Forest Resource Management Area Forest Inventory.* State of Alaska DNR Division of Forestry. 42p.

# Appendix A

## Species Sort and Grade Reports for Strata 1, 2, 3 and 5

## Strata 1 Species, Sort and Grade Summary

TC PSPCSTGR **Species, Sort Grade - Board Foot Volumes (Project)**

T26S R54E S36 Ty0001
THRU
T99S R99E S36 Ty0001

Project: HNSINVF
Acres 1,213.00

Page 1
Date 11/21/2019
Time 3:39:59PM

| Spp | S T | So rt | Gr ad | % Net BdFt | Bd. Ft. per Acre Def% | Gross | Net | Total Net MBF | Percent of Net Board Foot Volume: Log Scale Dia. 4-5 | 6-11 | 12-16 | 17+ | Log Length 12-20 | 21-30 | 31-35 | 36-99 | Average Log Ln Ft | Dia In | Bd Ft | CF/ Lf | Logs Per /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | | DO | 2S | 36 | 3.5 | 8,881 | 8,569 | 10,394 | | | 15 | 85 | | 4 | 96 | | 32 | 21 | 654 | 3.64 | 13.1 |
| SS | | DO | 3S | 24 | 1.4 | 5,842 | 5,761 | 6,988 | | 11 | 22 | 67 | 0 | 14 | 85 | 1 | 31 | 15 | 324 | 2.00 | 17.8 |
| SS | | DO | 4S | 7 | .9 | 1,764 | 1,747 | 2,119 | | 32 | 29 | 39 | 11 | 17 | 72 | 1 | 24 | 9 | 100 | 1.12 | 17.4 |
| SS | | J | SM | 2 | 5.9 | 427 | 402 | 487 | | | | 100 | | 100 | | | 30 | 26 | 870 | 4.88 | .5 |
| SS | | K | 1S | 1 | | 313 | 313 | 379 | | | | 100 | | | 100 | | 32 | 24 | 810 | 3.71 | .4 |
| SS | | K | 2S | 16 | 1.0 | 3,826 | 3,789 | 4,596 | | | 3 | 97 | | 17 | 83 | | 32 | 21 | 649 | 3.39 | 5.8 |
| SS | | K | 3S | 3 | | 748 | 748 | 908 | | | | 100 | | 5 | 95 | | 31 | 20 | 540 | 2.84 | 1.4 |
| SS | | K | SM | 3 | | 619 | 619 | 750 | | | | 100 | | 17 | 83 | | 31 | 22 | 670 | 3.97 | .9 |
| SS | | UT | 2S | 4 | 25.0 | 1,140 | 855 | 1,037 | | | | 100 | | | 100 | | 33 | 32 | 1140 | 6.94 | .8 |
| SS | | UT | 4S | | | 145 | 145 | 176 | | 28 | 72 | | 7 | 93 | | | 24 | 9 | 72 | 1.09 | 2.0 |
| SS | | UT | UT | 4 | 2.5 | 778 | 759 | 920 | | 3 | 8 | 90 | 42 | 10 | 28 | 20 | 24 | 19 | 385 | 2.96 | 2.0 |
| **SS** | **Totals** | | | 63 | 3.2 | 24,484 | 23,707 | 28,756 | | 5 | 14 | 80 | 2 | 12 | 85 | 1 | 29 | 16 | 382 | 2.49 | 62.0 |
| WH | | DO | 1S | 1 | 14.9 | 225 | 191 | 232 | | | | 100 | | | 100 | | 32 | 35 | 1490 | 8.16 | .1 |
| WH | | DO | 2S | 19 | 10.5 | 2,829 | 2,532 | 3,071 | | | 29 | 71 | 18 | 4 | 69 | 9 | 31 | 18 | 386 | 2.60 | 6.6 |
| WH | | DO | 3S | 23 | 3.8 | 3,269 | 3,145 | 3,815 | 0 | 14 | 30 | 55 | 4 | 21 | 74 | 1 | 29 | 12 | 201 | 1.50 | 15.6 |
| WH | | DO | 4S | 21 | 3.5 | 2,983 | 2,880 | 3,493 | 2 | 38 | 19 | 41 | 9 | 46 | 39 | 6 | 24 | 9 | 106 | 1.07 | 27.2 |
| WH | | J | 1S | 1 | | 201 | 201 | 244 | | | | 100 | 100 | | | | 20 | 25 | 570 | 3.84 | .4 |
| WH | | J | SM | 2 | | 264 | 264 | 321 | | | | 100 | | | 100 | | 32 | 23 | 750 | 3.58 | .4 |
| WH | | J | PE | 2 | 11.0 | 257 | 229 | 278 | | | | 100 | 100 | | | | 20 | 28 | 650 | 4.93 | .4 |
| WH | | K | 1S | 1 | 18.9 | 222 | 180 | 218 | | | | 100 | | | 100 | | 32 | 36 | 1500 | 8.58 | .1 |
| WH | | K | 2S | 4 | 6.7 | 476 | 444 | 539 | | | | 100 | | | 100 | | 32 | 18 | 420 | 2.68 | 1.1 |
| WH | | K | 3S | 5 | 4.6 | 810 | 773 | 937 | | | 53 | 47 | | | 100 | | 32 | 17 | 343 | 2.16 | 2.3 |
| WH | | K | SM | 1 | | 70 | 70 | 85 | | | | 100 | | | 100 | | 32 | 23 | 750 | 4.06 | .1 |
| WH | | UT | 2S | 5 | 17.2 | 770 | 637 | 773 | | | | 100 | | | 77 | 23 | 34 | 20 | 511 | 3.05 | 1.2 |
| WH | | UT | 3S | | 18.8 | 77 | 63 | 76 | | | 100 | | | | 100 | | 32 | 16 | 260 | 2.41 | .2 |
| WH | | UT | 4S | 4 | 2.8 | 531 | 516 | 626 | | 24 | 67 | 9 | 56 | | 5 | 39 | 28 | 10 | 112 | 1.08 | 4.6 |
| WH | | UT | UT | 11 | 9.7 | 1,592 | 1,437 | 1,743 | 0 | 14 | 20 | 66 | 0 | 5 | 62 | 32 | 32 | 13 | 272 | 1.91 | 5.3 |
| **WH** | **Totals** | | | 36 | 7.0 | 14,576 | 13,562 | 16,451 | 0 | 14 | 25 | 61 | 12 | 16 | 63 | 9 | 27 | 12 | 207 | 1.63 | 65.5 |
| CW | | DO | 2S | 100 | 12.9 | 398 | 347 | 421 | | | | 100 | | | 100 | | 32 | 27 | 910 | 6.42 | .4 |
| **CW** | **Totals** | | | 1 | 12.9 | 398 | 347 | 421 | | | | 100 | | | 100 | | 32 | 27 | 910 | 6.42 | .4 |
| **Totals** | | | | | 4.7 | 39,459 | 37,616 | 45,628 | 0 | 8 | 18 | 74 | 6 | 13 | 77 | 4 | 28 | 14 | 294 | 2.07 | 127.9 |

## Strata 2 Species, Sort and Grade Summary

TC PSPCSTGR **Species, Sort Grade - Board Foot Volumes (Project)**

T26S R56E S31 Ty0001
THRU
T30S R57E S13 Ty0001

**Project:** HNSINVF
**Acres** 1,872.00

**Page** 1
**Date** 11/21/2019
**Time** 3:45:26PM

| Spp | S T | So Gr rt ad | % Net BdFt | Bd. Ft. per Acre Def% | Gross | Net | Total Net MBF | Percent of Net Board Foot Volume: Log Scale Dia. 4-5 | 6-11 | 12-16 | 17+ | Log Length 12-20 | 21-30 | 31-35 | 36-99 | Average Log Ln Ft | Dia In | Bd Ft | CF/ Lf | Logs Per /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WH | | DO 2S | 23 | 5.2 | 4,309 | 4,084 | 7,645 | | | 47 | 53 | 9 | 6 | 81 | 3 | 31 | 16 | 286 | 1.97 | 14.3 |
| WH | | DO 3S | 31 | 4.7 | 5,533 | 5,272 | 9,870 | 0 | 36 | 39 | 25 | 3 | 25 | 66 | 7 | 31 | 11 | 139 | 1.10 | 38.0 |
| WH | | DO 4S | 15 | 1.8 | 2,551 | 2,504 | 4,687 | 0 | 71 | 24 | 5 | 12 | 20 | 60 | 7 | 26 | 8 | 67 | 0.74 | 37.6 |
| WH | | J 2S | 2 | | 409 | 409 | 765 | | | | 100 | | 34 | 66 | | 31 | 23 | 702 | 3.56 | .6 |
| WH | | J SM | 1 | 14.3 | 105 | 90 | 168 | | | | 100 | | | 52 | 48 | 36 | 27 | 1008 | 4.95 | .1 |
| WH | | K 2S | 6 | .2 | 1,069 | 1,067 | 1,998 | | | 24 | 76 | | 8 | 92 | | 32 | 17 | 369 | 2.16 | 2.9 |
| WH | | K 3S | 5 | 2.7 | 981 | 955 | 1,787 | | | 6 | 94 | | 70 | 30 | | 27 | 20 | 460 | 2.82 | 2.1 |
| WH | | K SM | 1 | | 100 | 100 | 188 | | | | 100 | | | 100 | | 32 | 18 | 400 | 2.28 | .3 |
| WH | | UT 3S | | | 4 | 4 | 8 | | | 100 | | | | 100 | | 32 | 13 | 190 | 1.25 | .0 |
| WH | | UT 4S | 3 | .9 | 552 | 547 | 1,024 | | 61 | 14 | 25 | 20 | 28 | 40 | 11 | 22 | 7 | 49 | 0.55 | 11.1 |
| WH | | UT UT | 13 | 8.3 | 2,288 | 2,099 | 3,929 | 0 | 18 | 24 | 58 | 23 | 12 | 41 | 25 | 27 | 11 | 168 | 1.64 | 12.5 |
| **WH** | **Totals** | | 66 | 4.3 | 17,901 | 17,131 | 32,069 | 0 | 26 | 32 | 42 | 8 | 19 | 65 | 8 | 28 | 11 | 143 | 1.20 | 119.4 |
| SS | | DO 2S | 40 | 2.5 | 3,418 | 3,334 | 6,241 | | | 8 | 92 | 2 | 1 | 97 | | 32 | 22 | 674 | 4.07 | 4.9 |
| SS | | DO 3S | 15 | 1.5 | 1,289 | 1,270 | 2,377 | | 22 | 34 | 44 | 6 | 14 | 80 | | 29 | 12 | 192 | 1.47 | 6.6 |
| SS | | DO 4S | 5 | .4 | 407 | 405 | 759 | | 81 | 19 | | 24 | 16 | 50 | 10 | 24 | 8 | 61 | 0.70 | 6.7 |
| SS | | J 2S | 8 | | 681 | 681 | 1,275 | | | | 100 | | 12 | 88 | | 31 | 24 | 859 | 4.53 | .8 |
| SS | | K 2S | 29 | 4.2 | 2,479 | 2,376 | 4,448 | | | 23 | 77 | 0 | 6 | 87 | 7 | 31 | 19 | 531 | 3.21 | 4.5 |
| SS | | K 3S | 1 | 3.2 | 116 | 112 | 209 | | | 54 | 46 | | 46 | 54 | | 30 | 15 | 232 | 1.55 | .5 |
| SS | | K SM | 1 | | 48 | 48 | 90 | | | | 100 | | | 100 | | 32 | 26 | 1000 | 4.46 | .0 |
| SS | | UT 4S | | | 14 | 14 | 26 | | 100 | | | 3 | 17 | | 79 | 32 | 7 | 50 | 0.51 | .3 |
| SS | | UT UT | 1 | | 58 | 58 | 109 | | 7 | | 93 | | 93 | | 7 | 26 | 16 | 249 | 1.99 | .2 |
| **SS** | **Totals** | | 32 | 2.5 | 8,510 | 8,298 | 15,533 | | 8 | 16 | 76 | 3 | 7 | 87 | 3 | 29 | 15 | 338 | 2.32 | 24.6 |
| BR | | DO 2S | 40 | | 46 | 46 | 87 | | | 100 | | 100 | | | | 16 | 13 | 90 | 1.31 | .5 |
| BR | | DO 3S | 28 | | 34 | 34 | 63 | | 100 | | | 100 | | | | 16 | 11 | 65 | 0.80 | .5 |
| BR | | DO 4S | 20 | | 23 | 23 | 44 | | 100 | | | 100 | | | | 16 | 9 | 45 | 0.59 | .5 |
| BR | | UT 4S | 3 | 50.0 | 5 | 3 | 5 | | 100 | | | 100 | | | | 12 | 7 | 10 | 0.41 | .3 |
| BR | | UT UT | 9 | | 10 | 10 | 19 | | 100 | | | 100 | | | | 12 | 11 | 40 | 0.86 | .3 |
| **BR** | **Totals** | | 0 | 2.2 | 119 | 116 | 218 | | 60 | 40 | | 100 | | | | 15 | 10 | 56 | 0.85 | 2.1 |
| CW | | DO 2S | 52 | 24.6 | 178 | 134 | 251 | | | | 100 | | | 100 | | 32 | 31 | 1070 | 6.16 | .1 |
| CW | | DO 3S | 38 | 6.2 | 102 | 95 | 179 | | | | 100 | | | 100 | | 32 | 24 | 760 | 4.19 | .1 |
| CW | | DO 4S | 10 | | 24 | 24 | 45 | | | 100 | | | | 100 | | 32 | 13 | 190 | 2.03 | .1 |
| **CW** | **Totals** | | 1 | 16.5 | 304 | 254 | 475 | | | 9 | 91 | | | 100 | | 32 | 23 | 673 | 4.13 | .4 |
| **Totals** | | | | 3.9 | 26,833 | 25,799 | 48,295 | 0 | 20 | 27 | 54 | 7 | 15 | 72 | 6 | 28 | 11 | 176 | 1.40 | 146.4 |

## Strata 3 Species, Sort and Grade Summary

TC PSPCSTGR **Species, Sort Grade - Board Foot Volumes (Project)**

T27S R55E S11 Ty0001
THRU
T30S R59E S22 Ty0002

Project: HNSINVF
Acres 7,831.30

Page 1
Date 11/20/2019
Time 4:03:21PM

| Spp | S T | So rt | Gr ad | % Net BdFt | Bd. Ft. per Acre Def% | Gross | Net | Total Net MBF | Percent of Net Board Foot Volume: Log Scale Dia. 4-5 | 6-11 | 12-16 | 17+ | Log Length 12-20 | 21-30 | 31-35 | 36-99 | Average Log: Ln Ft | Dia In | Bd Ft | CF/ Lf | Logs Per /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WH | | DO | 2M | 17 | .9 | 913 | 905 | 7,086 | | | 67 | 33 | 43 | 49 | 9 | | 21 | 14 | 177 | 1.75 | 5.1 |
| WH | | DO | 3M | 34 | 2.0 | 1,744 | 1,709 | 13,380 | | 58 | 31 | 11 | 48 | 11 | 39 | 2 | 23 | 11 | 98 | 1.02 | 17.4 |
| WH | | DO | 4M | 20 | 2.9 | 1,068 | 1,037 | 8,124 | | 100 | | | 73 | 27 | | | 20 | 7 | 28 | 0.49 | 36.6 |
| WH | | KO | 3M | 3 | | 165 | 165 | 1,295 | | | 100 | | | | 100 | | 32 | 14 | 230 | 1.52 | .7 |
| WH | | KO | P | 5 | .0 | 256 | 256 | 2,004 | | | | 100 | | | 100 | | 33 | 25 | 950 | 4.33 | .3 |
| WH | | U | 3M | 2 | | 80 | 80 | 628 | | 100 | | | | | 100 | | 33 | 8 | 70 | 0.79 | 1.1 |
| WH | | U | 4M | 10 | 4.4 | 570 | 545 | 4,266 | 11 | 83 | 6 | | 42 | 24 | 35 | | 19 | 6 | 22 | 0.48 | 24.5 |
| WH | | U | U | 9 | 11.0 | 470 | 418 | 3,273 | | 42 | 35 | 23 | 49 | 11 | 40 | | 19 | 8 | 56 | 0.93 | 7.5 |
| **WH** | **Totals** | | | 37 | 2.9 | 5,265 | 5,115 | 40,057 | 1 | 53 | 29 | 16 | 47 | 21 | 31 | 1 | 21 | 8 | 55 | 0.74 | 93.3 |
| SS | | DO | 2M | 13 | 1.4 | 1,216 | 1,200 | 9,395 | | | 22 | 78 | 10 | 13 | 76 | | 28 | 18 | 420 | 3.07 | 2.9 |
| SS | | DO | 3M | 42 | .8 | 3,609 | 3,580 | 28,037 | | 37 | 28 | 35 | 3 | 36 | 56 | 5 | 29 | 12 | 183 | 1.39 | 19.6 |
| SS | | DO | 4M | 21 | 2.9 | 1,891 | 1,836 | 14,382 | | 70 | 21 | 9 | 5 | 43 | 43 | 8 | 27 | 8 | 64 | 0.78 | 28.7 |
| SS | | KO | 2M | 5 | | 396 | 396 | 3,103 | | | 58 | 42 | | 100 | | | 29 | 14 | 217 | 1.39 | 1.8 |
| SS | | KO | 3M | 16 | | 1,413 | 1,413 | 11,066 | | | 36 | 64 | | 100 | | | 27 | 17 | 339 | 2.29 | 4.2 |
| SS | | U | 4M | 1 | .0 | 118 | 118 | 927 | | 49 | | 51 | 67 | 33 | | | 21 | 8 | 51 | 0.60 | 2.3 |
| SS | | U | U | 2 | | 104 | 104 | 818 | | 100 | | | | | 70 | 30 | 34 | 8 | 80 | 1.28 | 1.3 |
| **SS** | **Totals** | | | 63 | 1.1 | 8,748 | 8,648 | 67,728 | | 32 | 28 | 40 | 4 | 47 | 44 | 4 | 28 | 11 | 142 | 1.22 | 60.8 |
| **Totals** | | | | | 1.8 | 14,014 | 13,763 | 107,784 | 0 | 40 | 28 | 31 | 20 | 38 | 39 | 3 | 23 | 9 | 89 | 0.96 | 154.1 |

## Strata 5 Species, Sort and Grade Summary

TC PSPCSTGR **Species, Sort Grade - Board Foot Volumes (Project)**

T26S R54E S01 Ty0001
THRU
T29S R55E S02 Ty0001

**Project:** 2018_RJ
**Acres** 6,460.00

**Page** 1
**Date** 12/9/2019
**Time** 2:02:08PM

| Spp | S T | So Gr rt ad | % Net BdFt | Bd. Ft. per Acre Def% | Gross | Net | Total Net MBF | Percent of Net Board Foot Volume: Log Scale Dia. 4-5 | 6-11 | 12-16 | 17+ | Log Length 12-20 | 21-30 | 31-35 | 36-99 | Average Log: Ln Ft | Dia In | Bd Ft | CF/ Lf | Logs Per /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | | DO 2S | 1 | | 43 | 43 | 279 | | 10 | 90 | | 12 | 64 | 24 | | 25 | 14 | 186 | 1.53 | .2 |
| SS | | DO 3S | 20 | .3 | 555 | 553 | 3,575 | | 48 | 43 | 9 | 8 | 27 | 21 | 44 | 31 | 10 | 130 | 0.91 | 4.3 |
| SS | | DO 4S | 79 | .6 | 2,187 | 2,175 | 14,051 | | 80 | 17 | 2 | 9 | 25 | 13 | 53 | 28 | 8 | 65 | 0.62 | 33.6 |
| **SS** | **Totals** | | 48 | .5 | 2,786 | 2,772 | 17,906 | | 73 | 24 | 3 | 9 | 26 | 15 | 50 | 28 | 8 | 73 | 0.66 | 38.1 |
| WH | | DO 3S | 11 | 3.2 | 98 | 95 | 612 | | 88 | 12 | | 12 | 25 | 23 | 40 | 31 | 9 | 89 | 0.70 | 1.1 |
| WH | | DO 4S | 87 | 2.4 | 732 | 715 | 4,617 | | 99 | 1 | | 14 | 37 | 23 | 27 | 27 | 6 | 40 | 0.41 | 18.1 |
| WH | | PU 4S | | 11.1 | 3 | 2 | 16 | | 100 | | | 50 | | 50 | | 26 | 7 | 40 | 0.73 | .1 |
| WH | | PU U | 2 | 17.3 | 12 | 10 | 65 | | 100 | | | 55 | 27 | 17 | | 21 | 7 | 31 | 0.49 | .3 |
| **WH** | **Totals** | | 14 | 2.7 | 845 | 822 | 5,310 | | 98 | 2 | | 14 | 35 | 23 | 28 | 27 | 7 | 42 | 0.43 | 19.5 |
| CW | | DO 2S | 4 | 2.1 | 91 | 89 | 574 | | | 73 | 27 | 17 | 5 | | 77 | 31 | 15 | 267 | 1.57 | .3 |
| CW | | DO 3S | 23 | 1.9 | 468 | 459 | 2,965 | | 41 | 54 | 5 | 6 | 7 | | 87 | 35 | 10 | 146 | 0.90 | 3.1 |
| CW | | DO 4S | 73 | 2.3 | 1,490 | 1,456 | 9,403 | | 84 | 14 | 2 | 9 | 15 | 8 | 69 | 30 | 7 | 69 | 0.54 | 21.2 |
| **CW** | **Totals** | | 35 | 2.2 | 2,048 | 2,003 | 12,941 | | 71 | 26 | 4 | 9 | 13 | 6 | 73 | 31 | 8 | 81 | 0.61 | 24.7 |
| OH | | DO 3S | 1 | | 2 | 2 | 13 | | 100 | | | | | 100 | | 31 | 6 | 40 | 0.71 | .0 |
| OH | | DO 4S | 98 | 8.3 | 167 | 153 | 987 | | 97 | 3 | | 29 | 36 | 20 | 14 | 25 | 7 | 43 | 0.48 | 3.6 |
| OH | | PU U | 1 | | 2 | 2 | 10 | | 100 | | | 100 | | | | 16 | 8 | 30 | 0.40 | .1 |
| **OH** | **Totals** | | 3 | 8.1 | 170 | 156 | 1,010 | | 97 | 3 | | 29 | 36 | 21 | 14 | 25 | 7 | 43 | 0.48 | 3.7 |
| **Totals** | | | | 1.6 | 5,849 | 5,753 | 37,167 | | 76 | 21 | 3 | 10 | 23 | 13 | 54 | 29 | 8 | 67 | 0.59 | 86.0 |

# Appendix B
## STAND TABLES STRATA 1-3

## Strata 1 Stand Table

TC PSTNDSUM — **Stand Table Summary** — Page 1 — Date: 4/21/2020

T26S R54E S36 Ty0001
THRU
T99S R99E S36 Ty0001

Project HNSINVF — Acres 1,213.00 — Time: 5:12:22PM — Grown Year:

| S Spc T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 11 | 2 | 87 | 69 | .104 | .07 | .10 | 14.3 | 50.0 | .04 | 1 | 5 | 47 | 18 | 6 |
| SS | 13 | 1 | 88 | 96 | .745 | .67 | 1.49 | 14.1 | 65.0 | .55 | 21 | 97 | 664 | 255 | 118 |
| SS | 14 | 2 | 86 | 70 | .076 | .08 | .10 | 17.3 | 34.7 | .04 | 2 | 3 | 54 | 21 | 4 |
| SS | 15 | 4 | 85 | 51 | .387 | .49 | .26 | 19.0 | 70.0 | .13 | 5 | 18 | 156 | 60 | 22 |
| SS | 16 | 2 | 85 | 66 | 1.259 | 1.67 | 1.02 | 18.0 | 75.0 | .47 | 18 | 76 | 576 | 222 | 92 |
| SS | 17 | 3 | 89 | 111 | .706 | 1.09 | 1.89 | 22.2 | 92.0 | 1.09 | 42 | 173 | 1,323 | 509 | 210 |
| SS | 18 | 3 | 89 | 107 | .494 | .85 | 1.43 | 24.8 | 108.7 | .92 | 35 | 156 | 1,119 | 431 | 189 |
| SS | 19 | 3 | 88 | 104 | .457 | .86 | .97 | 29.0 | 112.4 | .73 | 28 | 109 | 884 | 340 | 132 |
| SS | 20 | 9 | 87 | 108 | .896 | 1.95 | 1.99 | 29.6 | 141.4 | 1.53 | 59 | 282 | 1,862 | 716 | 342 |
| SS | 21 | 3 | 87 | 90 | .614 | 1.46 | 1.23 | 38.3 | 149.7 | 1.22 | 47 | 184 | 1,486 | 571 | 223 |
| SS | 22 | 4 | 89 | 112 | 1.402 | 3.60 | 1.91 | 33.2 | 166.6 | 1.65 | 63 | 318 | 1,998 | 769 | 386 |
| SS | 23 | 9 | 87 | 128 | 1.099 | 3.11 | 3.06 | 38.0 | 174.5 | 3.03 | 117 | 535 | 3,675 | 1,414 | 649 |
| SS | 24 | 5 | 89 | 112 | .426 | 1.32 | 1.23 | 46.4 | 219.7 | 1.48 | 57 | 270 | 1,795 | 690 | 327 |
| SS | 25 | 6 | 92 | 119 | 2.179 | 7.51 | 6.74 | 45.7 | 234.1 | 8.01 | 308 | 1,578 | 9,719 | 3,738 | 1,914 |
| SS | 26 | 7 | 88 | 101 | .365 | 1.34 | .99 | 46.6 | 222.1 | 1.20 | 46 | 220 | 1,457 | 561 | 267 |
| SS | 27 | 3 | 88 | 116 | 1.212 | 4.94 | 3.64 | 57.3 | 299.5 | 5.41 | 208 | 1,089 | 6,568 | 2,526 | 1,321 |
| SS | 28 | 3 | 91 | 148 | .636 | 2.66 | 2.28 | 54.6 | 294.7 | 3.24 | 125 | 673 | 3,935 | 1,514 | 816 |
| SS | 29 | 7 | 89 | 148 | 1.321 | 6.04 | 5.01 | 58.4 | 330.3 | 7.60 | 292 | 1,654 | 9,223 | 3,547 | 2,006 |
| SS | 30 | 1 | 89 | 117 | .052 | .25 | .21 | 61.2 | 337.5 | .33 | 13 | 70 | 403 | 155 | 86 |
| SS | 31 | 1 | 88 | 110 | .127 | .67 | .25 | 99.7 | 510.0 | .66 | 25 | 130 | 799 | 307 | 157 |
| SS | 32 | 5 | 88 | 148 | 1.369 | 7.69 | 5.63 | 70.2 | 387.3 | 10.28 | 395 | 2,181 | 12,474 | 4,797 | 2,646 |
| SS | 33 | 2 | 88 | 123 | .166 | .98 | .56 | 83.7 | 444.9 | 1.22 | 47 | 248 | 1,475 | 567 | 301 |
| SS | 34 | 3 | 88 | 147 | .440 | 2.81 | 1.66 | 89.8 | 502.0 | 3.87 | 149 | 832 | 4,695 | 1,806 | 1,009 |
| SS | 35 | 4 | 90 | 143 | .872 | 5.75 | 2.72 | 88.4 | 498.1 | 6.25 | 240 | 1,354 | 7,581 | 2,916 | 1,643 |
| SS | 37 | 3 | 86 | 141 | .587 | 4.27 | 2.07 | 102.0 | 547.2 | 5.47 | 211 | 1,130 | 6,641 | 2,554 | 1,371 |
| SS | 38 | 1 | 86 | 132 | .231 | 1.85 | .69 | 115.2 | 576.7 | 2.07 | 80 | 399 | 2,516 | 968 | 484 |
| SS | 39 | 4 | 90 | 137 | .628 | 5.28 | 1.88 | 109.2 | 602.0 | 5.35 | 206 | 1,133 | 6,489 | 2,495 | 1,375 |
| SS | 40 | 4 | 86 | 158 | .656 | 5.75 | 2.30 | 103.0 | 583.8 | 6.16 | 237 | 1,341 | 7,467 | 2,872 | 1,627 |
| SS | 41 | 2 | 89 | 168 | .474 | 4.42 | 1.90 | 128.5 | 774.0 | 6.33 | 244 | 1,467 | 7,680 | 2,954 | 1,779 |
| SS | 42 | 2 | 90 | 161 | .298 | 2.88 | .21 | 119.6 | 693.3 | .66 | 25 | 147 | 803 | 309 | 179 |
| SS | 43 | 1 | 90 | 141 | .067 | .67 | .27 | 148.0 | 772.5 | 1.03 | 40 | 207 | 1,251 | 481 | 251 |
| SS | 45 | 1 | 90 | 136 | .201 | 2.21 | .60 | 178.3 | 990.0 | 2.79 | 107 | 597 | 3,389 | 1,304 | 724 |
| SS | 46 | 3 | 86 | 159 | .438 | 5.08 | 1.95 | 132.2 | 758.6 | 6.69 | 257 | 1,477 | 8,120 | 3,123 | 1,792 |
| SS | 48 | 2 | 89 | 159 | .930 | 11.52 | 2.97 | 149.3 | 779.4 | 11.52 | 443 | 2,314 | 13,977 | 5,375 | 2,807 |
| SS | 54 | 1 | 82 | 142 | .139 | 2.21 | .42 | 238.5 | 1176.7 | 2.58 | 99 | 490 | 3,134 | 1,206 | 595 |
| SS | 56 | 1 | 91 | 188 | .130 | 2.21 | .39 | 312.2 | 1920.0 | 3.16 | 121 | 747 | 3,829 | 1,473 | 906 |
| SS | Totals | 117 | 88 | 124 | 22.185 | 106.21 | 62.01 | 71.2 | 382.3 | 114.81 | 4,416 | 23,707 | 139,263 | 53,562 | 28,756 |
| WH | 10 | 1 | 87 | 53 | 2.819 | 1.57 | 2.82 | 8.3 | 30.0 | .75 | 23 | 85 | 908 | 284 | 103 |
| WH | 11 | 1 | 63 | 59 | .093 | .06 | .09 | 8.9 | 20.0 | .03 | 1 | 2 | 32 | 10 | 2 |
| WH | 12 | 2 | 91 | 84 | .705 | .55 | 1.06 | 12.2 | 53.3 | .41 | 13 | 56 | 502 | 157 | 68 |
| WH | 13 | 7 | 89 | 68 | 4.207 | 3.72 | 4.82 | 14.6 | 48.6 | 2.27 | 71 | 234 | 2,748 | 855 | 284 |
| WH | 14 | 1 | 90 | 71 | .052 | .05 | .05 | 22.4 | 60.0 | .04 | 1 | 3 | 45 | 14 | 4 |
| WH | 15 | 2 | 88 | 95 | 1.387 | 1.60 | 3.70 | 12.9 | 54.4 | 1.53 | 48 | 201 | 1,854 | 579 | 244 |
| WH | 16 | 4 | 91 | 84 | 1.151 | 1.66 | 1.76 | 23.4 | 96.0 | 1.32 | 41 | 169 | 1,599 | 500 | 205 |
| WH | 17 | 7 | 92 | 97 | 2.617 | 4.16 | 6.69 | 20.8 | 89.4 | 4.44 | 139 | 598 | 5,391 | 1,685 | 725 |
| WH | 19 | 5 | 92 | 94 | .915 | 1.73 | 2.32 | 25.9 | 113.9 | 1.93 | 60 | 265 | 2,336 | 730 | 321 |
| WH | 20 | 3 | 90 | 93 | 1.979 | 4.29 | 2.85 | 31.9 | 114.8 | 2.90 | 91 | 327 | 3,520 | 1,100 | 396 |
| WH | 21 | 3 | 92 | 111 | 1.019 | 2.39 | 1.82 | 42.2 | 218.2 | 2.46 | 77 | 396 | 2,980 | 931 | 481 |
| WH | 22 | 4 | 91 | 110 | 1.905 | 4.99 | 4.16 | 34.2 | 159.4 | 4.55 | 142 | 662 | 5,524 | 1,726 | 804 |
| WH | 23 | 5 | 89 | 78 | 1.907 | 5.40 | 1.70 | 44.2 | 189.8 | 2.41 | 75 | 323 | 2,921 | 913 | 392 |
| WH | 24 | 7 | 91 | 97 | 2.439 | 7.74 | 4.83 | 36.9 | 167.7 | 5.71 | 179 | 810 | 6,930 | 2,165 | 983 |
| WH | 25 | 3 | 92 | 110 | .798 | 2.65 | 1.15 | 36.6 | 165.9 | 1.36 | 42 | 191 | 1,645 | 510 | 232 |
| WH | 26 | 1 | 93 | 135 | .623 | 2.21 | 1.87 | 43.0 | 210.0 | 2.57 | 80 | 392 | 3,119 | 975 | 476 |

## Strata 1 Stand Table Continued

TC PSTNDSUM **Stand Table Summary** Page 2
Date: 4/21/2020

T26S R54E S36 Ty0001
THRU
T99S R99E S36 Ty0001

Project HNSINVF
Acres 1,213.00

Time: 5:12:22PM
Grown Year:

| Spc | S T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WH | | 27 | 2 | 85 | 123 | 1.103 | 4.34 | 3.31 | 46.6 | 202.8 | 4.93 | 154 | 671 | 5,983 | 1,870 | 814 |
| WH | | 28 | 5 | 90 | 116 | 1.638 | 7.02 | 3.40 | 61.1 | 237.3 | 6.65 | 208 | 807 | 8,071 | 2,521 | 978 |
| WH | | 29 | 2 | 84 | 127 | .844 | 3.84 | 1.69 | 44.6 | 200.0 | 2.41 | 75 | 337 | 2,918 | 912 | 409 |
| WH | | 30 | 5 | 93 | 116 | 1.822 | 9.00 | 5.19 | 65.1 | 372.4 | 10.81 | 338 | 1,931 | 13,114 | 4,098 | 2,343 |
| WH | | 31 | 3 | 90 | 114 | .440 | 2.31 | 1.13 | 79.8 | 378.9 | 2.89 | 90 | 429 | 3,509 | 1,096 | 521 |
| WH | | 32 | 1 | 93 | 114 | .242 | 1.33 | .48 | 105.0 | 500.0 | 1.63 | 51 | 242 | 1,971 | 616 | 293 |
| WH | | 33 | 2 | 93 | 120 | .576 | 3.43 | 1.41 | 69.4 | 410.0 | 3.13 | 98 | 578 | 3,795 | 1,186 | 701 |
| WH | | 34 | 1 | 82 | 99 | .750 | 4.67 | 1.50 | 107.0 | 400.0 | 5.14 | 161 | 600 | 6,231 | 1,947 | 728 |
| WH | | 35 | 1 | 91 | 143 | .352 | 2.38 | .70 | 97.3 | 470.0 | 2.24 | 69 | 331 | 2,718 | 832 | 402 |
| WH | | 36 | 1 | 86 | 138 | .093 | .67 | .19 | 131.4 | 625.0 | .79 | 25 | 117 | 953 | 298 | 142 |
| WH | | 37 | 2 | 84 | 131 | .931 | 6.81 | 2.61 | 103.4 | 497.4 | 8.65 | 270 | 1,299 | 10,487 | 3,277 | 1,576 |
| WH | | 38 | 1 | 92 | 123 | .167 | 1.33 | .50 | 122.2 | 603.3 | 1.95 | 61 | 301 | 2,370 | 741 | 366 |
| WH | | 41 | 1 | 94 | 159 | .352 | 3.26 | .70 | 98.8 | 520.0 | 2.23 | 70 | 367 | 2,703 | 845 | 445 |
| WH | | 42 | 1 | 93 | 116 | .135 | 1.33 | | | | | | | | | |
| WH | | 43 | 2 | 93 | 113 | .262 | 2.65 | .13 | 282.0 | 1230.0 | 1.16 | 36 | 159 | 1,410 | 441 | 193 |
| WH | | 44 | 1 | 93 | 127 | .128 | 1.33 | .39 | 166.9 | 756.7 | 2.06 | 64 | 292 | 2,495 | 780 | 354 |
| WH | | 45 | 1 | 93 | 126 | .120 | 1.33 | .36 | 177.3 | 943.3 | 2.04 | 64 | 340 | 2,478 | 774 | 412 |
| WH | | 46 | 1 | 93 | 123 | .116 | 1.33 | .12 | 161.0 | 400.0 | .60 | 19 | 46 | 726 | 226 | 56 |
| WH | | Totals | 89 | 90 | 97 | 34.686 | 103.12 | 65.49 | 44.8 | 207.1 | 93.97 | 2,935 | 13,562 | 113,988 | 35,596 | 16,451 |
| CW | | 46 | 1 | 82 | 127 | .191 | 2.21 | .38 | 205.5 | 910.0 | 1.92 | 78 | 347 | 2,328 | 950 | 421 |
| CW | | Totals | 1 | 82 | 127 | .191 | 2.21 | .38 | 205.5 | 910.0 | 1.92 | 78 | 347 | 2,328 | 950 | 421 |
| Totals | | | 207 | 89 | 107 | 57.061 | 211.54 | 127.88 | 58.1 | 294.1 | 210.70 | 7,429 | 37,616 | 255,579 | 90,108 | 45,628 |

## Strata 2 Stand Table

TC PSTNDSUM — **Stand Table Summary** — Page 1 — Date: 4/21/2020

T26S R56E S31 Ty0001 THRU T30S R57E S13 Ty0001 — Project HNSINVF — Acres 1,872.00 — Time: 5:15:07PM — Grown Year:

| Spc | S T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WH | | 2 | 1 | 98 | 17 | 12.536 | .39 | | | | | | | | | |
| WH | | 3 | 1 | 98 | 17 | 2.493 | .08 | | | | | | | | | |
| WH | | 4 | 2 | 48 | 22 | 19.097 | 1.67 | | | | | | | | | |
| WH | | 5 | 2 | 55 | 24 | 3.989 | .63 | | | | | | | | | |
| WH | | 6 | 1 | 92 | 57 | .178 | .04 | .18 | 2.0 | 10.0 | .01 | 0 | 2 | 21 | 7 | 3 |
| WH | | 7 | 8 | 75 | 35 | 13.661 | 3.46 | .56 | .7 | 3.2 | .01 | 0 | 2 | 25 | 8 | 3 |
| WH | | 8 | 4 | 86 | 51 | 6.014 | 1.93 | 2.04 | 3.4 | 18.1 | .22 | 7 | 37 | 413 | 129 | 69 |
| WH | | 9 | 3 | 86 | 53 | 4.167 | 1.69 | 1.66 | 6.2 | 28.9 | .33 | 10 | 48 | 612 | 191 | 90 |
| WH | | 10 | 2 | 90 | 72 | 1.660 | .95 | 1.66 | 11.1 | 41.1 | .59 | 18 | 68 | 1,107 | 346 | 128 |
| WH | | 11 | 15 | 82 | 57 | 2.244 | 1.54 | 2.71 | 10.4 | 34.9 | .90 | 28 | 94 | 1,689 | 528 | 177 |
| WH | | 12 | 22 | 87 | 63 | 3.622 | 2.88 | 4.95 | 12.0 | 43.3 | 1.90 | 60 | 214 | 3,565 | 1,114 | 401 |
| WH | | 13 | 32 | 88 | 74 | 4.267 | 3.95 | 5.06 | 16.3 | 65.3 | 2.65 | 83 | 331 | 4,952 | 1,547 | 619 |
| WH | | 14 | 29 | 86 | 77 | 5.661 | 6.04 | 9.08 | 15.7 | 60.6 | 4.55 | 142 | 550 | 8,521 | 2,663 | 1,029 |
| WH | | 15 | 28 | 86 | 77 | 4.896 | 5.90 | 7.98 | 18.1 | 66.8 | 4.62 | 144 | 533 | 8,646 | 2,702 | 999 |
| WH | | 16 | 27 | 87 | 74 | 4.674 | 6.62 | 6.20 | 22.0 | 77.0 | 4.35 | 136 | 477 | 8,148 | 2,546 | 894 |
| WH | | 17 | 24 | 84 | 81 | 4.835 | 7.56 | 8.25 | 22.5 | 82.2 | 5.94 | 186 | 678 | 11,120 | 3,476 | 1,269 |
| WH | | 18 | 16 | 89 | 91 | 3.631 | 6.39 | 5.26 | 28.9 | 116.5 | 4.87 | 152 | 613 | 9,123 | 2,851 | 1,147 |
| WH | | 19 | 16 | 88 | 83 | 3.919 | 7.58 | 7.47 | 25.8 | 100.2 | 6.16 | 192 | 748 | 11,525 | 3,601 | 1,401 |
| WH | | 20 | 16 | 88 | 89 | 3.069 | 6.70 | 6.05 | 33.1 | 130.7 | 6.40 | 200 | 790 | 11,986 | 3,746 | 1,479 |
| WH | | 21 | 13 | 89 | 97 | 2.841 | 6.88 | 6.49 | 36.2 | 153.3 | 7.52 | 235 | 994 | 14,083 | 4,400 | 1,862 |
| WH | | 22 | 13 | 88 | 98 | 2.142 | 5.69 | 4.74 | 40.2 | 179.2 | 6.09 | 190 | 849 | 11,400 | 3,562 | 1,590 |
| WH | | 23 | 15 | 90 | 101 | 3.229 | 9.25 | 7.92 | 43.0 | 200.6 | 10.91 | 341 | 1,589 | 20,416 | 6,379 | 2,974 |
| WH | | 24 | 14 | 87 | 95 | 3.220 | 10.12 | 4.79 | 48.9 | 209.8 | 7.51 | 234 | 1,005 | 14,061 | 4,386 | 1,882 |
| WH | | 25 | 9 | 89 | 98 | 1.957 | 6.66 | 4.48 | 50.0 | 217.5 | 7.17 | 224 | 975 | 13,418 | 4,193 | 1,825 |
| WH | | 26 | 12 | 89 | 102 | 2.265 | 8.39 | 5.91 | 50.3 | 239.9 | 9.53 | 298 | 1,418 | 17,848 | 5,570 | 2,655 |
| WH | | 27 | 9 | 90 | 90 | 1.682 | 6.68 | 2.89 | 65.4 | 296.4 | 6.07 | 189 | 857 | 11,370 | 3,540 | 1,604 |
| WH | | 28 | 8 | 89 | 106 | 1.605 | 6.95 | 2.27 | 57.7 | 264.6 | 4.20 | 131 | 601 | 7,854 | 2,455 | 1,126 |
| WH | | 29 | 7 | 89 | 101 | .947 | 4.31 | 2.49 | 52.0 | 255.8 | 4.14 | 130 | 637 | 7,759 | 2,425 | 1,192 |
| WH | | 30 | 5 | 76 | 108 | .644 | 3.15 | 1.57 | 61.5 | 254.6 | 3.09 | 96 | 399 | 5,776 | 1,805 | 747 |
| WH | | 31 | 3 | 89 | 119 | .320 | 1.68 | .94 | 69.7 | 367.8 | 2.09 | 65 | 344 | 3,909 | 1,221 | 645 |
| WH | | 32 | 2 | 92 | 103 | .386 | 2.19 | .52 | 82.3 | 483.3 | 1.36 | 42 | 249 | 2,542 | 794 | 466 |
| WH | | 33 | 2 | 87 | 124 | .334 | 1.98 | 1.34 | 61.0 | 342.1 | 2.61 | 82 | 458 | 4,889 | 1,528 | 857 |
| WH | | 34 | 6 | 85 | 95 | .519 | 3.27 | .89 | 83.3 | 322.2 | 2.37 | 74 | 286 | 4,432 | 1,385 | 536 |
| WH | | 35 | 5 | 85 | 118 | .467 | 3.09 | 1.23 | 78.4 | 376.5 | 3.09 | 96 | 463 | 5,780 | 1,806 | 867 |
| WH | | 36 | 3 | 91 | 121 | .067 | .47 | .20 | 99.9 | 486.7 | .64 | 20 | 97 | 1,200 | 375 | 183 |
| WH | | 38 | 2 | 85 | 78 | .344 | 2.67 | .69 | 100.4 | 445.0 | 2.21 | 69 | 306 | 4,134 | 1,292 | 573 |
| WH | | 39 | 1 | 89 | 140 | .022 | .18 | .07 | 102.7 | 573.3 | .22 | 7 | 38 | 411 | 128 | 72 |
| WH | | 40 | 1 | 60 | 86 | .172 | 1.50 | .17 | 58.4 | 210.0 | .32 | 10 | 36 | 601 | 188 | 68 |
| WH | | 43 | 1 | 84 | 117 | .239 | 2.44 | .72 | 123.8 | 476.7 | 2.84 | 89 | 341 | 5,319 | 1,660 | 639 |
| WH | | 45 | 1 | 80 | 108 | .172 | 1.91 | | | | | | | | | |
| WH | | Totals | 381 | 80 | 58 | 128.186 | 155.43 | 119.41 | 33.3 | 143.5 | 127.49 | 3,982 | 17,131 | 238,654 | 74,547 | 32,069 |
| SS | | 8 | 2 | 63 | 34 | 1.980 | .68 | | | | | | | | | |
| SS | | 9 | 1 | 86 | 71 | 1.630 | .77 | | | | | | | | | |
| SS | | 12 | 1 | 89 | 111 | .185 | .14 | .37 | 13.4 | 60.0 | .13 | 5 | 22 | 241 | 93 | 42 |
| SS | | 13 | 1 | 92 | 99 | .048 | .05 | .10 | 17.7 | 85.0 | .04 | 2 | 8 | 83 | 32 | 15 |
| SS | | 14 | 2 | 81 | 79 | .148 | .15 | .30 | 13.2 | 43.0 | .10 | 4 | 13 | 190 | 73 | 24 |
| SS | | 16 | 3 | 86 | 110 | .556 | .77 | 1.11 | 24.0 | 98.3 | .69 | 27 | 109 | 1,298 | 499 | 205 |
| SS | | 17 | 3 | 89 | 102 | .437 | .68 | .70 | 22.7 | 94.7 | .41 | 16 | 66 | 774 | 298 | 124 |
| SS | | 18 | 3 | 87 | 106 | .296 | .52 | .70 | 23.8 | 104.8 | .43 | 17 | 73 | 812 | 312 | 137 |
| SS | | 19 | 3 | 89 | 125 | .767 | 1.55 | 2.30 | 26.7 | 126.8 | 1.60 | 61 | 292 | 2,988 | 1,149 | 546 |
| SS | | 20 | 5 | 88 | 117 | .533 | 1.19 | .99 | 31.1 | 134.6 | .80 | 31 | 133 | 1,494 | 575 | 249 |
| SS | | 21 | 2 | 87 | 87 | .110 | .26 | .24 | 29.0 | 100.6 | .18 | 7 | 24 | 332 | 128 | 44 |
| SS | | 22 | 4 | 87 | 122 | .618 | 1.64 | 1.85 | 38.7 | 172.0 | 1.86 | 72 | 319 | 3,489 | 1,342 | 597 |

## Strata 2 Stand Table Continued

TC PSTNDSUM — **Stand Table Summary** — Page 2 — Date: 4/21/2020

T26S R56E S31 Ty0001
THRU
T30S R57E S13 Ty0001

Project HNSINVF — Acres 1,872.00 — Time: 5:15:07PM — Grown Year:

| Spc | S T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | | 23 | 2 | 89 | 126 | .370 | 1.05 | .93 | 40.4 | 188.0 | .97 | 37 | 174 | 1,822 | 701 | 326 |
| SS | | 24 | 1 | 89 | 110 | .048 | .15 | .10 | 51.9 | 210.0 | .13 | 5 | 20 | 243 | 93 | 38 |
| SS | | 26 | 4 | 87 | 122 | .794 | 2.87 | 2.57 | 49.9 | 244.6 | 3.33 | 128 | 628 | 6,233 | 2,397 | 1,176 |
| SS | | 27 | 1 | 83 | 146 | .258 | 1.01 | .77 | 58.3 | 273.3 | 1.17 | 45 | 212 | 2,199 | 846 | 396 |
| SS | | 28 | 2 | 80 | 124 | .233 | 1.02 | .70 | 58.4 | 242.3 | 1.06 | 41 | 170 | 1,989 | 765 | 317 |
| SS | | 29 | 1 | 83 | 91 | .172 | .78 | .52 | 55.6 | 293.3 | .75 | 29 | 151 | 1,395 | 537 | 283 |
| SS | | 30 | 2 | 87 | 100 | .428 | 2.08 | 1.11 | 77.3 | 368.4 | 2.24 | 86 | 410 | 4,187 | 1,610 | 768 |
| SS | | 31 | 2 | 88 | 95 | .279 | 1.47 | .79 | 65.9 | 308.8 | 1.35 | 52 | 244 | 2,528 | 972 | 456 |
| SS | | 32 | 3 | 91 | 138 | .454 | 2.48 | 1.63 | 77.0 | 441.9 | 3.27 | 126 | 721 | 6,113 | 2,351 | 1,349 |
| SS | | 34 | 2 | 90 | 119 | .220 | 1.39 | .66 | 95.0 | 524.6 | 1.63 | 63 | 346 | 3,049 | 1,173 | 648 |
| SS | | 37 | 1 | 90 | 152 | .185 | 1.35 | .56 | 75.3 | 410.0 | 1.09 | 42 | 228 | 2,037 | 784 | 426 |
| SS | | 39 | 1 | 91 | 144 | .144 | 1.22 | .58 | 109.4 | 627.5 | 1.64 | 63 | 361 | 3,064 | 1,179 | 676 |
| SS | | 41 | 2 | 85 | 149 | .346 | 3.16 | 1.16 | 133.1 | 732.7 | 4.02 | 155 | 852 | 7,533 | 2,897 | 1,595 |
| SS | | 44 | 2 | 83 | 149 | .516 | 5.38 | 1.29 | 121.0 | 560.0 | 4.06 | 156 | 723 | 7,603 | 2,924 | 1,353 |
| SS | | 45 | 2 | 78 | 146 | .321 | 3.58 | 1.34 | 126.5 | 653.3 | 4.42 | 170 | 878 | 8,279 | 3,184 | 1,644 |
| SS | | 46 | 1 | 87 | 153 | .258 | 2.99 | 1.03 | 162.3 | 932.5 | 4.36 | 168 | 963 | 8,159 | 3,138 | 1,803 |
| SS | | 53 | 1 | 86 | 158 | .062 | .95 | .19 | 156.3 | 843.3 | .76 | 29 | 158 | 1,423 | 547 | 295 |
| SS | | Totals | 60 | 83 | 102 | 12.397 | 41.32 | 24.57 | 66.5 | 337.7 | 42.50 | 1,635 | 8,298 | 79,558 | 30,599 | 15,533 |
| CW | | 38 | 1 | 95 | 170 | .126 | 1.01 | .38 | 132.0 | 673.3 | 1.22 | 50 | 254 | 2,281 | 931 | 475 |
| CW | | Totals | 1 | 95 | 170 | .126 | 1.01 | .38 | 132.0 | 673.3 | 1.22 | 50 | 254 | 2,281 | 931 | 475 |
| BR | | 6 | 1 | 55 | 30 | 1.763 | .35 | | | | | | | | | |
| BR | | 14 | 1 | 80 | 64 | .258 | .28 | .26 | 10.4 | 40.0 | .09 | 3 | 10 | 160 | 50 | 19 |
| BR | | 15 | 1 | 80 | 79 | .258 | .31 | .52 | 11.1 | 50.0 | .18 | 6 | 26 | 344 | 108 | 48 |
| BR | | 17 | 1 | 80 | 77 | .258 | .41 | .52 | 14.8 | 70.0 | .24 | 8 | 36 | 457 | 143 | 68 |
| BR | | 18 | 1 | 80 | 82 | .258 | .45 | .77 | 12.7 | 56.7 | .31 | 10 | 44 | 590 | 184 | 82 |
| BR | | Totals | 5 | 64 | 47 | 2.796 | 1.80 | 2.07 | 12.5 | 56.3 | .83 | 26 | 116 | 1,551 | 485 | 218 |
| Totals | | | 447 | 80 | 61 | 143.504 | 199.56 | 146.43 | 38.9 | 176.2 | 172.03 | 5,692 | 25,799 | 322,043 | 106,561 | 48,295 |

## Strata 3 Stand Table

TC PSTNDSUM — **Stand Table Summary** — Page 1 — Date: 4/21/2020

T27S R55E S11 Ty0001 THRU T30S R59E S22 Ty0002 — Project HNSINVF — Acres 7,831.30 — Time: 5:32:09PM — Grown Year:

| Spc | S T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | | | 9 | | 1 | 112.418 | .10 | | | | | | | | | |
| SS | | 1 | 1 | | 1 | 9.993 | .05 | | | | | | | | | |
| SS | | 7 | 2 | 62 | 42 | 12.040 | 3.20 | | | | | | | | | |
| SS | | 8 | 1 | 87 | 81 | 4.363 | 1.60 | | | | | | | | | |
| SS | | 10 | 2 | 88 | 54 | 6.059 | 3.20 | | | | | | | | | |
| SS | | 11 | 1 | 89 | 106 | 2.469 | 1.60 | | | | | | | | | |
| SS | | 14 | 3 | 83 | 75 | 4.783 | 5.20 | 6.55 | 17.7 | 54.6 | 3.02 | 116 | 358 | 23,656 | 9,099 | 2,802 |
| SS | | 15 | 3 | 88 | 77 | 4.123 | 5.20 | 8.25 | 18.7 | 75.8 | 4.02 | 155 | 625 | 31,471 | 12,104 | 4,898 |
| SS | | 16 | 4 | 78 | 76 | 4.877 | 6.80 | 6.26 | 26.1 | 78.5 | 4.24 | 163 | 491 | 33,206 | 12,772 | 3,847 |
| SS | | 17 | 6 | 86 | 74 | 6.398 | 10.00 | 7.67 | 29.4 | 122.8 | 5.86 | 225 | 942 | 45,905 | 17,656 | 7,374 |
| SS | | 18 | 3 | 85 | 89 | 2.728 | 4.80 | 7.24 | 21.1 | 86.5 | 3.97 | 153 | 626 | 31,094 | 11,959 | 4,903 |
| SS | | 20 | 1 | 86 | 84 | .733 | 1.60 | 1.47 | 36.7 | 145.0 | 1.40 | 54 | 213 | 10,959 | 4,215 | 1,666 |
| SS | | 21 | 2 | 88 | 81 | 1.383 | 3.20 | 3.46 | 26.8 | 120.0 | 2.42 | 93 | 415 | 18,915 | 7,275 | 3,254 |
| SS | | 22 | 3 | 87 | 84 | 1.830 | 4.80 | 2.45 | 45.5 | 195.0 | 2.90 | 111 | 477 | 22,672 | 8,720 | 3,738 |
| SS | | 23 | 5 | 84 | 105 | 2.954 | 8.40 | 6.48 | 39.0 | 161.0 | 6.56 | 252 | 1,043 | 51,371 | 19,758 | 8,164 |
| SS | | 25 | 1 | 93 | 104 | .455 | 1.60 | .91 | 66.5 | 405.0 | 1.57 | 60 | 368 | 12,307 | 4,734 | 2,884 |
| SS | | 26 | 2 | 79 | 85 | .861 | 3.20 | 1.73 | 45.8 | 200.4 | 2.06 | 79 | 347 | 16,115 | 6,198 | 2,714 |
| SS | | 27 | 1 | 79 | 112 | .397 | 1.60 | 1.19 | 51.0 | 206.7 | 1.58 | 61 | 246 | 12,355 | 4,752 | 1,925 |
| SS | | 29 | 3 | 79 | 94 | 1.054 | 4.80 | 3.16 | 42.3 | 183.4 | 3.48 | 134 | 579 | 27,241 | 10,477 | 4,537 |
| SS | | 33 | 3 | 84 | 90 | .803 | 4.80 | .79 | 67.2 | 303.3 | 1.38 | 53 | 239 | 10,796 | 4,152 | 1,874 |
| SS | | 34 | 1 | 88 | 103 | .257 | 1.60 | .26 | 107.0 | 120.0 | .71 | 27 | 31 | 5,595 | 2,152 | 241 |
| SS | | 35 | 1 | 88 | 107 | .237 | 1.60 | .71 | 90.5 | 466.7 | 1.67 | 64 | 331 | 13,082 | 5,032 | 2,596 |
| SS | | 37 | 1 | 89 | 112 | .211 | 1.60 | .63 | 94.2 | 513.3 | 1.55 | 60 | 325 | 12,129 | 4,665 | 2,543 |
| SS | | 38 | 1 | 89 | 118 | .209 | 1.60 | .63 | 109.4 | 576.7 | 1.78 | 68 | 361 | 13,935 | 5,360 | 2,826 |
| SS | | 40 | 1 | 90 | 117 | .181 | 1.60 | .54 | 126.5 | 706.7 | 1.78 | 69 | 383 | 13,959 | 5,369 | 2,999 |
| SS | | 46 | 1 | 76 | 127 | .139 | 1.60 | .42 | 151.5 | 596.7 | 1.64 | 63 | 248 | 12,834 | 4,936 | 1,943 |
| SS | | Totals | 62 | 80 | 24 | 181.954 | 85.35 | 60.77 | 33.9 | 142.3 | 53.58 | 2,061 | 8,648 | 419,597 | 161,384 | 67,728 |
| WH | | | 26 | | 1 | 277.299 | .24 | | | | | | | | | |
| WH | | 2 | 1 | | 2 | 9.993 | .22 | | | | | | | | | |
| WH | | 3 | 1 | | 2 | 9.993 | .34 | | | | | | | | | |
| WH | | 7 | 2 | 72 | 28 | 11.806 | 3.20 | 5.82 | 2.4 | 10.0 | .45 | 14 | 58 | 3,532 | 1,104 | 456 |
| WH | | 8 | 2 | 77 | 43 | 9.284 | 3.20 | | | | | | | | | |
| WH | | 9 | 3 | 67 | 34 | 12.077 | 5.20 | 4.74 | 6.4 | 20.0 | .97 | 30 | 95 | 7,572 | 2,366 | 742 |
| WH | | 10 | 4 | 71 | 32 | 12.193 | 6.80 | 12.19 | 6.4 | 17.5 | 2.49 | 78 | 214 | 19,506 | 6,096 | 1,675 |
| WH | | 11 | 2 | 83 | 29 | 5.874 | 3.60 | 3.26 | 7.4 | 20.0 | .77 | 24 | 65 | 6,067 | 1,896 | 511 |
| WH | | 12 | 5 | 84 | 42 | 11.744 | 8.80 | 12.16 | 8.3 | 31.8 | 3.22 | 101 | 387 | 25,233 | 7,885 | 3,028 |
| WH | | 13 | 4 | 83 | 52 | 7.265 | 6.80 | 5.56 | 15.6 | 36.2 | 2.75 | 87 | 201 | 21,553 | 6,797 | 1,573 |
| WH | | 14 | 5 | 84 | 53 | 8.339 | 8.80 | 9.17 | 14.0 | 58.3 | 4.12 | 129 | 534 | 32,243 | 10,076 | 4,181 |
| WH | | 15 | 1 | 81 | 59 | 1.321 | 1.60 | 3.96 | 8.5 | 36.7 | 1.08 | 34 | 145 | 8,456 | 2,642 | 1,138 |
| WH | | 16 | 3 | 83 | 61 | 3.738 | 5.20 | 6.33 | 17.6 | 64.2 | 3.56 | 111 | 406 | 27,899 | 8,718 | 3,180 |
| WH | | 17 | 4 | 85 | 61 | 4.341 | 6.80 | 6.55 | 18.2 | 72.9 | 3.82 | 119 | 478 | 29,907 | 9,346 | 3,740 |
| WH | | 18 | 3 | 86 | 54 | 2.747 | 4.80 | 2.74 | 16.5 | 60.1 | 1.44 | 45 | 165 | 11,299 | 3,531 | 1,289 |
| WH | | 19 | 4 | 75 | 57 | 3.167 | 6.40 | 4.74 | 21.7 | 58.2 | 3.29 | 103 | 276 | 25,741 | 8,075 | 2,161 |
| WH | | 20 | 3 | 82 | 72 | 2.355 | 5.20 | 3.99 | 23.8 | 90.8 | 3.04 | 95 | 362 | 23,782 | 7,432 | 2,838 |
| WH | | 21 | 3 | 82 | 57 | 2.034 | 4.80 | 4.07 | 23.3 | 95.0 | 3.03 | 95 | 386 | 23,711 | 7,410 | 3,026 |
| WH | | 23 | 5 | 86 | 66 | 2.797 | 8.00 | 1.67 | 24.2 | 36.7 | 1.29 | 41 | 61 | 10,085 | 3,173 | 480 |
| WH | | 24 | 2 | 90 | 86 | 1.010 | 3.20 | 1.00 | 49.0 | 205.0 | 1.57 | 49 | 205 | 12,299 | 3,843 | 1,608 |
| WH | | 25 | 2 | 75 | 63 | .931 | 3.20 | 1.40 | 26.3 | 67.1 | 1.18 | 37 | 94 | 9,262 | 2,895 | 738 |
| WH | | 26 | 1 | 91 | 77 | .434 | 1.60 | .87 | 57.7 | 255.0 | 1.60 | 50 | 221 | 12,554 | 3,923 | 1,733 |
| WH | | 27 | 1 | 80 | 74 | .391 | 1.60 | 1.17 | 31.9 | 143.3 | 1.20 | 37 | 168 | 9,383 | 2,932 | 1,316 |
| WH | | 29 | 1 | 86 | 51 | .361 | 1.60 | | | | | | | | | |
| WH | | 30 | 1 | 86 | 81 | .333 | 1.60 | | | | | | | | | |
| WH | | 31 | 1 | 91 | 81 | .301 | 1.60 | | | | | | | | | |

## Strata 3 Stand Table Continued

TC PSTNDSUM **Stand Table Summary** Page 2
Date: 4/21/2020

T27S R55E S11 Ty0001
THRU
T30S R59E S22 Ty0002

Project HNSINVF
Acres 7,831.30

Time: 5:32:09PM
Grown Year:

| Spc | S T | DBH | Sample Trees | FF 16' | Tot Av Ht | Trees/ Acre | BA/ Acre | Logs Acre | Average Log Net Cu.Ft. | Average Log Net Bd.Ft. | Tons/ Acre | Net Cu.Ft. Acre | Net Bd.Ft. Acre | Totals Tons | Totals Cunits | Totals MBF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WH | | 33 | 2 | 93 | 97 | .539 | 3.20 | 1.08 | 79.2 | 380.0 | 2.73 | 85 | 409 | 21,371 | 6,679 | 3,207 |
| WH | | 34 | 1 | 76 | 78 | .254 | 1.60 | | | | | | | | | |
| WH | | 36 | 2 | 90 | 78 | .453 | 3.20 | .23 | 99.7 | 170.0 | .72 | 23 | 38 | 5,655 | 1,767 | 301 |
| WH | | 38 | 2 | 86 | 87 | .408 | 3.20 | .61 | 60.1 | 236.7 | 1.18 | 37 | 145 | 9,221 | 2,882 | 1,136 |
| WH | | 39 | 1 | 74 | 71 | .196 | 1.60 | | | | | | | | | |
| WH | | Totals | 98 | 78 | 13 | 403.978 | 117.20 | 93.31 | 15.3 | 54.8 | 45.50 | 1,423 | 5,115 | 356,330 | 111,468 | 40,057 |
| Totals | | | 160 | 79 | 16 | 585.931 | 202.55 | 154.09 | 22.6 | 89.3 | 99.08 | 3,484 | 13,763 | 775,927 | 272,852 | 107,784 |

# Appendix C
## Sitka Spruce and Western Hemlock Site Index

## SS Growth and Site Index by Strata

| | Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|---|
| **Strata 1 Conifer High** | | | | | **Acres** | **15,944** |
| | 19.8 | 102 | 127 | | | 86 |
| | 27.4 | 168 | 113 | | 0.5 | 65 |
| | 25.4 | 195 | 124 | | 0.45 | 71 |
| | 19.7 | 176 | 113 | | | 65 |
| | 24.8 | 194 | 115 | | 0.35 | 66 |
| | 29.4 | 174 | 124 | | | 71 |
| | 32.4 | 173 | 150 | | | 86 |
| | 25.0 | 169 | 103 | | 0.425 | 59 |
| | 23.0 | 245 | 114 | | | 65 |
| | 31.9 | 167 | 156 | | | 89 |
| | 29.3 | 204 | 140 | | | 80 |
| | 17.0 | 166 | 124 | | | 71 |
| Summary for strata = 1 (12 detail records) | | | | | | |
| **Avg** | 25.4 | 178 | 125 | | 0.43 | 73 |
| **Strata 2 Conifer Medium** | | | | | **Acres** | **24,484** |
| | 18.8 | 195 | 115 | | | 66 |
| | 28.9 | 238 | 91 | | 0.35 | 52 |
| | 14.2 | 102 | 93 | | | 62 |
| | 34.2 | 196 | 122 | | | 70 |
| | 31.7 | 189 | 145 | | | 83 |
| | 20.9 | 121 | 85 | | | 52 |
| | 22.4 | 191 | 135 | | | 77 |
| | 16.0 | 216 | 110 | | | 63 |
| | 29.8 | 244 | 131 | | | 75 |
| | 29.5 | 193 | 110 | | 0.45 | 63 |
| | 31.1 | 123 | 97 | | 0.625 | 60 |
| Summary for strata = 2 (11 detail records) | | | | | | |
| **Avg** | 25.2 | 183 | 112 | | 0.48 | 66 |
| **Strata 3 Conifer Low** | | | | | **Acres** | **21,089** |
| | 23.6 | 174 | 72 | | | 41 |
| | 26.2 | 448 | 67 | | 0.6 | 39 |
| | 22.8 | 210 | 95 | | 1.2 | 55 |
| | 17.0 | 190 | 81 | | 0.35 | 47 |
| | 28.8 | 187 | 114 | | 0.35 | 65 |
| | 15.3 | 217 | 84 | | 0.65 | 48 |

| | Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|---|
| | 10.9 | 86 | 106 | | 0.25 | 77 |
| Summary for strata = 3 (7 detail records) | | | | | | |
| **Avg** | 20.7 | 216 | 88 | | 0.57 | 53 |
| **Strata 5 Young Growth** | | | | | **Acres** | **10,830** |
| | 12.5 | 40 | 85 | 1.35 | 0.3 | 99 |
| | 20.2 | 38 | 88 | 1.3 | 0.5 | 106 |
| | 15.4 | 46 | 82 | 2 | 0.3 | 87 |
| | 13.7 | 36 | 92 | 1.45 | 0.3 | 114 |
| | 16.3 | 41 | 70 | 1.65 | 0.3 | 81 |
| | 11.0 | 39 | 75 | 1.1 | 0.3 | 90 |
| | 17.4 | 47 | 92 | 1.2 | 0.4 | 96 |
| | 12.5 | 35 | 69 | 1.3 | 0.3 | 90 |
| | 18.6 | 37 | 79 | 1.7 | 0.4 | 97 |
| | 9.3 | 29 | 55 | 1.2 | 0.3 | 84 |
| | 15.3 | 37 | 47 | 1.5 | 0.4 | 61 |
| | 16.2 | 38 | 65 | 1.2 | 0.3 | 80 |
| | 16.1 | 35 | 64 | 1.7 | 0.4 | 84 |
| | 14.5 | 30 | 64 | 1.55 | 0.3 | 93 |
| | 12.0 | 28 | 38 | 1.8 | 0.3 | 65 |
| | 10.0 | 24 | 40 | 2.15 | 0.4 | 75 |
| | 15.2 | 33 | 57 | 1.5 | 0.3 | 79 |
| | 15.8 | 32 | 67 | 2.3 | 0.4 | 93 |
| | 17.5 | 36 | 69 | 1.75 | 0.4 | 88 |
| | 15.4 | 33 | 51 | 1.95 | 0.2 | 72 |
| | 18.8 | 39 | 102 | 1.7 | 0.4 | 120 |
| | 10.6 | 38 | 64 | 1.35 | 0.2 | 79 |
| | 11.6 | 39 | 58 | 0.65 | 0.3 | 71 |
| | 9.0 | 38 | 55 | 1.25 | 0.4 | 69 |
| | 16.2 | 33 | 73 | 2.1 | 0.3 | 98 |
| | 13.1 | 29 | 55 | 2.8 | 0.3 | 84 |
| | 15.4 | 38 | 72 | 1.4 | 0.3 | 88 |
| | 15.7 | 38 | 66 | 1.7 | 0.3 | 81 |
| | 14.7 | 27 | 60 | 2.5 | 0.3 | 95 |
| | 15.8 | 36 | 81 | 2.15 | 0.3 | 102 |
| | 12.5 | 36 | 62 | 0.6 | 0.3 | 80 |
| | 12.6 | 36 | 74 | 1.05 | 0.3 | 94 |
| | 17.8 | 47 | 86 | 1.35 | 0.4 | 90 |
| | 15.2 | 38 | 69 | 1.15 | 0.4 | 84 |
| | 15.2 | 36 | 86 | 1.55 | 0.3 | 107 |
| | 20.6 | 46 | 82 | 0.9 | 0.6 | 87 |

| Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|
| 11.9 | 38 | 72 | 0.75 | 0.3 | 88 |
| 17.7 | 38 | 85 | 1.6 | 0.4 | 103 |
| 10.1 | 38 | 79 | 1.35 | 0.4 | 96 |
| 15.4 | 34 | 73 | 1.95 | 0.4 | 96 |
| 9.4 | 54 | 38 | 1.2 | 0.4 | 35 |
| 9.3 | 23 | 47 | 2.65 | 0.3 | 87 |
| 9.8 | 21 | 33 | 3.15 | 0.3 | 72 |
| 7.5 | 27 | 34 | 1.4 | 0.3 | 61 |
| 9.0 | 24 | 50 | 2 | 0.3 | 89 |
| 12.8 | 73 | 78 | 1.1 | 0.4 | 61 |
| 17.1 | 42 | 76 | 1.35 | 0.3 | 86 |
| 15.0 | 36 | 66 | 2.45 | 0.4 | 84 |
| 16.1 | 40 | 79 | 1.15 | 0.3 | 92 |
| 9.4 | 43 | 75 | 0.75 | 0.2 | 84 |
| 10.8 | 24 | 27 | 2.05 | 0.3 | 58 |
| 10.8 | 37 | 34 | 1.75 | 0.3 | 46 |
| 14.6 | 50 | 85 | 1.25 | 0.4 | 85 |
| 13.7 | 41 | 80 | 1.2 | 0.3 | 92 |
| 11.0 | 41 | 78 | 0.75 | 0.3 | 90 |
| 11.1 | 42 | 78 | 1.1 | 0.3 | 88 |
| 11.7 | 36 | 82 | 1.35 | 0.3 | 103 |
| 12.4 | 73 | 73 | 1.05 | 0.4 | 57 |
| 1.6 | 44 | 10 | 0.8 | 0.4 | 13 |
| 13.7 | 37 | 68 | 1.85 | 0.3 | 85 |
| 10.8 | 37 | 65 | 1.35 | 0.4 | 81 |
| 8.0 | 22 | 44 | 1.25 | 0.4 | 86 |
| 11.7 | 32 | 44 | 1.65 | 0.3 | 65 |
| 10.0 | 24 | 49 | 1.85 | 0.3 | 88 |
| 15.0 | 31 | 46 | 1.05 | 0.4 | 69 |
| 10.8 | 32 | 41 | 0.5 | 0.2 | 61 |
| 12.0 | 31 | 65 | 1.3 | 0.4 | 92 |
| 9.3 | 47 | 63 | 0.45 | 0.4 | 66 |
| 13.2 | 35 | 70 | 1.4 | 0.3 | 91 |
| 15.1 | 37 | 86 | 0.9 | 0.3 | 105 |
| 15.5 | 37 | 74 | 1.2 | 0.5 | 92 |
| 11.4 | 32 | 70 | 1.05 | 0.3 | 96 |
| 14.4 | 40 | 84 | 0.9 | 0.4 | 98 |
| 11.6 | 23 | 55 | 2.5 | 0.3 | 98 |
| 9.2 | 40 | 73 | 0.6 | 0.4 | 86 |
| 12.9 | 35 | 85 | 1.2 | 0.3 | 108 |

| Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|
| 21.7 | 32 | 74 | 2.6 | 0.5 | 101 |
| 11.4 | 42 | 84 | 1.55 | 0.3 | 95 |
| 10.5 | 47 | 50 | 1.05 | 0.4 | 53 |
| 9.1 | 30 | 63 | 1.2 | 0.3 | 92 |
| 10.3 | 31 | 75 | 2.05 | 0.3 | 105 |
| 12.1 | 32 | 67 | 1.6 | 0.3 | 93 |
| 11.8 | 28 | 60 | 1.8 | 0.3 | 93 |
| 19.3 | 33 | 76 | 1.5 | 0.4 | 102 |
| 13.1 | 33 | 68 | 1.6 | 0.3 | 92 |
| 10.2 | 34 | 68 | 0.8 | 0.4 | 90 |
| 11.0 | 47 | 72 | 1.1 | 0.4 | 75 |
| 9.4 | 33 | 67 | 1.2 | 0.4 | 91 |
| 9.4 | 35 | 61 | 1.15 | 0.3 | 80 |
| 10.7 | 26 | 66 | 1.2 | 0.5 | 105 |
| 14.1 | 39 | 75 | 1.1 | 0.4 | 90 |
| 11.0 | 34 | 58 | 1.15 | 0.4 | 78 |
| 20.2 | 37 | 79 | 1.75 | 0.4 | 97 |
| 12.0 | 30 | 52 | 1.25 | 0.3 | 78 |
| 10.3 | 41 | 73 | 1.05 | 0.5 | 84 |
| 14.5 | 44 | 88 | 0.85 | 0.4 | 96 |
| 12.0 | 34 | 78 | 1.2 | 0.4 | 102 |
| 15.8 | 38 | 82 | 1.9 | 0.3 | 99 |
| 20.1 | 140 | 96 | | | 57 |
| 25.6 | 122 | 105 | | 0.45 | 66 |
| 18.2 | 84 | 72 | | 0.425 | 52 |
| 23.0 | 213 | 106 | | | 61 |
| 24.8 | 187 | 124 | | | 71 |
| 12.6 | 33 | 70 | 1.1 | 0.3 | 94 |
| 18.4 | 42 | 97 | 1.5 | 0.4 | 109 |
| 11.0 | 37 | 77 | 0.75 | 0.3 | 95 |
| 17.9 | 42 | 81 | 1.1 | 0.4 | 91 |
| 13.4 | 35 | 71 | 1.7 | 0.3 | 92 |
| 10.7 | 31 | 69 | 1.85 | 0.3 | 97 |
| 10.7 | 34 | 58 | 1.5 | 0.2 | 78 |
| 9.4 | 34 | 55 | 1.05 | 0.3 | 75 |
| 16.7 | 34 | 78 | 2.3 | 0.3 | 102 |
| 11.0 | 43 | 54 | 0.8 | 0.3 | 61 |
| 12.1 | 44 | 70 | 1.15 | 0.3 | 77 |
| 11.6 | 39 | 55 | 1.25 | 0.3 | 67 |
| 12.2 | 35 | 69 | 1.6 | 0.5 | 90 |

| Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|
| 16.4 | 40 | 75 | 1.85 | 0.4 | 88 |
| 19.4 | 37 | 87 | 2.15 | 0.4 | 107 |
| 9.9 | 46 | 58 | 1.1 | 0.4 | 62 |
| 16.3 | 33 | 63 | 1.8 | 0.7 | 86 |
| 19.8 | 43 | 82 | 1.65 | 0.6 | 91 |
| 16.1 | 38 | 64 | 1.35 | 0.3 | 79 |
| 16.4 | 43 | 78 | 1.3 | 0.3 | 87 |
| 11.0 | 34 | 57 | 1.9 | 0.4 | 77 |
| 15.8 | 38 | 64 | 2.1 | 0.2 | 79 |
| 13.7 | 55 | 76 | 1.1 | 0.5 | 71 |
| 20.3 | 40 | 74 | 1.55 | 0.6 | 87 |
| 10.3 | 30 | 53 | 1.25 | 0.3 | 80 |
| 17.6 | 41 | 97 | 1.3 | 0.3 | 111 |
| 18.8 | 39 | 64 | 0.75 | 0.4 | 77 |
| 14.4 | 36 | 70 | 0.8 | 0.3 | 89 |
| 11.3 | 39 | 76 | 0.75 | 2 | 91 |
| 16.9 | 38 | 66 | 1.75 | 0.3 | 81 |
| 11.4 | 41 | 70 | 1 | 0.3 | 81 |
| 16.5 | 45 | 93 | 1.55 | 0.2 | 100 |
| 12.8 | 35 | 72 | 1.2 | 0.4 | 93 |
| 14.8 | 41 | 83 | 1.5 | 0.5 | 95 |
| 10.8 | 33 | 55 | 1.15 | 0.5 | 77 |
| 13.6 | 37 | 80 | 1.3 | 0.3 | 99 |
| 12.5 | 41 | 70 | 0.85 | 0.4 | 81 |
| 14.9 | 38 | 72 | 0.8 | 0.3 | 88 |
| 9.3 | 39 | 49 | 1.1 | 0.4 | 60 |
| 12.6 | 34 | 74 | 0.85 | 0.4 | 97 |
| 10.0 | 36 | 63 | 1.15 | 0.5 | 81 |
| 13.7 | 31 | 75 | 1.9 | 0.5 | 105 |
| 21.6 | 37 | 78 | 1.4 | 0.6 | 96 |
| 11.3 | 28 | 72 | 1.85 | 0.5 | 108 |
| 11.1 | 37 | 63 | 1.45 | 0.3 | 79 |
| 16.8 | 37 | 64 | 2.15 | 0.6 | 80 |
| 11.4 | 37 | 66 | 1 | 0.4 | 83 |
| 18.6 | 48 | 89 | 1.25 | 0.7 | 91 |
| 11.3 | 34 | 66 | 1.6 | 0.4 | 88 |
| 15.9 | 39 | 76 | 1.9 | 0.7 | 91 |
| 9.0 | 32 | 45 | 1.4 | 0.4 | 66 |
| 13.7 | 37 | 70 | 1.25 | 0.3 | 87 |
| 14.2 | 38 | 70 | 1 | 0.5 | 86 |
| Summary for strata = 5 (156 detail records) | | | | | |
| **Avg** 13.7 | 41 | 69 | 1.42 | 0.38 | 85 |
| **SS Avg** **15.4** | **64** | **76** | **1.42** | **0.39** | **82** |

## WH Growth and Site Index by Strata

| | Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|---|
| **Strata 1 Conifer High** | | | | | **Acres** | **15,944** |
| | 31.0 | 363 | 122 | | | 67 |
| | 22.5 | 177 | 118 | | | 65 |
| | 28.9 | 221 | 131 | | 0.6 | 72 |
| Summary for strata = 1 (3 detail records) | | | | | | |
| **Avg** | 27.5 | 254 | 124 | | 0.60 | 68 |
| **Strata 2 Conifer Medium** | | | | | **Acres** | **24,484** |
| | 23.8 | 546 | 67 | | | 36 |
| | 24.5 | 203 | 114 | | | 62 |
| | 24.0 | 203 | 118 | | | 65 |
| | 23.5 | 350 | 98 | | | 53 |
| | 12.8 | 299 | 67 | | | 36 |
| | 23.3 | 173 | 101 | | | 55 |
| | 24.8 | 199 | 116 | | | 63 |
| | 22.2 | 205 | 102 | | | 56 |
| | 17.8 | 402 | 106 | | | 58 |
| | 30.3 | 179 | 105 | | | 57 |
| | 25.9 | 218 | 126 | | | 69 |
| | 26.1 | 210 | 117 | | | 64 |
| | 19.9 | 307 | 98 | | | 53 |
| | 28.5 | 260 | 114 | | | 62 |
| | 24.8 | 234 | 109 | | 0.75 | 60 |
| | 22.8 | 177 | 111 | | 0.275 | 61 |
| | 18.3 | 195 | 97 | | | 53 |
| | 14.4 | 208 | 89 | | 0.45 | 48 |
| | 17.8 | 105 | 98 | | | 59 |
| Summary for strata = 2 (19 detail records) | | | | | | |
| **Avg** | 22.4 | 246 | 103 | | 0.49 | 56 |
| **Strata 3 Conifer Low** | | | | | **Acres** | **21,089** |
| | 17.3 | 378 | 50 | | 0.6 | 26 |
| Summary for strata = 3 (1 detail record) | | | | | | |
| **Avg** | 17.3 | 378 | 50 | | 0.60 | 26 |
| **Strata 5 Young Growth** | | | | | **Acres** | **10,830** |
| | 12.5 | 37 | 88 | 0.85 | 0.4 | 108 |
| | 9.6 | 43 | 72 | 1.5 | 0.4 | 80 |
| | 9.0 | 22 | 42 | 0.9 | 0.4 | 82 |

| Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|
| 14.0 | 40 | 73 | 1.2 | 0.2 | 86 |
| 10.0 | 34 | 44 | 1.15 | 0.4 | 62 |
| 12.9 | 40 | 71 | 1.2 | 0.4 | 84 |
| 11.8 | 44 | 71 | 1 | 0.4 | 78 |
| 14.8 | 34 | 58 | 1.05 | 0.4 | 78 |
| 15.6 | 39 | 67 | 1.55 | 0.6 | 81 |
| 11.8 | 35 | 63 | 1.4 | 0.3 | 82 |
| 14.0 | 38 | 80 | 0.6 | 0.4 | 97 |
| 9.9 | 35 | 56 | 1.75 | 0.4 | 74 |
| 8.2 | 29 | 52 | 1 | 0.4 | 80 |
| 12.4 | 43 | 61 | 1 | 0.3 | 69 |
| 9.9 | 27 | 55 | 2.2 | 0.3 | 88 |
| 11.0 | 28 | 42 | 2 | 0.4 | 69 |
| 12.7 | 31 | 53 | 1.85 | 0.4 | 79 |
| 10.2 | 36 | 46 | 0.9 | 0.4 | 61 |
| 10.5 | 41 | 51 | 1.35 | 0.4 | 60 |
| 12.6 | 34 | 68 | 1.05 | 0.3 | 90 |
| 17.0 | 94 | 95 | 0.7 | 0.2 | 62 |
| 16.4 | 45 | 79 | 1.05 | 0.2 | 85 |
| 9.1 | 27 | 42 | 1.5 | 0.4 | 71 |
| 15.0 | 34 | 58 | 1.75 | 0.4 | 78 |
| 12.2 | 36 | 55 | 1.15 | 0.4 | 72 |
| 27.2 | 82 | 92 | | | 65 |
| 28.7 | 264 | 108 | | | 59 |
| 22.2 | 205 | 94 | | | 51 |
| 25.2 | 198 | 106 | | | 58 |
| 14.9 | 56 | 78 | 0.75 | 0.4 | 72 |
| 11.0 | 34 | 59 | 0.8 | 0.3 | 79 |
| 10.5 | 38 | 71 | 0.85 | 0.4 | 87 |
| 10.3 | 30 | 57 | 1.3 | 0.3 | 84 |
| 9.2 | 41 | 68 | 0.65 | 0.5 | 79 |
| 10.0 | 36 | 60 | 0.9 | 0.4 | 77 |
| 15.3 | 36 | 73 | 1.75 | 0.5 | 92 |
| 12.3 | 39 | 63 | 0.85 | 0.3 | 76 |
| 16.3 | 42 | 63 | 1.2 | 0.4 | 72 |
| 14.5 | 88 | 86 | 0.85 | 0.4 | 57 |
| 7.4 | 33 | 58 | 1 | 0.3 | 80 |
| 7.5 | 31 | 49 | 1.4 | 0.4 | 74 |
| 13.3 | 42 | 68 | 1.4 | 0.5 | 77 |
| 12.9 | 48 | 62 | 0.85 | 0.4 | 64 |

| | Dbh | Age | Ht | 10 Yr. Radial Gr.(Inches) | Bark Thick. (Inches) | Site Index |
|---|---|---|---|---|---|---|
| | 12.8 | 58 | 53 | 0.65 | 0.5 | 46 |
| | 10.8 | 41 | 60 | 1.35 | 0.4 | 70 |
| | 14.8 | 30 | 60 | 1.95 | 0.3 | 88 |
| | 11.2 | 32 | 52 | 1.25 | 0.3 | 74 |
| | 13.7 | 45 | 86 | 0.7 | 0.2 | 92 |
| Summary for strata = | 5 (48 detail records) | | | | | |
| **Avg** | 13.2 | 52 | 66 | 1.18 | 0.37 | 76 |
| **WH Avg** | **16.3** | **117** | **78** | **1.18** | **0.39** | **69** |

# Appendix D
## Diameter and Height Relationships

## Ten Year Radial Growth and Bark Thickness by Species

| | | | Radial Growth (In.) | Single Bark Thickness (In.) |
|---|---|---|---|---|
| Birch | (2 detail records) | Average= | 1.05 | 0.35 |
| Cottonwood | (10 detail records) | Average= | 1.35 | 0.50 |
| Sitka spruce | (186 detail records) | Average= | 1.42 | 0.39 |
| Western Hemlock | (71 detail records) | Average= | 1.18 | 0.39 |

## Average DBH and Height by Species and Strata

| | Dbh | Ht |
|---|---|---|
| Stratum 1 | | |
| Cottonwood (1 detail record) | 46.1 | 127 |
| Sitka spruce (118 detail records) | 27.9 | 120 |
| Western hemlock (101 detail records) | 23.5 | 89 |
| Summary for 'stratum' = 1 (220 detail records) | | |
| Stratum Avg | 26.0 | 106 |
| Stratum 2 | | |
| Birch (4 detail records) | 16.0 | 76 |
| Cottonwood (1 detail record) | 38.4 | 170 |
| Sitka spruce (61 detail records) | 26.1 | 112 |
| Western hemlock (352 detail records) | 19.3 | 88 |
| Summary for 'stratum' = 2 (418 detail records) | | |
| Stratum Avg | 20.3 | 92 |
| Stratum 3 | | |
| Sitka spruce (49 detail records) | 22.4 | 88 |
| Species Western hemlock (64 detail records) | 20.0 | 59 |
| Summary for 'stratum' = 3 (113 detail records) | | |
| Stratum Avg | 21.0 | 72 |
| Stratum 5 | | |
| Birch (99 detail records) | 11.2 | 62 |
| Cottonwood (366 detail records) | 13.4 | 88 |
| Species Sitka spruce (732 detail records) | 12.8 | 67 |
| Species Western hemlock (466 detail records) | 11.9 | 62 |
| Summary for 'stratum' = 5 (1663 detail records) | | |
| Stratum Avg | 12.6 | 70 |
| Overall Average | 15.5 | 77 |

# Appendix E
## Summary of Puget Sound Grading Rules

| Species | Grade No. | Gross Diameter | Gross Length | Minimum Volume | Surface | Annual Ring Count | Slope of Grain |
|---|---|---|---|---|---|---|---|
| Western Hemlock | Peeler P | 24 Inches | 17 Feet | | | | < 3 inches/foot |
| Sitka Spruce / Western Hemlock | Special Mill SM | 16 Inches | 17 Feet | | Knots < 1.5 inches in diameter | 6 per Inch | 2-3 inches/foot |
| | 1 | 24 Inches | 12 Feet<br>17 Feet WH | | | 8 per Inch | < 3 inches/foot |
| | 2 | 12 Inches | 12 Feet | 60 BF Net | Knots < 2.5 inches in diameter | | |
| | 3 | 6 Inches | 12 Feet | 50 BF Net | Knots < 3 inches in diameter | | May include excessive slope with deduction |
| | 4 | 5 Inches | 12 Feet | 10 BF Net | | | |
| Birch | 1 | 16 Inches | 8 Feet | | 75% Clear | | |
| | 2 | 12 Inches | 8 Feet | | 50% Clear | | |
| | 3 | 10 Inches | 8 Feet | | | | |
| | 4 | 5 Inches | 8 Feet | 10 BF Net | | | |
| Balsam Poplar | 1 | 10 Inches | 8 Feet | | < 4 Knots per log | | |
| | 2 | 6 Inches | 8 Feet | | | | |
| | 4 | 5 Inches | 8 Feet | 10 BF Net | | | |
| All Species Utility Logs | UT | 4 Inches | 12 Feet | 10 BF Net | | | |
| Logs do not meet sawmill grades but are suitable for the production of firm usable chips to an amount not less than 50% of gross scale. A log that is burned or charred or is not mechanically barkable, shall not qualify as a Utility Log. | | | | | | | |