# The Forest Inventory and Analysis Database: Database Description and Users Guide Version 3.0

**Forest Inventory and Analysis Program**

**U.S. Department of Agriculture, Forest Service**

## Foreword

Forest Inventory and Analysis (FIA) is a continuing endeavor mandated by Congress in the Forest and Rangeland Renewable Resources Planning Act of 1974 and the McSweeney-McNary Forest Research Act of 1928. FIA's primary objective is to determine the extent, condition, volume, growth, and depletions of timber on the Nation's forest land. Before 1999, all inventories were conducted on a periodic basis. With the passage of the 1998 Farm Bill, FIA is required to collect data on 20 percent of the plots annually within each State. This kind of up-to-date information is essential to frame realistic forest policies and programs. USDA Forest Service regional research stations are responsible for conducting these inventories and publishing summary reports for individual States.

In addition to published reports, the Forest Service can also provide portions of the data collected in each inventory to those interested in further analysis. This report describes a standard format in which data can be obtained. This standard format, referred to as the Forest Inventory and Analysis Database (FIADB) structure, was developed to provide users with as much data as possible in a consistent manner among States. FIADB files can be obtained for any State inventory conducted after 1988 (Eastern U.S.) or 1994 (Western U.S.). Files for many State inventories conducted before this time may also be available; however, some data fields may be empty or the items may have been collected or computed differently. Annual inventories begun after 1998 use a common plot design and common data collection procedures nationwide, resulting in greater consistency among FIA units than earlier inventories. Data field definitions note inconsistencies caused by different sampling designs and processing methods.

As well, there has been an ongoing effort to develop a National Information Management System (NIMS) to process and store annual inventory data. Changes in the FIADB structure have allowed for data processing and storage with NIMS. Members of the team that developed NIMS, led by Charles Liff, are Carol L. Alerich, Larry L. Bednar, Gary J. Brand, Kurt Campbell, Laurie Klevgard, Kevin Nimerfro, Larry Royer, Mark E. Rubey, Geetha Sendhil, Ron Wanek, Charles Washington, Shirley Waters, and Sharon W. Woudenberg. Bryan L. Lanier and Richard Teck of the National Forest System were liaisons to the team.

## Acknowledgments

The material in this document is based on previous efforts to provide a uniform database for multiple FIA units (Hansen *et al*. 1992, Woudenberg and Farrenkopf 1995, Miles *et al.* 2001).

The following persons contributed to this document as editors and compilers: Carol L. Alerich (USDA Forest Service, Northeast Research Station), Laurie Klevgard (University of Nevada-Las Vegas), Charles Liff (USDA Forest Service, Rocky Mountain Research Station), Patrick D. Miles (USDA Forest Service, North Central Research Station), Barbara Knight (USDA Forest Service, formerly of the North Central Research Station), and Barbara L. Conkling (North Carolina State University). In addition, we thank William Bechtold (USDA Forest Service, Southern Research Station), Mark Hansen (USDA Forest Service, North Central Research Station), and other members of the Statistics band for their valuable assistance.

Chapter 1 -- The FIA Database ..... 5
Chapter 2 -- FIA Sampling and Estimation Procedures ..... 8
Remote Sensing ..... 8
Ground Sampling ..... 8
Accuracy Standards ..... 10
Chapter 3 -- Database Structure ..... 11
Table Descriptions ..... 11
Core Optional Variables ..... 13
Data Storage and Format ..... 14
Fuzzing and Swapping ..... 14
Regional Variables ..... 15
Survey Table (Oracle table name is SURVEY) ..... 16
County Table (Oracle table name is COUNTY) ..... 19
Plot Table (Oracle table name is PLOT) ..... 21
Subplot Table (Oracle table name is SUBPLOT) ..... 33
Condition Table (Oracle table name is COND) ..... 39
Subplot Condition Table (Oracle table name is SUBP_COND) ..... 70
Tree Table (Oracle table name is TREE) ..... 75
Seedling Table (Oracle table name is SEEDLING) ..... 108
Site Tree Table (Oracle table name is SITETREE) ..... 112
Boundary Table (Oracle table name is BOUNDARY) ..... 121
Population Evaluation Group Table (Oracle table name is POP_EVAL_GRP) ..... 125
Population Evaluation Table (Oracle table name is POP_EVAL) ..... 128
Population Estimation Unit Table (Oracle table name is POP_ESTN_UNIT) ..... 130
Population Stratum Table (Oracle table name is POP_STRATUM) ..... 133
Population Plot Stratum Assignment Table (Oracle table name is POP_PLOT_STRATUM_ASSGN) 136
Population Attribute Table (Oracle table name is POP_ATTRIBUTE) ..... 139
Population Evaluation Attribute Table (Oracle table name is POP_EVAL_ATTRIBUTE ..... 141
Chapter 4 – Calculating Population Estimates and Their Associated Sampling Errors ..... 143
Literature Cited ..... 160
Appendix A -- Index of Column Names ..... 161
Appendix B – Forest Inventory and Analysis (FIA) Design Codes and Definitions by Region ..... 173
Appendix C – State, Survey Unit, and County Codes ..... 182
Appendix D – Forest Type Codes And Names ..... 215
Appendix E—National Forest Codes And Names ..... 217
Appendix F – Tree Species Codes, Names, And Occurrences ..... 221
Appendix G—Tree Species Group Codes ..... 230

# Chapter 1 -- The FIA Database

This document describes a database that has a uniform data structure for FIA inventories nationwide. Its creation is part of an ongoing effort by FIA to produce consistent inventory data and summaries nationwide. Specifically, the intent is to provide data to:

1) Produce standard FIA tables of timber resource statistics (refer to Appendix B),
2) Meet Resource Planning Act Assessment data requirements,
3) Provide users with a common source for integrated FIA plot and tree data, and
4) Estimate changes in forest land area and timber volume between successive FIA inventories.

The FIADB replaces two FIA regional databases, one for the Eastern States (Eastwide database) and the other for the Western States (Westwide database), which are documented in separate documents (Hansen et al. 1992, Woudenberg and Farrenkopf 1995). A new national plot design provided the impetus for replacing these two databases. FIA units adopted this design in all State inventories initiated after 1998. An overview of the design is presented in Chapter 2.

This user's guide describes version 3.0 of the FIADB. With the ongoing effort to develop and use NIMS to process and store annual inventory data, the previous FIADB structure, as described in the document "The Forest Inventory and Analysis Database: Database description and Users Manual Version 2.1," was modified. Several of the variables that have been added to the FIADB data structure are variables needed to process data in NIMS. Some of these variables are regionally specific and are identified by region, both in the table structure description and in the variable description. See Chapter 3 for the description of the database.

In this version of FIADB, area and tree expansion factors have been removed from the PLOT, TREE and SEEDLING tables. Instead, there is one area expansion factor (EXPSN) stored, located on the POP_STRATUM table. This change is needed because of the way annual inventory data must be compiled. Under the annual inventory system, new plots are added each year. If 100% of the plots have been established under the annual system, then the older measurement data from plots that have been sampled at two points in time are not included in the current population estimate. The adjustment factors that are used to compensate for denied access, inaccessible, and other reasons for not sampling may differ each time new data replaces older data. In fact both the number of acres each plot represents and the adjustments for the proportion of plots not sampled may change each year. In order to allow users to obtain population estimates for any grouping of data, an adjustment factor has been calculated and stored for each set of data being compiled. There is a separate adjustment factor for each fixed plot size; that is the microplot, subplot, and macroplot. These attributes are also stored in the POP_STRATUM table. Each time the data are stratified a different way, the adjustments and expansions may change. Therefore, FIA is providing a different expansion factor every time the data are restratified. Now, for instance, users will be able to recreate the answer for the grouping of last year's data. Previous versions of FIADB restricted the user to only being able to produce an answer for the most current set of data.

FIA has chosen the term 'evaluation' to describe this process of storing different stratifications of data either for an individual set of data or for the changing sets of data through time. Each

aggregation of data is given an evaluation id (EVALID). The user can select population estimates for the most current set of data or for previous sets of data. In addition to being able to calculate population estimates, users can now calculate sampling error information because FIA is storing all of the phase 1 information used for the stratification. That information is stored for each estimation unit, which is usually a geographic subset of the state (see the POP_ESTN_UNIT table).

Phase 1 data (remotely sensed data) and phase 2 data (field data) are combined into an 'evaluation' that allows users to generate precision estimates along with the population estimates. An evaluation consists of a set of phase 2 plots and a phase 1 layer that can be used to generate population estimates and sampling errors. Estimation procedures follow the methodology outlined in the FIA national estimation document (Bechtold and Patterson 2005).

Although specifically intended to store data collected with the new design, the FIADB also stores data from FIA inventories completed before the adoption of the annual inventory method, the national plot design, common data collection procedures, and common processing and storage of annual inventory data. These older inventories are always included in the database if they are the most recently completed inventory in a State. Optionally, FIA units may include data from other older inventories. The level of data consistency among these older inventories varies depending on when, where, and how the data were collected and compiled. Generally, notes are provided in Chapter 3 indicating when a data element differs among FIA units or between successive inventories. We have also noted when differences occur between these older inventories and those conducted using the new national plot design. We recommend that users contact the FIA unit that produced any of these older inventories for additional details.

The database contains extensive data on forest area attributes and on the status of live and standing dead trees. However, it does not include all data collected and compiled by FIA units. In particular, data on dead and down trees, understory (non-tree) vegetation, and many abiotic attributes are not included. Users should contact individual FIA units to see if these data are available.

Users needing estimates of change in seedling density, forest land area, or timberland volume should note the following cautions. Tree lists contained in this database may be significantly truncated on plots that sample very young stands predominantly stocked with seedlings (trees less than 1 inch at the point of diameter measure). Seedlings often are tallied in FIA inventories only to the extent necessary to determine if some minimum number of them are present, which means that seedlings are often underreported. The database is not designed to provide valid estimates of change in forest land area between successive inventories that predate the new national plot design. Computations of various components of volume change should carefully mimic the examples given in Chapter 4.

Data for individual States are available through the Internet at: http://www.fs.fed.us. This is the Internet address for the Forest Service's National Headquarters and should remain unchanged for the immediate future. From this page, users should click on "Research & Development", then "Forest Inventory and Analysis", and finally "Online databases". Users accessing the FIA Web site can either download the data as comma-delimited files in FIADB format or use a Web-based program to generate their own customized reports.

Chapter 2 describes FIA sampling and estimation procedures and Chapter 3 provides detailed documentation of the database. Chapter 4 presents algorithms on how to compute estimates of area; current timber volume; biomass; number of trees; and annual timber volume growth, mortality, and removals.

# Chapter 2 -- FIA Sampling and Estimation Procedures

To understand the types of data available, FIADB users need a basic concept of FIA sampling and estimation procedures. A general discussion of these sampling procedures follows. Before the new common sampling design, specific sampling methods varied among FIA units and even among States within an FIA unit. Users who require additional information about sampling procedures for a specific State should contact the group responsible for that State's inventory. As new inventories are completed, the common sampling design being implemented will produce greater consistency in the compiled data.

## Remote Sensing

Each State inventory begins with the interpretation of a remotely sensed, or "phase 1," sample that classifies the land by various remote sensing classes. The total area of a sample comes from outside sources (usually Bureau of Census reports). The remote sensing classifications are based on land use (such as pasture, cropland, urban). For forested land, more detailed classes are sometimes defined based on criteria such as forest type, volume per acre, stand size, stand density, ownership, and/or stand age. Then, ground plots are measured to adjust the remote sensing sample for changes since its acquisition date and to correct any misclassification. Ground plots also provide estimates that cannot be made from a remotely sensed sample. The remote sensing classification of these ground plots, together with the area estimates from the remote sensing sample, is used to assign area expansion factors to all ground plots. These area expansion factors are used to weight plot-level estimates when computing estimates for selected strata of the population. Selection criteria for remote sensing classes and computation of area expansion factors differ from State to State. Users interested in the details of how these expansion factors were assigned to the ground plots for a particular State should contact the appropriate FIA unit.

## Ground Sampling

FIA ground plots, or "phase 2" plots, are designed to cover a 1-acre sample area; however, not all trees on the acre are measured. Recent inventories use a national standard, fixed-radius plot layout for sample tree selection. Various arrangements of fixed-radius and variable-radius (prism) subplots were used to select sample trees in older inventories. Ground plots may be new plots that have never been measured, or remeasurement plots that were measured during a previous inventory. For all plots, several observations are recorded for each sample tree, including its diameter, species, and other measurements that enable the prediction of the tree's volume, growth rate, and quality. These tree measurements form the basis of the data on the tree records in the FIADB.

Some of the data items in the FIADB come directly from field measurements; others are computed from tree measurements. Net cubic-foot volume is a computed item. Each FIA unit uses a volume equation to compute this volume based on diameter, taken either at breast height (DBH) or root collar (DRC), and other tree and/or stand attributes. Although equations vary from State to State, they were all designed to estimate the same volume. Users interested in the details of equations for a particular State should contact the appropriate FIA unit.

One important computed item is the tree expansion factor. This item expresses the number of trees per acre that each sampled tree represents in the current inventory. It is the inverse of the size of the plot the tree was sampled on. For example, if the plot design samples trees under 5 inches DBH on a single fixed-radius plot covering 1/100th acre, this item would have the value of 100 trees per acre for a tree less than 5 inches DBH. If trees 5 inches DBH and larger are sampled with ten 37.5 BAF (English) prism points, as was common with FIA plots in the Eastern U.S., the expansion factor would depend on the DBH of the tree. Under such a sample, a 14.0-inch tree would have an expansion factor of 3.51 trees per acre, again the inverse of the plot size[1].

A national plot design was adopted in the mid-1990's. Now all FIA units have implemented a common sampling design consisting of four 24.0-foot radius subplots (each subplot is approximately 1/24th acre) for trees at least 5 inches in diameter and four 6.8-foot radius microplots (each microplot is approximately 1/300th acre) for smaller trees. Therefore, tree expansion factors are approximately 6 for trees at least 5 inches in diameter and approximately 75 for the smaller trees. Subplot 1 is the center of the cluster with the other three subplots located 120 feet away at azimuths of 360°, 120°, and 240°, respectively. Another characteristic of the new design is the mapping of differing forest conditions. Reserved status, owner group, forest type, stand-size class, regeneration status, and stand density define a forest condition. If two or more conditions occur within a plot, the boundary between them is mapped and the proportion of the plot in each condition is recorded or calculated.

Data items collected for a condition are estimates of average attributes for the portion of the plot in that condition. Previous inventories did not map conditions. Instead, some attributes were assigned the value determined for the plot center, or subplots were shifted so that they fell within the same stand as the plot center.

Computed expansion factors are needed to estimate growth, mortality, and removals. Growth can be estimated by measuring the tree at two times, by measuring growth rings on an increment core, or by using a model. The method used, along with the sampling design, determines the value for the expansion factors needed to compute growth. Mortality can also be estimated from remeasured or new plots. With inventories that have remeasurement plots, mortality is based on trees that die during the remeasurement period. In cases where new plots provide estimates of mortality, mortality is estimated from either a mortality prediction equation that predicts the probability that a tree will die over some time period, or from a field estimate of mortality based on the measurement of dead trees and an estimate of when they died. Depending on the inventory design, removals may be estimated from observations of trees cut on either new or remeasured plots.

We have tried with the FIADB to provide as consistent data as possible from one State to another. Therefore, although differences in field and estimation procedures do exist among States, the data in the FIADB for different States are compatible. Differences that do exist are

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[1] The plot size of a 14.0 inch tree on a single 37.5 BAF (English) prism plot would be:
$((14.0 \text{ inches})^2 \times \pi)/(37.5 \text{ ft}^2/\text{acre} \times 2^2 \times ((12 \text{ inches})^2)/1 \text{ ft}^2) = .0285$ acres.
The plot size of this tree on a ten point cluster would be ten times this or .285 acres, producing an expansion factor of 3.51.

minor and should have little or no impact on most uses of these data. Consistency will increase as inventories incorporating the new common sampling design are completed.

**Accuracy Standards**

Forest inventory plans are designed to meet sampling error standards for area, volume, growth, and removals provided in the Forest Service Handbook (FSH 4809.11). These standards, along with other guidelines, are aimed at obtaining comprehensive and comparable information on timber resources for all parts of the country. FIA inventories are commonly designed to meet the specified sampling errors at the State level at the 67 percent confidence limit (one standard error). The Forest Service Handbook mandates that the sampling error for area cannot exceed 3 percent error per 1 million acres of timberland. Five percent (Eastern U.S.) or 10 percent (Western U.S.) error per 1 billion cubic feet of growing stock on timberland is applied to volume, removals, and net annual growth. Unlike the mandated sampling error for area, sampling errors for volume, removals, and growth are only targets.

FIA inventories are extensive inventories that provide reliable estimates for large sampling areas. As data are subdivided into smaller and smaller areas, such as a geographic unit or a county, the sampling errors increase and the reliability of the estimates goes down. For example, a State with 5 million acres of timberland would have a maximum allowable sampling error of 1.3 percent ($3\% \times (1{,}000{,}000)^{-.5} / (5{,}000{,}000)^{-.5}$), a geographic unit within that State with 1 million acres of timberland would have a 3.0 percent maximum allowable sampling error ($3\% \times (1{,}000{,}000)^{-.5} / (1{,}000{,}000)^{-.5}$), and a county within that State with 100 thousand acres would have a 9.5 percent maximum allowable sampling error ($3\% \times (1{,}000{,}000)^{-.5} / (100{,}000)^{-.5}$) at the 67 percent confidence level.

# Chapter 3 -- Database Structure

The FIA Database is a relational database structured for the Oracle Database Management System. By the nature of the way FIA data are collected and compiled, these Oracle tables are hierarchical. This structure makes it easy to produce flat files for customers who do not have access to, or the capability of, database management on their computer system.

## Table Descriptions

There are seventeen tables in the phase 1 and phase 2 portions of the FIA Database [ add bulleted table name and descriptions in the order they will be in the final document.] .

- SURVEY table – Contains one record for each year an inventory is conducted in a state. Can be linked to plot records where survey.cn=plot.srv_cn.
- COUNTY table – Reference table for the county and unit names. Can be linked to plot records where county.cn=plot.cty_cn.
- PLOT table – Provides information relevant to the entire 1-acre field plot.
- SUBPLOT table – Describes the features of a single subplot. There are multiple subplots per 1-acre field plot.
- COND table – Provides information on the discrete combination of landscape attributes that define the condition (a condition will have the same land class, reserved status, owner group, forest type, stand-size class, regeneration status, and stand density). Can be linked to plot record where cond.plt_cn=plot.cn.
- SUBP_COND table – Contains information about the proportion of a subplot in a condition.
- TREE table – Describes each tree 1 inch in diameter and larger found on a microplot or subplot. Can be linked to plot record where tree.plt_cn=plot.cn.
- SEEDLING table – Provides a count of the number of live trees of a species found on a microplot that are less than 1 inch in diameter but at least 6 inches in length for conifer species or at least 12 inches in length for hardwood species. Can be linked to plot record where seedling.plt_cn=plot.cn.
- SITETREE table – Provides information on one of the site trees collected to provide site index information for a condition. Can be linked to cond record where sitetree.plt_cn=cond.plt_cn and sitetree.condid=cond.condid.
- BOUNDARY table – Provides a description of the demarcation line between two conditions that occur on a single subplot. Can be linked to plot record where boundary.plt_cn=plot.cn.
- POP_EVAL_GRP table – Provides information on the suite of evaluations that were used to generate a complete set of reports for an inventory. In a typical state inventory report one evaluation is used to generate an estimate of the total land area in a State; a second evaluation is used to generate current estimates of volume, numbers of trees and biomass; and a third evaluation is used for estimating growth, removals and mortality. One record in the POP_EVAL_GRP record identifies all the evaluations that were used in generating estimates for a State inventory report.
- POP_EVAL table – An evaluation is the combination of a set of plots (the sample) and a set of phase 1 (remote sensing) data (a stratification) that can be used to produce

population estimates for a State (an evaluation may be created to produce population estimates for a region other than a State – such as the Black Hills National Forest). A record in the POP_EVAL table identifies one evaluation and provides some descriptive information about how the evaluation may be used.

- POP_ESTN_UNIT table – An estimation unit can be drawn on a map. It has known area and is field-sampled at the same intensity. Generally estimation units are contiguous areas, but exceptions are made when certain ownerships, usually national forests, are sampled at different intensities. One record in the POP_ESTN_UNIT table corresponds to a single estimation unit.
- POP_STRATUM table – The area within an estimation unit is divided into strata. The area for each stratum can be calculated by determining the proportion of phase 1 pixels/plots in each stratum and multiplying that proportion by the total area in the estimation unit. Information for a single stratum is stored in a single record of the POP_STRATUM table.
- POP_PLOT_STRATUM_ASSGN table – Stratum information is assigned to a plot by overlaying the plot's location on the phase 1 imagery. Plots are linked to their appropriate stratum for an evaluation via the POP_PLOT_STRATUM_ASSGN table.
- POP_ATTRIBUTE table – Identifies all of the population estimates that are currently supported and provides information useful to the estimation procedure. There are currently 46 records in the POP_ATTRIBUTE table providing information on everything from how to calculate forest area to average annual net growth on forestland.
- POP_EVAL_ATTRIBUTE table – Provides information as to which population estimates can be provided by an evaluation. If an evaluation can produce 22 of the 46 currently supported population estimates there will be 22 records in the POP_EVAL_ATTRIBUTE table (one per population estimate) for that evaluation.

For each column or variable in a table, there is a section that describes the unabbreviated name and detailed description of the variable. Coded items also include a list of the codes and their meanings.

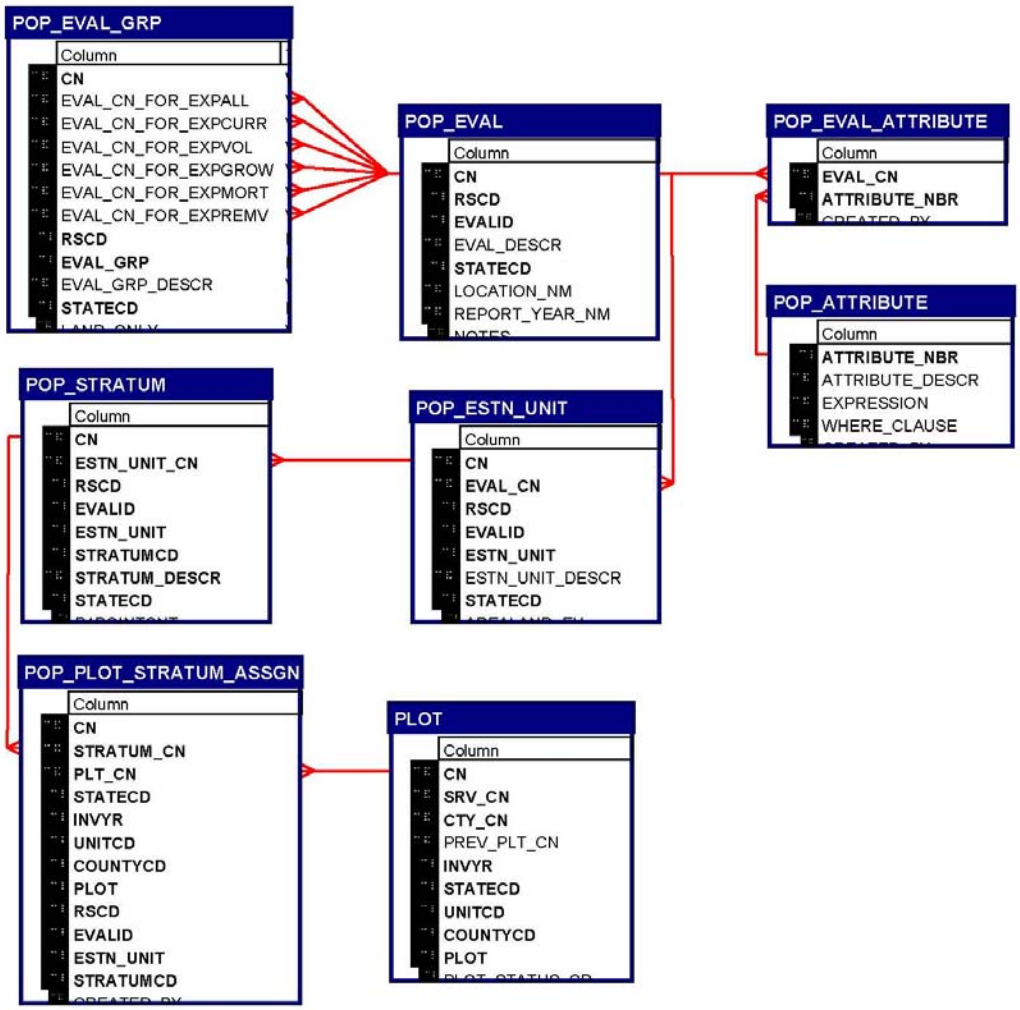


**Figure 3.1 Relationships among phase 1 tables and the phase 2 plot data table.**

## Core Optional Variables

Several variables throughout this guide are indicated as *Core Optional*. Items or codes specified as *Core Optional* are not required by individual units; however, if the item is collected or coded, it is done as specified in the "Forest inventory and analysis national core field guide, volume 1: field data collection procedures for phase 2 plots, version 3.0," which is cited in the Literature Cited Section.

Throughout this document are references to the macroplot. This is a *Core Optional* plot design where data are collected on four 58.9 foot radius macroplots, rather than on the *Core* plot design of four 24.0 foot radius subplots. This plot design is used primarily by the Pacific Northwest Research Station, but may be used by other stations; for information about a particular state, contact the appropriate FIA unit for more information.

## Data Storage and Format

FIA uses the Oracle Database Management System to store the FIADB data. In this system, a variable may be of type VARCHAR2 (a character variable) or type NUMBER (a number variable, which may be integer or real). An example of a VARCHAR2(28) variable is SURVEY.STATENM, which contains the state names, up to 28 characters; 'Pennsylvania' would be a valid value. An example of a NUMBER variable is TREE.AZIMUTH, which stores the values of tree azimuth, and is defined as a NUMBER(3) variable. The range of values that could be stored in a NUMBER(3) variable is -999 to 999; however, in this document, only **valid** values are described. Valid values for TREE.AZIMUTH, as described in the field guide and in this document, are 001 to 360, but the database will store these values as 1 to 360. When the data are retrieved as output from the database, they should be displayed as 001 to 360 to accurately represent the data as collected by the field crews. With a simple selection of the data and with a lack of formatting of the data by the user, the data will not appear as described; the output must be formatted to correctly display the data. This may be accomplished with any number of software packages; In Excel, for example, this can be done by customizing the cell formats accordingly.

## Fuzzing and Swapping

In its amendment of the Food Securities Act, Congress directed FIA to ensure that FIA plot data cannot be linked to its owner. This ensures the privacy of the owner. Because plot coordinates can be used to identify the owner, FIA stopped providing public access to these coordinates. However, a revised policy has been released and new methods for making approximate coordinates available for all plots have been developed.

FIA customers want to know where the plots are in order to perform analyses by user-defined polygons and for relating FIA plot data to other map-based information, such as soils maps and satellite imagery. In order to accommodate this need, FIA will provide approximate coordinates for all plots – both public and private. The general methods that FIA uses to provide these coordinates are described below.

In the past, FIA provided approximate coordinates for its periodic data in the FIADB. These coordinates were within 1.0 miles of the exact plot location (this is called fuzzing). However, due to the large size of many ownerships, the data could be linked to these owners. The original coordinates are restored to the FIADB but up to 20% of the private plot coordinates are swapped with another similar private plot within the same county. This ensures that county summaries and any breakdowns by categories, such as ownership class, will be the same as before. This is because only the coordinates of the plot are swapped – all the other plot characteristics remain the same. The only difference will be when users want to subdivide the county using a polygon. Even then, results will be similar because swapped plots are chosen to be similar based on attributes such as forest type, stand-size class, latitude and longitude (each FIA unit has chosen its own attributes for defining similarity).

For the plot data collected under the new annual system, plot numbers are reassigned to sever the link from the unswapped coordinates stored in the FIADB prior to the change in the law. Private plots are also swapped using the method described above – remeasured annual plots are swapped

independently of the periodic data. All annual plot coordinates are fuzzed, but less than before – within 0.5 miles for most plots and up to 1.0 miles on a small subset of them. This was done to make it difficult to locate the plot on the ground, while maintaining a good correlation between the plot data and map-based characteristics.

All variables on the data that are assigned by laying a Geographic Information System layer over the plot locations, such as COND.CONGCD, would be assigned using the fuzzed and swapped coordinate.

### Regional Variables

Variables that have been added to version 3.0 of the FIADB are those needed to process data in NIMS. Some of these variables are regionally specific, and are identified, by region, both in the table structure description (e.g., the variable is labeled with "**(NERS)**") and in the variable description (e.g., the variable description text contains the phrase "**Specific to Northeastern Research Station.**").

For regionally specific questions about the data, please contact the following persons:

| Research Station | RSCD | States | Contact | Phone |
|---|---|---|---|---|
| Rocky Mountain (RMRS) | 22 | AZ,CO,ID,MT,NV,NM,UT,WY | Mark Rubey | 801-625-5647 |
| North Central (NCRS) | 23 | IL,IN,IA,KS,MI,MN,MO,NE,ND,SD,WI | Gary Brand | 651-649-5170 |
| Northeast (NERS) | 24 | CT,DE,ME,MD,MA,NH,NJ,NY,OH,PA, RI,VT,WV | Carol Alerich | 610-557-4068 |
| Pacific Northwest (PNWRS) | 26,27 | AK,CA,HI,OR,WA | Ron Wanek | 503-808-2048 |
| Southern (SRS) | 33 | AL,AR,FL,GA,KY,LA,MS,NC,OK,SC, TN,TX,VA | Jeff Turner | 865-862-2053 |

**Survey Table (Oracle table name is SURVEY)**

| | Column Name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | INVYR | NUMBER(4) | Year (YYYY) |
| 3 | P3_OZONE_IND | VARCHAR2(1) | Character |
| 4 | STATECD | NUMBER(4) | Coded |
| 5 | STATEAB | VARCHAR2(2) | Name |
| 6 | STATENM | VARCHAR2(28) | Name |
| 7 | NOTES | VARCHAR2(2000) | Character |
| 8 | CREATED_BY | VARCHAR2(30) | Character |
| 9 | CREATED_DATE | DATE | DD-MON-YYYY |
| 10 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 11 | MODIFIED_BY | VARCHAR2(30) | Character |
| 12 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 13 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 14 | CYCLE | NUMBER(2) | Number |
| 15 | SUBCYCLE | NUMBER(2) | Number |

SRV_PK (CN)
SRV_UK (STATECD, INVYR, P3_OZONE_IND)

1. CN — Sequence number. A unique sequence number used to identify a survey record.

2. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A set of plots belong to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

3. P3_OZONE_IND

   Phase 3 ozone indicator. Values are Y (yes) and N (no). If Y, then the Survey is for a P3 ozone inventory. If N, then the Survey is not for a P3 ozone inventory.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. STATEAB State abbreviation. The two-character State abbreviation. Refer to table 1 at the end of the description of the SURVEY table.

6. STATENM State name. Refer to table 1 at the end of the description of the SURVEY table.

7. NOTES Notes. An optional item where notes about the inventory may be stored.

8. CREATED_BY The user who created the record.

9. CREATED_DATE

   The date the record was created. Date will be in the form DD-MON-YYYY.

10. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

11. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

12. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

13. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

14. CYCLE Inventory cycle number. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

15. SUBCYCLE Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

Table 1. Codes used for STATENM, STATEAB, and STATECD. Also listed is the Region or Station code (RSCD) of the FIA unit responsible for collecting data in that state or area under U.S. sovereignty.

| STATENM | STATEAB | STATECD | RSCD | STATENM | STATEAB | STATECD | RSCD |
|---|---|---|---|---|---|---|---|
| Alabama | AL | 01 | 33 | Nebraska | NE | 31 | 23 |
| Alaska | AK | 02 | 27 | Nevada | NV | 32 | 22 |
| Arizona | AZ | 04 | 22 | New Hampshire | NH | 33 | 24 |
| Arkansas | AR | 05 | 33 | New Jersey | NJ | 34 | 24 |
| California | CA | 06 | 26 | New Mexico | NM | 35 | 22 |
| Colorado | CO | 08 | 22 | New York | NY | 36 | 24 |
| Connecticut | CT | 09 | 24 | North Carolina | NC | 37 | 33 |
| Delaware | DE | 10 | 24 | North Dakota | ND | 38 | 23 |
| District of Columbia | DC | 11 | 24 | Ohio | OH | 39 | 24 |
| Florida | FL | 12 | 33 | Oklahoma | OK | 40 | 33 |
| Georgia | GA | 13 | 33 | Oregon | OR | 41 | 26 |
| Hawaii | HI | 15 | 26 | Pennsylvania | PA | 42 | 24 |
| Idaho | ID | 16 | 22 | Rhode Island | RI | 44 | 24 |
| Illinois | IL | 17 | 23 | South Carolina | SC | 45 | 33 |
| Indiana | IN | 18 | 23 | South Dakota | SD | 46 | 23 |
| Iowa | IA | 19 | 23 | Tennessee | TN | 47 | 33 |
| Kansas | KS | 20 | 23 | Texas | TX | 48 | 33 |
| Kentucky | KY | 21 | 33 | Utah | UT | 49 | 22 |
| Louisiana | LA | 22 | 33 | Vermont | VT | 50 | 24 |
| Maine | ME | 23 | 24 | Virginia | VA | 51 | 33 |
| Maryland | MD | 24 | 24 | Washington | WA | 53 | 26 |
| Massachusetts | MA | 25 | 24 | West Virginia | WV | 54 | 24 |
| Michigan | MI | 26 | 23 | Wisconsin | WI | 55 | 23 |
| Minnesota | MN | 27 | 23 | Wyoming | WY | 56 | 22 |
| Mississippi | MS | 28 | 33 | Puerto Rico | PR | 72 | 33 |
| Missouri | MO | 29 | 23 | U.S. Virgin Islands | VI | 78 | 33 |
| Montana | MT | 30 | 22 | | | | |

**County Table (Oracle table name is COUNTY)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | STATECD | NUMBER(4) | Coded |
| 2 | UNITCD | NUMBER(2) | Coded |
| 3 | COUNTYCD | NUMBER(3) | Coded |
| 4 | COUNTYNM | VARCHAR2(50) | Name |
| 5 | CN | VARCHAR2(34) | Character |
| 6 | CREATED_BY | VARCHAR2(30) | Character |
| 7 | CREATED_DATE | DATE | DD-MON-YYYY |
| 8 | CREATED_IN_INSTANCE | NUMBER(6) | NUMBER |
| 9 | MODIFIED_BY | VARCHAR2(30) | Character |
| 10 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 11 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

CTY_PK (CN)

CTY_UK (STATECD, UNITCD, COUNTYCD)

1. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

2. UNITCD Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

3. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

4. COUNTYNM County name. County name as recorded by the Bureau of the Census, 1990, for individual counties, or the name given to a similar governmental unit by the FIA program. Only the first 28 characters of the name are used. Refer to Appendix C for names.

5. CN Sequence number. A unique sequence number used to identify a county record.

6. CREATED_BY The user who created the record.

7. CREATED_DATE

   The date the record was created. Date will be in the form DD-MON-YYYY.

8. CREATED_IN_INSTANCE

   The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

9. MODIFIED_BY

   The user who modified the record. This field will be null if the data have not been modified since initial creation.

10. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

11. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Plot Table (Oracle table name is PLOT)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | SRV_CN | VARCHAR2(34) | Character |
| 3 | CTY_CN | VARCHAR2(34) | Character |
| 4 | PREV_PLT_CN | VARCHAR2(34) | Character |
| 5 | INVYR | NUMBER(4) | Year (YYYY) |
| 6 | STATECD | NUMBER(4) | Coded |
| 7 | UNITCD | NUMBER(2) | Coded |
| 8 | COUNTYCD | NUMBER(3) | Coded |
| 9 | PLOT | NUMBER(5) | Number |
| 10 | PLOT_STATUS_CD | NUMBER(1) | Coded |
| 11 | PLOT_NONSAMPLE_REASN_CD | NUMBER(2) | Coded |
| 12 | MEASYEAR | NUMBER(4) | Year (YYYY) |
| 13 | MEASMON | NUMBER(2) | Month (MM) |
| 14 | MEASDAY | NUMBER(2) | Day (DD) |
| 15 | REMPER | NUMBER(3,1) | Years |
| 16 | KINDCD | NUMBER(2) | Coded |
| 17 | DESIGNCD | NUMBER(4) | Coded |
| 18 | RDDISTCD | NUMBER(2) | Coded |
| 19 | WATERCD | NUMBER(2) | Coded |
| 20 | LAT | NUMBER(8,6) | Decimal degree |
| 21 | LON | NUMBER(9,6) | Decimal degree |
| 22 | ELEV | NUMBER(5) | Feet |
| 23 | GROWCD | NUMBER(2) | Coded |
| 24 | MORTCD | NUMBER(2) | Coded |
| 25 | P2PANEL | NUMBER(2) | Number |
| 26 | P3PANEL | NUMBER(2) | Number |
| 27 | ECOSUBCD | VARCHAR2(7) | Name |
| 28 | CONGCD | NUMBER(4) | Number |
| 29 | MANUAL | NUMBER(3,1) | Number |
| 30 | SUBPANEL | NUMBER(2) | Number |
| 31 | KINDCD_NC | NUMBER(2) | Coded |
| 32 | QA_STATUS | NUMBER(1) | Coded |
| 33 | CREW_TYPE | NUMBER(1) | Coded |
| 34 | MANUAL_DB | NUMBER(3,1) | Number |

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 35 | CREATED_BY | VARCHAR2(30) | Character |
| 36 | CREATED_DATE | DATE | DD-MON-YYYY |
| 37 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 38 | MODIFIED_BY | VARCHAR2(30) | Character |
| 39 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 40 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 41 | MICROPLOT_LOC | VARCHAR2(12) | Description |
| 42 | DECLINATION | NUMBER(4,1) | |
| 43 | EMAP_HEX | NUMBER(7) | |
| 44 | REPLACED_PLOT_NBR | NUMBER(5) | Number |
| 45 | SAMP_METHOD_CD | NUMBER(1) | |
| 46 | SUBP_EXAMINE_CD | NUMBER(1) | |
| 47 | MACRO_BREAKPOINT_DIA | NUMBER(2) | |
| 48 | LAST_INVYR_MEASURED | NUMBER(4) | |
| 49 | CYCLE | NUMBER(2) | Number |
| 50 | SUBCYCLE | NUMBER(2) | Number |
| 51 | ECO_UNIT_PNW | VARCHAR2(10) | |
| 52 | TOPO_POSITION_PNW | VARCHAR2(2) | |

| | |
|---|---|
| PLT_CTY_FK_I | (CTY_CN) |
| PLT_PK | (CN) |
| PLT_SRV_FK_I | (SRV_CN) |
| PLT_UK | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT) |

1. CN — Sequence number. A unique sequence number used to identify a plot record.

2. SRV_CN — Survey sequence number. Foreign key linking the plot record to the survey record.

3. CTY_CN — County sequence number. Foreign key linking the plot record to the county record.

4. PREV_PLT_CN

   Previous plot sequence number. Foreign key linking the plot record to the previous inventory's plot record for this location. Only populated on remeasurement plots.

5. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

6. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

7. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

8. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

9. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

10. PLOT_STATUS_CD

Plot status code. A code that describes the sampling status of the plot.

| Code | Description |
|---|---|
| 1 | Sampled – at least one accessible forest land condition present on plot |
| 2 | Sampled – no accessible forest land condition present on plot |
| 3 | Nonsampled |

11. PLOT_NONSAMPLE_REASN_CD

Plot nonsampled reason code. For entire plots that cannot be sampled, one of the following reasons is recorded.

| Code | Description |
|---|---|
| 01 | Outside U.S. boundary –Entire plot is outside of the U.S. border. |
| 02 | Denied access area – Access to the entire plot is denied by the legal owner, or by the owner of the only reasonable route to the plot. Because a denied-access plot can become accessible in the future, it remains in the sample and is re-examined at the next occasion to determine if access is available. |

03 Hazardous – Entire plot cannot be accessed because of a hazard or danger, for example cliffs, quarries, strip mines, illegal substance plantations, high water, etc. Although most hazards will not change over time, a hazardous plot remains in the sample and is re-examined at the next occasion to determine if the hazard is still present.

05 Lost data – Plot data file was discovered to be corrupt after a panel was completed and submitted for processing. This code is applied at the time of processing after notification to the units. This code is for office use only.

06 Lost plot – Lost plot – Entire plot cannot be found. Whenever this code is assigned, a replacement plot is required. The plot that is lost is assigned SAMPLE KIND = 2 and NONSAMPLED REASON = 6. The replacement plot is assigned SAMPLE KIND = 3.

07 Wrong location – Previous plot can be found, but its placement is beyond the tolerance limits for plot location. Whenever this code is assigned, a replacement plot is required. The plot being relocated is assigned SAMPLE KIND = 2 and NONSAMPLED REASON = 7. Its replacement plot is assigned SAMPLE KIND =

08 Skipped visit – This code applies to whole plots that are skipped (i.e., the entire plot should be assigned to this condition class). It is used for plots that are not completed prior to the time a panel is finished and submitted for processing. Note: This code is for office use only.Skipped visit – Entire plot skipped. Used for plots that are not completed prior to the time a panel is finished and submitted for processing. This code is for office use only.

09 Dropped intensified plot - Intensified plot dropped due to a change in grid density. This code used only by units engaged in intensification. This code is for office use only.

10 Other – Entire plot not sampled due to a reason other than one of the specific reasons already listed. A field note is required to describe the situation..

12. MEASYEAR Measurement year. The year in which the plot was completed. This year may differ from INVYR in the SURVEY table.

13. MEASMON Measurement month. The month in which the plot was completed.

| Code | Description |
|---|---|
| 01 | January |
| 02 | February |
| 03 | March |

04 April
05 May
06 June
07 July
08 August
09 September
10 October
11 November
12 December

14. MEASDAY Measurement day. The day of the month in which the plot was completed.

15. REMPER Remeasurement period. The number of years between measurements of remeasured plots. For data processed with NIMS, REMPER is the number of years between measurements (to the nearest 0.1 year); it is null for new or other plots that are not used for growth, removals, or mortality estimates. For data processed with systems other than NIMS, remeasurement period is based on the number of growing seasons between measurements; it is either null or zero for new or other plots that are not used for growth, removals, or mortality estimates. Allocation of parts of the growing season by month is different for each FIA program. Contact the appropriate FIA program for information on how this is done for a particular State. NOTE: it is **not** valid to use REMPER to estimate periodic change.

16. KINDCD Sample kind code. A code to indicate whether the plot is being measured for the first time, had been measured in a previous cycle and is being remeasured, or had been remeasured previously but could not be relocated and this is the replacement.

| Code | Description |
|---|---|
| 0 | Periodic inventory plot |
| 1 | Initial plot establishment of the National design plot |
| 2 | Remeasurement of a previously established National design plot – field visited or remotely classified |
| 3 | Replacement of a previously established National design plot |
| 4 | Modeled |

17.DESIGNCD Plot design code. A code to indicate the type of plot design used to collect the data. Contact appropriate FIA program for specific code descriptions.

| Code | Description |
|---|---|
| 001 | National FIA mapped plot design consisting of 4 fixed-radius subplots |
| 100-199 | Northeastern Station (NERS) |
| 200-299 | Southern Station (SRS) |
| 300-399 | North Central Station (NCRS) |
| 333 | a plot created for area control and gaps in FIA sampling |
| 400-499 | Rocky Mountain Station (RMRS) |
| 500-599 | Pacific Northwest Station (PNWRS) |
| 600-699 | Alaska |

18. RDDISTCD Horizontal distance to improved road code. The straight-line distance from plot center to the nearest improved road, which is a road of any width that is maintained as evidenced by pavement, gravel, grading, ditching, and/or other improvements. New in annual inventory.

| Code | Description |
|---|---|
| 1 | 100 ft. or less |
| 2 | 101 ft. to 300 ft. |
| 3 | 301 ft. to 500 ft. |
| 4 | 501 ft. to 1000 ft. |
| 5 | 1001 ft. to 1/2 mile |
| 6 | 1/2 to 1 mile |
| 7 | 1 to 3 miles |
| 8 | 3 to 5 miles |
| 9 | Greater than 5 miles |

19. WATERCD Water on plot code. Water body less than 1 acre in size or a stream less than 30 feet wide that has the greatest impact on the area within the forest land portion of the four subplots. The coding hierarchy is listed in order from large permanent water to temporary water. New in annual inventory.

| Code | Description |
|---|---|
| 0 | None - no water sources within the accessible forest land CONDITION CLASS |
| 1 | Permanent streams or ponds too small to qualify as noncensus water |
| 2 | Permanent water in the form of deep swamps, bogs, marshes without standing trees present and less than 1.0 ac in size, or with standing trees |
| 3 | Ditch/canal – human made channels used as a means of moving water, e.g., for irrigation or drainage, which are too small to qualify as noncensus water |
| 4 | Temporary streams |

| | | |
|---|---|---|
| | | 5 Flood zones – evidence of flooding when bodies of water exceed their natural banks<br>9 Other temporary water – specified in plot-level notes. |
| 20. | LAT | Latitude NAD 83 datum. The approximate latitude of the plot in decimal degrees. The precision of this item along the meridian is ± 1542 m at latitude 45 degrees north. However, in some cases the county centroid may be entered when the actual location is not available. Actual plot locations cannot be released. The LAT is based on fuzzed and swapped plot coordinates. |
| 21. | LON | Longitude NAD 83 datum. The approximate longitude of the plot in decimal degrees. The precision of this item along the parallel is ± 1094 m at latitude 45 degrees. However, in some cases the county centroid may be entered when the actual location is not available. Actual plot locations cannot be released. The LON is based on fuzzed and swapped plot coordinates. |
| 22. | ELEV | Elevation. The distance the plot is located above sea level, recorded in feet (NAD 83 datum). Negative values indicate distance below sea level. The ELEV is based on fuzzed and swapped plot coordinates. |
| 23. | GROWCD | Type of annual volume growth code. A code to indicate how volume growth is estimated. Current annual growth is an estimate of the change in volume that occurred in a 1-year period ending when the plot was measured. Periodic annual growth is an estimate of the average annual change in volume occurring between two measurements, usually the current cycle and previous cycle.<br><br>Code Description<br>1 Current annual<br>2 Periodic annual |
| 24. | MORTCD | Type of annual mortality volume code. A code to indicate how mortality volume is estimated. Current annual mortality is an estimate of the volume of trees dying during a 1-year period ending when the plot was measured. Periodic annual mortality is an estimate of the average annual volume of trees dying between two measurements, usually the current cycle and previous cycle.<br><br>Code Description<br>1 Current annual<br>2 Periodic annual |
| 25. | P2PANEL | Phase 2 panel number. Forest Inventory and Analysis panel number. This is recorded for inventories begun after 1998. A panel is a sample in which the same elements are measured on two or more occasions. FIA divides the plots in a cycle into five panels that can be used to independently |

sample the population. The value for P2PANEL ranges from 1 to 5 for annual inventories and is null for periodic inventories.

26. P3PANEL Phase 3 panel number. A panel is a sample in which the same elements are measured on two or more occasions. FIA divides the plots in a cycle into five panels that can be used to independently sample the population. The value for P3PANEL ranges from 1 to 5 for those plots where phase 3 data were collected.

27. ECOSUBCD Ecological subsection code. An area of similar surficial geology, lithology, geomorphic process, soil groups, subregional climate, and potential natural communities. Subsection boundaries usually correspond with discrete changes in geomorphology. Subsection information is used for broad planning and assessment. Subsection codes may consist of up to six characters and were developed by the Forest Service as part of the National Hierarchical Framework of Ecological Units. The ECOSUBCD is based on fuzzed and swapped plot coordinates.

28. CONGCD Congressional district code. A territorial division of a State from which a member of the U.S. House of Representatives is elected. Based on the current Census, congressional districts in the United States are apportioned to the States based on population; each State receives at least one congressional district. The congressional district code assigned to a plot (regardless of when it was measured) is for the most recent Congress; the assignment is made based on the plot's approximate coordinates. CONGCD is a four-digit number. The first two digits are the State FIPS code and the last two digits are the congressional district number. If a State has only one congressional district the congressional district number is 00. If a plot's congressional district assignment falls in a state other than the plot's actual state due to using the approximate coordinates, the congressional district code ends in 99. The CONGCD is based on fuzzed and swapped plot coordinates.

29. MANUAL Field guide (manual) version number. Version of the National Field Guide used to describe procedures for collecting data on the plot. New in annual inventory. This is the version of the guide with which the data were collected. Value is 0.0 if data were collected with a regional field guide.

30. SUBPANEL Subpanel assignment for plot for those regions using subpaneling. Null if subpaneling is not used.

31. KINDCD_NC Sample kind code. **Specific to North Central Research Station.** All other Stations record null for this variable. Contact North Central Research Station for codes and more information.

32. QA_STATUS The code indicates the type of plot data collected.

| Code | Description |
|---|---|
| 1 | Standard production plot |
| 2 | Cold check |
| 3 | Reference plot (off grid) |
| 4 | Training/practice plot (off grid) |
| 5 | Botched plot file (disregard during data processing) |
| 6 | Blind check |
| 7 | Production plot (hot check) |

33. CREW_TYPE A code identifying the type of crew measuring the plot.

| Code | Description |
|---|---|
| 1 | Standard field crew |
| 2 | QA crew (any QA crew member present collecting data) |

34. MANUAL_DB Version of the National Field Guide used to describe procedures for collecting data on the plot. New in annual inventory. The data in the database have been standardized to this version. The current version of the Field Guide is Version 2.0. See the Literature Cited Section for more details about this document.

35. CREATED_BY The user who created the record.

36. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

37. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

38. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

39. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

40. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

41. MICROPLOT_LOC

Microplot location. Values are 'OFFSET' or 'CENTER'. The offset microplot center is located 12 feet due East (90 degrees) of subplot center. The current standard described in Version 2.0 of the Field Guide is that the microplot is located in the 'OFFSET' location, but some earlier inventories, including some early panels of the annual inventory, may contain data where the microplot was located at the 'CENTER' location.

42. DECLINATION

Declination. (*Core optional*) The azimuth correction used to adjust magnetic north to true north. All azimuths are assumed to be magnetic azimuths unless otherwise designated. The Portland FIA unit historically has corrected all compass readings for true north. This field is to be used only in cases where units are adjusting azimuths to correspond to true north; for units using magnetic azimuths, this field will always be set = 0 in the office. This field carries a decimal place because the USGS corrections are provided to the nearest half degree. DECLINATION is defined as:

DECLINATION = (TRUE NORTH - MAGNETIC NORTH)

43. EMAP_HEX EMAP hexagon. The identifier for the approximately 160,000 acre Environmental Monitoring and Assessment Program (EMAP) hexagon in which the plot is located. EMAP hexagons are available to the public, cover the conterminous U.S., and have been used in summarizing and aggregating data about numerous natural resources

44. REPLACED_PLOT_NBR

Replaced plot number. Previous plot number identifying the plot that is being replaced.

45. SAMP_METHOD_CD

Sample method code. A code to indicate if the plot was observed in the field or remotely sensed in the office.

| Code | Description |
|---|---|
| 1 | Field visited |

| | |
|---|---|
| 2 | Remotely sensed |

46. SUBP_EXAMINE_CD

Subplots examined code. Indicates the number of subplots examined.

| Code | Description |
|---|---|
| 1 | Only subplot 1 center condition examined and all other subplots assumed (inferred) to be the same |
| 4 | All four subplots fully described (no assumptions/inferences) |

47. MACRO_BREAKPOINT_DIA

Macroplot breakpoint diameter. CORE OPTIONAL variable. A macroplot breakpoint diameter is the diameter (either DBH or DRC) above which trees are measured on the plot extending from 0.01 to 58.9 feet horizontal distance from the center of each subplot. Examples of different breakpoint diameters used by western FIA units are 24 inches or 30 inches (Pacific Northwest), or 21 inches (Interior West). Installation of macroplots is core optional and is used to have a larger plot size in order to more adequately sample large trees. If macroplots are not being installed, this item will be left blank.

48. LAST INVYR_MEASURED

Last inventory year measured. Identifies the most recent inventory year.

49. CYCLE — Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

50. SUBCYCLE — Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

51. ECO_UNIT_PNW (PNW)

Ecological unit in PNW. This is the ecological unit used to identify PNW stockability algorithms.

52. TOPO_POSITION_PNW (**PNW**)

Topographic position in PNW. The topographic position that describes the plot area.

| Code | Topographic Position | Common shape of slope |
|---|---|---|
| 1 | Ridge top or mountain peak over 130 feet | Flat |
| 2 | Narrow ridge top or mountain peak over 130 feet wide | Convex |
| 3 | Side hill – upper 1/3 | Convex |
| 4 | Side hill – middle 1/3 | No rounding |
| 5 | Side hill – lower 1/3 | Concave |
| 6 | Canyon bottom less than 660 feet wide | Concave |
| 7 | Bench, terrace or dry flat | Flat |
| 8 | Broad alluvial flat over 660 feet wide | Flat |
| 9 | Swamp or wet flat | Flat |

**Subplot Table (Oracle table name is SUBPLOT)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | PREV_SBP_CN | VARCHAR2(34) | |
| 4 | INVYR | NUMBER(4) | Year (YYYY) |
| 5 | STATECD | NUMBER(4) | Coded |
| 6 | UNITCD | NUMBER(2) | Coded |
| 7 | COUNTYCD | NUMBER(3) | Coded |
| 8 | PLOT | NUMBER(5) | Number |
| 9 | SUBP | NUMBER(3) | Number |
| 10 | STATUSCD | NUMBER(1) | Number |
| 11 | POINT_NONSAMPLE_REASN_CD | NUMBER(2) | |
| 12 | MICRCOND | NUMBER(1) | Number |
| 13 | SUBPCOND | NUMBER(1) | Number |
| 14 | MACRCOND | NUMBER(1) | Number |
| 15 | CONDLIST | NUMBER(4) | Number |
| 16 | SLOPE | NUMBER(3) | Percent |
| 17 | ASPECT | NUMBER(3) | Degrees |
| 18 | WATERDEP | NUMBER(2,1) | Feet |
| 19 | P2A_GRM_FLG | VARCHAR2(1) | |
| 20 | CREATED_BY | VARCHAR2(30) | Character |
| 21 | CREATED_DATE | DATE | DD-MON-YYYY |
| 22 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 23 | MODIFIED_BY | VARCHAR2(30) | Character |
| 24 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 25 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 26 | CYCLE | NUMBER(2) | Number |
| 27 | SUBCYCLE | NUMBER(2) | Number |
| 28 | ROOT_DIS_SEV_CD_PNWRS | NUMBER(1) | |

| | |
|---|---|
| SBP_CND_FK2_I | (PLT_CN, MICRCOND) |
| SBP_CND_FK3_I | (PLT_CN, MACRCOND) |
| SBP_CND_FK_I | (PLT_CN, SUBPCOND) |
| SBP_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT,SUBP) |
| SBP_PK | (CN) |
| SBP_PLT_FK_I | (PLT_CN) |
| SBP_UK | (PLT_CN, SUBP) |

1. CN — Sequence number. A unique sequence number used to identify a subplot record.

2. PLT_CN — Plot sequence number. Foreign key linking the subplot record to the plot record.

3. PREV_SBP_CN

   Previous subplot sequence number. Foreign key linking the subplot record to the previous inventory's subplot record for this subplot. Only populated on annual remeasured plots.

4. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

5. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table..

6. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

7. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

8. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

9. SUBP — Subplot number. Number of the subplot. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

10. STATUSCD Subplot/macroplot status code. A code to indicate whether forest land was sampled on the subplot/macroplot or not.

| Code | Description |
|---|---|
| 1 | Sampled – at least one accessible forest land condition present on subplot |
| 2 | Sampled – no accessible forest land condition present on subplot |
| 3 | Nonsampled |

11. POINT_NONSAMPLE_REASN_CD

Point nonsampled reason code. If an entire subplot (or macroplot) could not be sampled, a code is recorded to provide the explanation about why the sample could not be taken.

| Code | Description |
|---|---|
| 01 | Outside U.S. boundary – Assign this code to condition classes beyond the U.S. border. |
| 02 | Denied access area – Any area within the sampled area of a plot to which access is denied by the legal owner, or to which an owner of the only reasonable route to the plot denies access. There are no minimum area or width requirements for a condition class delineated by denied access. Because a denied-access condition can become accessible in the future, it remains in the sample and is re-examined at the next occasion to determine if access is available. In some regions denied access plots may be replaced; check with the field supervisor regarding regional protocols for plot replacement. |
| 03 | Hazardous situation – Any area within the sampled area on plot that cannot be accessed because of a hazard or danger, for example cliffs, quarries, strip mines, illegal substance plantations, temporary high water, etc. Although the hazard is not likely to change over time, a hazardous condition remains in the sample and is re-examined at the next occasion to determine if the hazard is still present. There are no minimum size or width requirements for a condition class delineated by a hazardous condition. In some regions hazardous plots may be replaced; check with the field supervisor regarding regional protocols for plot replacement. |
| 04 | Time limitation – This code applies to full subplots that cannot be sampled due to a time restriction. This code is reserved for areas with limited access, and in situations where it is imperative for the crew to leave before the plot can be completed (e.g., scheduled helicopter rendezvous). Use of this code requires notification to the field supervisor. This code should not be used for an entire plot |

(use code 8 (skipped visit) when an entire plot is skipped; see Section 8.3.5).

05 Lost data – The plot data file was discovered to be corrupt after a panel was completed and submitted for processing. This code is assigned to entire plots or full subplots that could not be processed, and is applied at the time of processing after notification to the region. Note: This code is for office use only.

10 Other – This code is used whenever a plot or condition class is not sampled due to a reason other than one of the specific reasons already listed. A field note is required to describe the situation.

12. MICRCOND Microplot center condition. Condition number for the condition at the center of the microplot.

13. SUBPCOND Subplot center condition. Condition number for the condition at the center of the subplot.

14. MACRCOND Macroplot center condition. Condition number for the condition at the center of the macroplot. Null if macroplot is not measured.

15. CONDLIST Subplot/macroplot condition list. This is a listing of all condition classes located within the 24.0/58.9 ft. radius around the subplot/macroplot center. A maximum of four conditions is permitted at any individual subplot/macroplot. *Core Optional*.

16. SLOPE Subplot slope. The angle of slope, in percent, of the subplot, determined by sighting along the average incline or decline of the subplot. If the slope changes gradually, an average slope is recorded. If the slope changes across the subplot but is predominately of one direction, the predominant slope is recorded. Valid values are 000 through 155.

17. ASPECT Subplot aspect. The direction of slope, to the nearest degree, of the subplot, determined along the direction of slope. If the aspect changes gradually, an average aspect is recorded. If the aspect changes across the subplot but is predominately of one direction, the predominant aspect is recorded . North is recorded as 360. When slope is less than 5 percent, there is no aspect; is recorded as 000.

18. WATERDEP Snow/water depth. The approximate depth in feet of water or snow covering the subplot when data were collected. New in annual inventory.

19, P2A_GRM_FLG

Periodic to annual growth, removal, and mortality flag. "Y" is used to indicate if this subplot is used in computing growth, removal, and mortality estimates from periodic inventories to annual inventories.

20. CREATED_BY The user who created the record.

21. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

22. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

23. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

24. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

25. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

26. CYCLE Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

27. SUBCYCLE Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

28. ROOT_DIS_SEV_CD_PNWRS

    Root disease severity rating code in PNW. The root disease severity rating that describes the degree of root disease present.

    | Code | Description |
    |---|---|
    | 0 | No evidence of root disease visible within 50 feet of the 58.9 foot macroplot. |
    | 1 | Root disease present within 50 feet of the macroplot, but no evidence of disease on the macroplot. |

2 Minor evidence of root disease on the macroplot, such as suppressed tree killed by root disease, or a minor part of the overstory showing symptoms of infection. Little or no detectable reduction in canopy closure or volume.

3 Canopy reduction evident, up to 20%; usually as a result of death of 1 codominant tree on an otherwise fully stocked site. In absence of mortality, numerous trees showing symptoms of root disease infection.

4 Canopy reduction at least 20%; up to 30% as a result of root disease mortality. Snags and downed trees removed from canopy by disease as well as live trees with advance symptoms of disease contribute to impact.

5 Canopy reduction 30-50% as a result of root disease. At least half of the ground area of macroplot considered infested with evidence of root disease-killed trees. Macroplots representing mature stands with half of their volume in root disease-tolerant species usually do not go much above severity 5 because of the ameliorating effect of the disease-tolerant trees.

6 50-75% reduction in canopy with most of the ground area considered infested as evidenced by symptomatic trees. Much of the canopy variation in this category is generally a result of root disease-tolerant species occupying infested ground.

7 At least 75% canopy reduction. Macroplots that reach this severity level usually are occupied by only the most susceptible species. There are very few of the original overstory trees remaining although infested ground is often densely stocked with regeneration of susceptible species.

8 The entire macroplot falls within a definite root disease pocket with only one or very few susceptible overstory trees present.

9 The entire macroplot falls within a definite root disease pocket with no overstory trees of the susceptible species present.

**Condition Table (Oracle table name is COND)**

| | Column Name | Oracle data type | Value or unit of measure | Mapped design recorded on1y[1] | Other designs[1] |
|---|---|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character | A | A |
| 2 | PLT_CN | VARCHAR2(34) | Character | A | A |
| 3 | INVYR | NUMBER(4) | Year (YYYY) | | |
| 4 | STATECD | NUMBER(4) | Coded | A | A |
| 5 | UNITCD | NUMBER(2) | Coded | A | A |
| 6 | COUNTYCD | NUMBER(3) | Coded | A | A |
| 7 | PLOT | NUMBER(5) | Number | A | A |
| 8 | CONDID | NUMBER(1) | Number | A | A |
| 9 | COND_STATUS_CD | NUMBER(1) | Number | A | |
| 10 | COND_NONSAMPLE_REASN_CD | NUMBER(2) | Coded | | |
| 11 | RESERVCD | NUMBER(2) | Coded | F | F |
| 12 | OWNCD | NUMBER(2) | Coded | F | F |
| 13 | OWNGRPCD | NUMBER(2) | Coded | F | F |
| 14 | FORINDCD | NUMBER(2) | Coded | F | F |
| 15 | ADFORCD | NUMBER(4) | Coded | P | P |
| 16 | FORTYPCD | NUMBER(3) | Coded | F | F |
| 17 | FLDTYPCD | NUMBER(3) | Coded | F | F |
| 18 | MAPDEN | NUMBER(1) | Coded | F | |
| 19 | STDAGE | NUMBER(4) | Years | F | O |
| 20 | STDSZCD | NUMBER(2) | Coded | F | T |
| 21 | FLDSZCD | NUMBER(2) | Coded | F | T |
| 22 | SITECLCD | NUMBER(2) | Coded | F | F |
| 23 | SICOND | NUMBER(3) | Feet | F | O |
| 24 | SIBASE | NUMBER(3) | Years | F | O |
| 25 | SISP | NUMBER(4) | Coded | F | O |
| 26 | STDORGCD | NUMBER(2) | Coded | F | O |
| 27 | STDORGSP | NUMBER | Coded | F | |
| 28 | PROP_BASIS | VARCHAR2(12) | Character | A | |
| 29 | CONDPROP_UNADJ | NUMBER(5,4) | | | |
| 30 | MICRPROP_UNADJ | NUMBER(5,4) | | | |
| 31 | SUBPPROP_UNADJ | NUMBER(5,4) | | | |
| 32 | MACRPROP_UNADJ | NUMBER(5,4) | | | |
| 33 | SLOPE | NUMBER(3) | Percent | F | F |

| | Column Name | Oracle data type | Value or unit of measure | Mapped design recorded on1y[1] | Other designs[1] |
|---|---|---|---|---|---|
| 34 | ASPECT | NUMBER(3) | Degrees | F | F |
| 35 | PHYSCLCD | NUMBER(2) | Coded | F | |
| 36 | GSSTKCD | NUMBER(2) | Coded | F | T |
| 37 | ALSTKCD | NUMBER(2) | Coded | F | O |
| 38 | TRTOPCD | NUMBER(2) | Coded | N | N |
| 39 | DSTRBCD1 | NUMBER(2) | Coded | F | |
| 40 | DSTRBYR1 | NUMBER(4) | Year | F | |
| 41 | DSTRBCD2 | NUMBER(2) | Coded | F | |
| 42 | DSTRBYR2 | NUMBER(4) | Year | F | |
| 43 | DSTRBCD3 | NUMBER(2) | Coded | F | |
| 44 | DSTRBYR3 | NUMBER(4) | Year | F | |
| 45 | TRTCD1 | NUMBER(2) | Coded | F | |
| 46 | TRTYR1 | NUMBER(4) | Year | F | |
| 47 | TRTCD2 | NUMBER(2) | Coded | F | |
| 48 | TRTYR2 | NUMBER(4) | Year | F | |
| 49 | TRTCD3 | NUMBER(2) | Coded | F | |
| 50 | TRTYR3 | NUMBER(4) | Year | F | |
| 51 | PASTNFCD | NUMBER(2) | | | |
| 52 | PRESNFCD | NUMBER(2) | Coded | NF | |
| 53 | BALIVE | NUMBER(9,4) | Square feet/acre | F | |
| 54 | FLDAGE | NUMBER(4) | Number | F | |
| 55 | ALSTK | NUMBER(7,4) | Percent | F | |
| 56 | GSSTK | NUMBER(7,4) | Percent | F | |
| 57 | FORTYPCDCALC | NUMBER(3) | Character | F | |
| 58 | HABTYPCD1 | VARCHAR2(10) | Character | F | |
| 59 | HABTYPCD1_PUB_CD | VARCHAR2(10) | | | |
| 60 | HABTYPCD1_DESCR_PUB_CD | VARCHAR2(10) | | | |
| 61 | HABTYPCD2 | VARCHAR2(10) | Character | F | |
| 62 | HABTYPCD2_PUB_CD | VARCHAR2(10) | | | |
| 63 | HABTYPCD2_DESCR_PUB_CD | VARCHAR2(10) | | | |
| 64 | MIXEDCONFCD | VARCHAR2(1) | Character | F | |
| 65 | VOL_LOC_GRP | VARCHAR2(200) | Character | F | |
| 66 | SITECLCDEST | NUMBER(2) | Coded | F | |
| 67 | SITETREE_TREE | NUMBER(4) | Number | F | |
| 68 | SITECL_METHOD | NUMBER(2) | Number | F | |
| 69 | CREATED_BY | VARCHAR2(30) | Character | A | A |

| | Column Name | Oracle data type | Value or unit of measure | Mapped design recorded on[1y] | Other designs[1] |
|---|---|---|---|---|---|
| 70 | CREATED_DATE | DATE | DD-MON-YYYY | A | A |
| 71 | CREATED_IN_INSTANCE | NUMBER(6) | Number | A | A |
| 72 | MODIFIED_BY | VARCHAR2(30) | Character | A | A |
| 73 | MODIFIED_DATE | DATE | DD-MON-YYYY | A | A |
| 74 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number | A | A |
| 75 | CYCLE | NUMBER(2) | Number | A | A |
| 76 | SUBCYCLE | NUMBER(2) | Number | A | A |
| 77 | SOIL_ROOTING_DEPTH_PNW | VARCHAR2(1) | | | |
| 78 | GROUND_LAND_CLASS_PNW | VARCHAR2(3) | | | |
| 79 | PLANT_STOCKABILITY_FACTOR_PNW | NUMBER | | | |
| 80 | STND_COND_CD_PNWRS | NUMBER(1) | | | |
| 81 | STND_STRUC_CD_PNWRS | NUMBER(1) | | | |
| 82 | STUMP_CD_PNWRS | VARCHAR2(1) | | | |
| 83 | DISTANCE_WATER_SRS | NUMBER(3) | | | |
| 84 | FIRE_SRS | NUMBER(1) | | | |
| 85 | GRAZING_SRS | NUMBER(1) | | | |
| 86 | LAND_USE_SRS | NUMBER(2) | | | |
| 87 | OPERABILITY_SRS | NUMBER(2) | | | |
| 88 | STAND_STRUCTURE_SRS | NUMBER(2) | | | |
| 89 | TRTCD1_SRS | NUMBER(2) | | | |
| 90 | TRTCD2_SRS | NUMBER(2) | | | |
| 91 | TRTCD3_SRS | NUMBER(2) | | | |

[1] A = all conditions regardless of condition class status
P = all conditions excluding outside-of-the-population conditions
S = all conditions in the sample (excluding outside-of-the-population, denied-access, and hazardous conditions)
F = all forested conditions (LANDCLCD = 1)
T = all timberland conditions (LANDCLCD = 1, SITECLCD < 7)
N = nonindustrial private timberland RPA requirement, optional on all other timberland conditions
O = optional on forested conditions, not collected on nonforest conditions
NF = nonforest conditions

| | |
|---|---|
| CND_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT, CONDID) |
| CND_PK | (CN) |
| CND_PLT_FK_I | (PLT_CN) |
| CND_UK | (PLT_CN, CONDID) |

1. CN — Sequence number. A unique sequence number used to identify a condition record.

2. PLT_CN — Plot sequence number. Foreign key linking the condition record to the plot record.

3. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

6. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

7. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

8. CONDID — Condition class number. Unique identifying number assigned to each condition on a plot. A condition is initially defined by condition class status. Differences in reserved status, owner group, forest type, stand-size class, regeneration status, and stand density further define condition for forest land. Mapped nonforest conditions are also assigned numbers. At the time of the plot establishment, the condition class at plot center (the center of subplot 1) is usually designated as condition class 1. Other condition classes are assigned numbers sequentially at the time each condition class is delineated. On a plot, each sampled condition class must have a unique number that can change at remeasurement to reflect new conditions on the plot.

9. COND_STATUS_CD

   Condition status code. (formerly LANDCLCD) A code to indicate the basic land cover. Starting with annual inventory protocols, land class code was renamed condition class status code.

| Code | Description |
|---|---|
| 1 | Land that is within the population of interest, is accessible, is on a subplot that can be occupied at subplot center, can safely be visited, and meets at least one of the two following criteria: (a) the condition is at least 10-percent stocked by trees of any size or has been at least 10-percent stocked in the past. Additionally, the condition is not subject to nonforest use(s) that prevent normal tree regeneration and succession such as regular mowing, intensive grazing, or recreation activities; or (b) in several western woodland types where stocking cannot be determined, and the condition has at least 5 percent crown cover by trees of any size, or has had at least 5 percent cover in the past. Additionally, the condition is not subject to nonforest use that prevents normal regeneration and succession such as regular mowing, chaining, or recreation activities. To qualify as forest land, the prospective condition must be at least 1.0 ac in size and 120.0 ft wide measured stem-to-stem. Forested strips must be 120.0 ft wide for a continuous length of at least 363.0 ft in order to meet the acre threshold. Forested strips that do not meet these requirements are classified as part of the adjacent nonforest land. |
| 2 | Nonforest land is any land within the sample that does not meet the definition of accessible forest land or any of the other types of basic land covers. To qualify, the area must be at least 1.0 ac in size and 120.0 ft wide, with some exceptions that are described in the document “Forest inventory and analysis national core field guide, volume 1: field data collection procedures for phase 2 plots, version 2.0”. Evidence of "possible" or future development or conversion is not considered. A nonforest land condition will remain in the sample and will be examined at the next occasion to see if it has become forest land. |
| 3 | Noncensus water: Lakes, reservoirs, ponds, and similar bodies of water 1.0 ac to 4.5 ac in size. Rivers, streams, canals, etc., 30.0 ft to 200 ft wide (1990 U.S. Census definition). This definition was used in the 1990 census and applied when the data became available. Earlier inventories defined noncensus water differently. |
| 4 | Census water: Lakes, reservoirs, ponds, and similar bodies of water 4.5 ac in size and larger; and rivers, streams, canals, etc., more than 200 ft wide (1990 U.S. Census definition). |
| 5 | Nonsampled : conditions within accessible forest land are delineated, regardless of size, as a separate condition. |

10. COND_NONSAMPLE_REASN_CD

Condition nonsampled reason code. The reason why the condition was not sampled.

| Code | Description |
|---|---|
| 01 | Outside U.S. boundary – Assign this code to condition classes beyond the U.S. border. |
| 02 | Denied access area – Any area within the sampled area of a plot to which access is denied by the legal owner, or to which an owner of the only reasonable route to the plot denies access. There are no minimum area or width requirements for a condition class delineated by denied access. Because a denied-access condition can become accessible in the future, it remains in the sample and is re-examined at the next occasion to determine if access is available. In some regions denied access plots may be replaced; check with the field supervisor regarding regional protocols for plot replacement. |
| 03 | Hazardous situation – Any area within the sampled area on plot that cannot be accessed because of a hazard or danger, for example cliffs, quarries, strip mines, illegal substance plantations, temporary high water, etc. Although the hazard is not likely to change over time, a hazardous condition remains in the sample and is re-examined at the next occasion to determine if the hazard is still present. There are no minimum size or width requirements for a condition class delineated by a hazardous condition. In some regions hazardous plots may be replaced; check with the field supervisor regarding regional protocols for plot replacement. |
| 10 | Other – This code is used whenever a plot or condition class is not sampled due to a reason other than one of the specific reasons listed. A field note is required to describe the situation. |

11. RESERVCD Reserved status code. Reserved land is land that is withdrawn by law(s) prohibiting the management of the land for the production of wood products. CORE: All accessible forestland condition classes (Condition Class Status = 1); CORE OPTIONAL: Non-forest condition classes (Condition Class Status >1)

| Code | Description |
|---|---|
| 0 | Not reserved |
| 1 | Reserved |

12. OWNCD Owner class code. A code to indicate the class in which the landowner (at the time of the inventory) belongs. CORE: All accessible forest land condition classes (Condition Class Status = 1); CORE OPTIONAL: Nonforest condition classes (Condition Class Status > 1)

| Code | Description |
|---|---|
| 11 | National Forest : Lands administered by USDA Forest Service, National Forest System |
| 12 | National Grassland |
| 13 | Other Forest Service |
| 21 | National Park Service: Lands administered by USDI National Park Service |
| 22 | Bureau of Land Management: Lands administered by USDI Bureau of Land Management |
| 23 | Fish and Wildlife Service |
| 24 | Department of Defense/Energy |
| 25 | Other federal |
| 31 | State |
| 32 | Local (County, Municipal, etc) |
| 33 | Other non-federal public |
| 41 | Corporate |
| 42 | Non-governmental conservation/natural resources organization |
| 43 | Unincorporated local partnership/association/club |
| 44 | Native American (Indian) |
| 45 | Individual |
| 46 | Undifferentiated private (assigned when there are too few privately-owned plots in a population where an estimate of land area by owner class code may violate the landowners' privacy) |

13. OWNGRPCD Owner group code. A broader group of landowner classes. CORE: All accessible forest land condition classes (Condition Class Status = 1);CORE OPTIONAL: Non-forest condition classes (Condition Class Status > 1)

| Code | Description |
|---|---|
| 10 | Forest Service (OWNCD 11, 12, 13) |
| 20 | Other federal (OWNCD 21, 22, 23, 24, 25) |
| 30 | State and local government (OWNCD 31, 32, 33) |
| 40 | Private (OWNCD 41, 42, 43, 44, 45,46) |

14. FORINDCD Private owner industrial status code. A code to indicate whether the landowner owns and operates a primary wood processing plant. A primary wood processing plant is any commercial operation that originates the primary processing of wood on a regular and continuing basis. Examples include: pulp or paper mill, sawmill, panel board mill, post or pole mill. CORE: All accessible forest land condition classes (Condition Class Status = 1) when the owner group is private (OWNER GROUP 40); CORE OPTIONAL: Non-forest condition classes (Condition Class Status > 1) when the owner group is private (OWNER GROUP 40)

| Code | Description |
|---|---|
| 0 | Land is not owned by industrial owner with wood processing plant |
| 1 | Land is owned by industrial owner with wood processing plant |

15. ADFORCD — Administered forest code. Identifies the administrative unit (Forest Service Region and National Forest) in which the condition is located. The first two digits of the four digit code are for the Region number and the last two digits are for the Administered National Forest number. Refer to Appendix E for codes. Recorded in coordination with plot measurement date.

16. FORTYPCD — Forest type code, derived by algorithm. The forest typing algorithm is a hierarchical procedure. The algorithm begins by comparing the live tree stocking of softwoods and hardwoods and continues in a stepwise fashion comparing successively smaller subgroups of the preceding aggregation of initial types. The aggregated initial type groups used at each step of the process are called combined type groups. Each initial type group can occur in more than one of these combined groups. The stepwise progression proceeds in most cases until a plurality of an initial type group is identified. In certain situations, the algorithm may revert to the field call. These situations are what would cause this variable to differ from FORTYPCDCALC. Refer to Appendix D for a detailed list of forest type codes. Information on how data are assigned to these types for a particular State can be obtained by contacting the appropriate FIA unit. Nonstocked forest land has a live tree stocking < 10.

17. FLDTYPCD — Forest type code (assigned by the field crew). Forest type is based on the tree species or species groups forming a plurality of all live stocking. Refer to Appendix D for a detailed list of forest type codes. Information on how data are assigned to these types for a particular State can be obtained by contacting the appropriate FIA unit. Nonstocked forest land has a live tree stocking < 10.

18. MAPDEN — Tree density class code. Code that indicates the relative density classification of the condition. Delineation by density class is done only when the less-dense condition is 50 percent or less as dense as the denser condition. Codes other than 1 are used to indicate that tree density is the only factor differentiating two conditions. New in annual inventory.

| Code | Description |
|---|---|
| 1 | Initial tree density class |
| 2 | Density class 2 – density different than density of the condition assigned a tree density class of 1 |
| 3 | Density class 3 – density different than densities of the conditions assigned tree density classes of 1 and 2 |

19. STDAGE — Stand age. For annual inventories (MANUAL > 1.0), stand age is equal to the field-recorded stand age (FLDAGE) with two exceptions. One exception is if field-recorded stand age equals either 998 or 999, then stand age is computed. The other exception is that RMRS always computes stand age using field recorded tree ages from trees in the

calculated stand size class. If no tree ages are available, then RMRS sets this attribute equal to the field recorded stand age. For all inventories, nonstocked stands have stand age set to 0. In periodic inventories, stand age is determined using local procedures. Annual inventory data will contain stand ages assigned to the nearest year. For some older inventories, stand age was recorded in 10-year classes for stands < 100 years old, 20-year age classes for stands between 100 and 200 years, and 100-year age classes if older than 200 years. These classes were converted to store the midpoint of the age class in years. Null values in the periodic data (INVYR < 1999) indicate that the stand was recorded as mixed age on forested condition clasees. Age is difficult to measure and therefore stand age may have large measurement errors.

20. STDSZCD Stand-size class code (derived by algorithm). A classification of the predominant (based on stocking) diameter class of live trees within the condition. Large diameter trees are at least 11.0 inches diameter for hardwoods and at least 9.0 inches diameter for softwoods. Medium diameter trees are at least 5.0 inches diameter but not as large as large diameter trees. Small diameter trees are less than 5.0 inches diameter.

| Code | Description |
|---|---|
| 1 | Large diameter: Stands with an all live stocking of at least 10 (base 100); with more than 50 percent of the stocking in medium and large diameter trees; and with the stocking of large diameter trees equal to or greater than the stocking of medium diameter trees |
| 2 | Medium diameter: Stands with an all live stocking of at least 10 (base 100); with more than 50 percent of the stocking in medium and large diameter trees; and with the stocking of large diameter trees less than the stocking of medium diameter trees |
| 3 | Small diameter: Stands with an all live stocking value of at least 10 (base 100) on which at least 50 percent of the stocking is in small diameter trees |
| 4 | Chaparral: Forest land with all live stocking less than 10 and at least 5 percent cover by species that make up chaparral communities |
| 5 | Nonstocked: Forest land with all live stocking less than 10 |

21. FLDSZCD Field stand-size class code (assigned by the field crew). A classification of the predominant (based on stocking) diameter class of live trees within the condition.

| Code | Description |
|---|---|
| 0 | Nonstocked: Meeting the definition of accessible land and one of the following applies (1) less than 10 percent stocked by trees of any size, and not classified as cover trees (see code 6), or (2) for several western woodland species where stocking standards are not available, less than 5 percent crown cover of trees of any size |

1 ≤ 4.9 inches (seedlings / saplings). At least 10 percent stocking (or 5 percent crown cover if stocking standards are not available) in trees of any size; and at least 2/3 of the crown cover is in trees less than 5.0 inches DBH/DRC

2 5.0 – 8.9 inches (softwoods)/ 5.0 – 10.9 inches (hardwoods). At least 10 percent stocking (or 5 percent crown cover if stocking standards are not available) in trees of any size; and at least one-third of the crown cover is in trees greater than 5.0 inches DBH/DRC and the plurality of the crown cover is in softwoods 5.0 – 8.9 inches diameter and/or hardwoods 5.0 –10.9 in DBH, and/or for western woodland trees 5.0 – 8.9 inches DRC

3 9.0 – 19.9 inches (softwoods)/ 11.0 – 19.9 inches (hardwoods). At least 10 percent stocking (or 5 percent crown cover if stocking standards are not available) in trees of any size; and at least one-third of the crown cover is in trees greater than 5.0 inches DBH/DRC and the plurality of the crown cover is in softwoods 9.0 – 19.9 inches diameter and/or hardwoods between 11.0 –19.9 in DBH, and for western woodland trees 9.0 – 19.9 inches DRC

4 20.0 – 39.9 inches. At least 10 percent stocking (or 5 percent crown cover if stocking standards are not available) in trees of any size; and at least one-third of the crown cover is in trees greater than 5.0 inches DBH/DRC and the plurality of the crown cover is in trees 20.0 – 39.9 inches DBH

5 40.0+ inches. At least 10 percent stocking (or 5 percent crown cover if stocking standards are not available) in trees of any size; and at least one-third of the crown cover is in trees greater than 5.0 inches DBH/DRC and the plurality of the crown cover is in trees ≥ 40.0 inches DBH

6 Cover trees (trees not on species list, used for plots classified as nonforest): Less than 10 percent stocking by trees of any size, and greater than 5 percent crown cover of species that comprise cover trees.

22. SITECLCD Site productivity class code. A classification of forest land in terms of inherent capacity to grow crops of industrial wood. Identifies the potential growth in cubic feet/acre/year and is based on the culmination of mean annual increment of fully stocked natural stands. For data stored in the database that were processed outside of NIMS, this variable may be assigned based on the site productivity determined with the site trees, or from some other source, but the actual source of the site productivity class code is not known. For data processed with NIMS, this variable may either be assigned based on the site trees available for the plot, or, if no valid site trees are available, this variable is set equal to SITECLCDEST, a default value that is either an estimated or predicted site productivity class. If SITECLCDEST is used to populate SITECLCD, the variable SITECL_METHOD is set to 6.

| Code | Description |
|---|---|
| 1 | 225+ cubic feet/acre/year |
| 2 | 165-224 cubic feet/acre/year |
| 3 | 120-164 cubic feet/acre/year |
| 4 | 85-119 cubic feet/acre/year |
| 5 | 50-84 cubic feet/acre/year |
| 6 | 20-49 cubic feet/acre/year |
| 7 | 0-19 cubic feet/acre/year |

23. SICOND — The site index (in feet) within the condition. This represents the average total length that dominant and co-dominant trees in fully-stocked, even-aged stands will obtain at key ages.

24. SIBASE — Site index base age. The base age (in years) of the site index curves used to derive site index.

25. SISP — Site index species code. The species upon which the site index is based.

26. STDORGCD — Regeneration status (stand origin) code. Method of stand regeneration for the trees in the condition. An artificially regenerated stand is established by planting or artificial seeding.

| Code | Description |
|---|---|
| 0 | Natural stands |
| 1 | Clear evidence of artificial regeneration |

27. STDORGSP — Artificial regeneration (stand origin) species code. The species code for the predominant artificially regenerated species (only when STDORGCD = 1).

28. PROP_BASIS — Proportion basis. Valid values are either “SUBP” or “MACR”. This indicates whether the proportion stored in CONDPROP_UNADJ is based on the subplot (SUBP) or on the macroplot (MACR).

29. CONDPROP_UNADJ

Condition proportion unadjusted. The unadjusted proportion, based on the sampling design (either the subplot or macroplot), of the plot that is in the condition. If the value of the condition variable PROP_BASIS is “MACR” then CONDPROP_UNDADJ is based on the macroplot otherwise it is based on the subplot. The sum of all condition proportions for a plot equals 1. The condition proportion is adjusted by either the POP_STRATUM.ADJ_FACTOR_MACR or the POP_STRATUM.ADJ_FACTOR_SUBP when generating population estimates to take into account “out of population” and “denied access” portions of subplots within the stratum.

30. MICRPROP_UNADJ

    Microplot proportion unadjusted. The unadjusted proportion, based on the sampling design, of the microplots that are in the condition. The sum of all microplot condition proportions for a plot equals 1.

31. SUBPPROP_UNADJ

    Subplot proportion unadjusted. The unadjusted proportion, based on the sampling design, of the subplots that are in the condition. The sum of all subplot condition proportions for a plot equals 1.

32. MACRPROP_UNADJ

    Macroplot proportion unadjusted. The unadjusted proportion, based on the sampling design, of the macroplots that are in the condition. The sum of all macroplot condition proportions for a plot equals 1.

33. SLOPE — Slope. The angle of slope, in percent, of the condition. Valid values are 000 through 155 for data collected in 1999 and after, and 000 through 200 on data collected before 1999. Before 1999, the field crew measured condition slope by sighting along the average incline or decline of the condition. Beginning in 1999, slope is collected on subplots but no longer collected for conditions. For plots taken in 1999 and after, the slope from the subplot representing the greatest percentage of the condition will be assigned as a surrogate. In the event that two or more subplots represent the same amount of area in the condition, the slope from the lower numbered subplot is used.

34. ASPECT — Aspect. The direction of slope, to the nearest degree, for most of the condition. North is recorded as 360. When slope is less than 5 percent, there is no aspect and this item is set to zero. Before 1999, the field crew measured condition aspect. Beginning in 1999, aspect is collected on subplots but no longer collected for conditions. For plots taken in 1999 and after, the aspect from the subplot representing the greatest percentage of the condition will be assigned as a surrogate. In the event that two or more subplots represent the same percentage of area in the condition, the slope from the lower numbered subplot is used.

35. PHYSCLCD — Physiographic class code. The general effect of land form, topographical position, and soil on moisture available to trees. These codes are new in annual inventory; older inventories have been updated to these codes when possible.

| Code | Description |
|---|---|
| | **Xeric** sites (normally low or deficient in available moisture) |
| 11 | Dry Tops - Ridge tops with thin rock outcrops and considerable exposure to sun and wind. |
| 12 | Dry Slopes - Slopes with thin rock outcrops and considerable exposure to sun and wind. Includes most mountain/steep slopes with a southern or western exposure. |
| 13 | Deep Sands - Sites with a deep, sandy surface subject to rapid loss of moisture following precipitation. Typical examples include sand hills, ridges, and flats in the South, sites along the beach and shores of lakes and streams. |
| 19 | Other Xeric - All dry physiographic sites not described above. |
| | **Mesic** sites (normally moderate but adequate available moisture) |
| 21 | Flatwoods - Flat or fairly level sites outside of flood plains. Excludes deep sands and wet, swampy sites. |
| 22 | Rolling Uplands - Hills and gently rolling, undulating terrain and associated small streams. Excludes deep sands, all hydric sites, and streams with associated flood plains. |
| 23 | Moist Slopes and Coves - Moist slopes and coves with relatively deep, fertile soils. Often these sites have a northern or eastern exposure and are partially shielded from wind and sun. Includes moist mountain tops and saddles. |
| 24 | Narrow Flood plains/Bottomlands – Flood plains and bottomlands less than 1/4-mile in width along rivers and streams. These sites are normally well drained but are subjected to occasional flooding during periods of heavy or extended precipitation. Includes associated levees, benches, and terraces within a 1/4 mile limit. Excludes swamps, sloughs, and bogs. |
| 25 | Broad Floodplains/Bottomlands - Floodplains and bottomlands less than ¼ mile or wider along rivers and streams. These sites are normally well drained but are subjected to occasional flooding during periods of heavy or extended precipitation. Includes associated levees, benches, and terraces. Excludes swamps, sloughs, and bogs with year-round water problems. |
| 29 | Other Mesic - All moderately moist physiographic sites not described above. |
| | **Hydric** sites (normally abundant or overabundant moisture all year) |
| 31 | Swamps/Bogs - Low, wet, flat, forested areas usually quite extensive that are flooded for long periods except during periods of extreme drought. Excludes cypress ponds and small drains. |
| 32 | Small Drains - Narrow, stream-like, wet strands of forest land often without a well-defined stream channel. These areas are poorly drained or flooded throughout most of the year and drain the adjacent higher ground. |

33 Bays and wet pocosins - Low, wet, boggy sites characterized by peaty or organic soils. May be somewhat dry during periods of extended drought. Examples include sites in the Lake States with lowland swamp conifers.
34 Beaver ponds.
35 Cypress ponds.
39 Other hydric - All other hydric physiographic sites.

36. GSSTKCD Growing-stock stocking code. A code to indicate the stocking of the condition by growing-stock trees, including seedlings. Growing-stock trees are those where tree class (TREE.TREECLCD) equals 2 and species group (TREE.SPGRPCD) is equal to other than 23 (western woodland softwoods), 43 (eastern noncommercial hardwoods), and 48 (western woodland hardwoods).

| Code | Description | |
|---|---|---|
| 1 | Overstocked | (100+ %) |
| 2 | Fully stocked | (60 – 99%) |
| 3 | Medium stocked | (35 – 59%) |
| 4 | Poorly stocked | (10 – 34%) |
| 5 | Nonstocked | ( 0 – 9%) |

37. ALSTKCD All live stocking code. A code to indicate the stocking of the condition by live trees, including seedlings. Data are in classes as listed for GSSTKCD above. This variable may not be present for some older inventories.

38. TRTOPCD Treatment opportunity class code. Identifies the physical opportunity to improve stand conditions by applying management practices. Determined only for timberland (LANDCLCD=1, SITECLCD 1-6, and RESERVCD=0). This variable is mandatory for nonindustrial private lands AND optional for other ownerships.

Code Description
1 Regeneration without site preparation: The area is characterized by the absence of a manageable stand because of inadequate stocking of growing stock. Growth will be much below the potential for the site if the area is left alone. Prospects are not good for natural regeneration. Artificial regeneration will require little or no site preparation.
2 Regeneration with site preparation: The area is characterized by the absence of a manageable stand because of inadequate stocking of growing stock. Growth will be much below the potential for the site if the area is left alone. Either natural or artificial regeneration will require site preparation.
3 Stand conversion: The area is characterized by stands of undesirable, chronically diseased, or off-site (found where not normally expected) species. Growth and quality will be much

below the potential for the site if the area is left alone. The best prospect is for conversion to a different forest type or species.

4 Thinning seedlings and saplings: The stand is characterized by a dense stocking of growing stock. Stagnation appears likely if left alone. Stocking must be reduced to help crop trees attain dominance.

5 Thinning poletimber: The stand is characterized by a dense stocking of growing stock. Stocking must be reduced to prevent stagnation or to confine growth to selected, high-quality crop trees.

6 Other stocking control: The stand is characterized by an adequate stocking of seedlings, saplings, and poletimber growing stock, mixed with competing vegetation either overtopping or otherwise inhibiting the development of crop trees. The undesirable material must be removed to release overtopped trees, to prevent stagnation, or to improve composition, form, or growth of the residual stand.

7 Other intermediate treatments: The stand would benefit from other special treatments, such as fertilization to improve the growth potential of the site, and pruning to improve the quality of individual crop trees.

8 Clearcut harvest: The area is characterized by a mature or overmature sawtimber stand of sufficient volume to justify a commercial harvest. The best prospect is to harvest the stand and regenerate.

9 Partial cut harvest: The stand is characterized by poletimber- or sawtimber-size trees with sufficient merchantable volume for a commercial harvest, which will meet intermediate stand treatment needs or prepare the stand for natural regeneration. The stand is of a favored species composition and may be even or uneven aged. Included are such treatments as commercial thinning, seed tree, or shelterwood regeneration, and use of the selection system to maintain an uneven-age stand.

10 Salvage harvest: The stand is characterized by excessive damage to merchantable timber because of fire, insects, disease, wind, ice, or other destructive agents. The best prospect is to remove damaged or threatened material.

11 No treatment: No silvicultural treatment is needed.

39. DSTRBCD1 Disturbance 1 code. A code to indicate the kind of disturbance occurring since the last measurement or within the last 5 years for new plots. The area affected by the disturbance must be at least 1 acre in size. A significant level of disturbance (mortality or damage to 25 percent of the trees in the condition) is required. This attribute is new in annual inventory. Codes 11, 12, 21, 22, and 55 are valid where MANUAL (PLOT table) is 2.0 and later.

| Code | Description |
|---|---|
| 0 | No visible disturbance |
| 10 | Insect damage |
| 11 | insect damage to understory vegetation |
| 12 | insect damage to trees, including seedlings and saplings |
| 20 | Disease damage |
| 21 | disease damage to understory vegetation |
| 22 | disease damage to trees, including seedlings and saplings |
| 30 | Fire damage (from crown and ground fire, either prescribed or natural) |
| 31 | Ground fire damage |
| 32 | Crown fire damage |
| 40 | Animal damage |
| 41 | Beaver (includes flooding caused by beaver) |
| 42 | Porcupine |
| 43 | Deer/ungulate |
| 44 | Bear (CORE OPTIONAL) |
| 45 | Rabbit (CORE OPTIONAL) |
| 46 | Domestic animal/livestock (includes grazing) |
| 50 | Weather damage |
| 51 | Ice |
| 52 | Wind (includes hurricane, tornado) |
| 53 | Flooding (weather induced) |
| 54 | Drought |
| 55 | Earth movement/avalanches |
| 60 | Vegetation (suppression, competition, vines) |
| 70 | Unknown / not sure / other (include in NOTES) |
| 80 | Human-caused damage – any significant threshold of human-caused damage not described in the DISTURBANCE codes or in the TREATMENT codes. |

40. DSTRBYR1 Disturbance year 1. Year in which Disturbance 1 is estimated to have occurred. If the disturbance occurs continuously over a period of time, the value 9999 is used. This attribute is new in annual inventory.

41. DSTRBCD2 Disturbance 2 code. The second disturbance code, if the stand has experienced more than one disturbance. See DSTRBCD1 for more information. This attribute is new in annual inventory.

42. DSTRBYR2 Disturbance year 2. The year in which Disturbance 2 occurred. See DSTRBYR1 for more information. This attribute is new in annual inventory.

43. DSTRBCD3 Disturbance 3 code. The third disturbance code, if the stand has experienced more than two disturbances. See DSTRBCD1 for more information. This attribute is new in annual inventory.

44. DSTRBYR3 Disturbance year 3. The year in which Disturbance 3 occurred. See DSTRBYR1 for more information. This attribute is new in annual inventory.

45. TRTCD1 Stand Treatment 1 code. A code to indicate the type of stand treatment that has occurred since the last measurement or within the last 5 years for new plots. The area affected by the treatment must be at least 1 acre in size. Inventories conducted before 1999 may record treatments occurring within the last 20 years for new plots. New in annual inventory.

| Code | Description |
|---|---|
| 00 | No observable treatment. |
| 10 | Cutting – The removal of one or more trees from a stand. |
| 20 | Site preparation – Clearing, slash burning, chopping, disking, bedding, or other practices clearly intended to prepare a site for either natural or artificial regeneration. |
| 30 | Artificial regeneration - Following a disturbance or treatment (usually cutting), a new stand where at least 50% of the live trees present resulted from planting or direct seeding. |
| 40 | Natural regeneration – Following a disturbance or treatment (usually cutting), a new stand where at least 50% of the live trees present (of any size) were established through the growth of existing trees and/or natural seeding or sprouting. |
| 50 | Other silvicultural treatment – The use of fertilizers, herbicides, girdling, pruning, or other activities (not covered by codes 10-40) designed to improve the commercial value of the residual stand, or chaining, which is a practice used on western woodlands to encourage wildlife forage. |

46. TRTYR1 Treatment year 1. Year in which Stand Treatment 1 is estimated to have occurred. New in annual inventory.

47. TRTCD2 Stand treatment 2. A code to indicate the type of stand treatment that has occurred since the last measurement or within the last 5 years for new plots. Inventories conducted before 1999 may record treatments occurring within the last 20 years for new plots. Use same codes as TRTCD1. New in annual inventory.

48. TRTYR2 Treatment year 2. Year in which Stand Treatment 2 is estimated to have occurred. New in annual inventory.

49. TRTCD3 Stand Treatment 3 code. A code to indicate the type of stand treatment that has occurred since the last measurement or within the last 5 years for new plots. Inventories conducted before 1999 may record treatments occurring within the last 20 years for new plots. Use same codes as TRTCD1. New in annual inventory.

50. TRTYR3 Treatment year 3. Year in which Stand Treatment 3 is estimated to have occurred. New in annual inventory.

51. PASTNFCD Past nonforest/ inaccessible code. Used when conditions were classified as nonforest or inaccessible during the previous inventory but are classified as accessible forest land during the current inventory. Indicates the kind of land use occurring at the previous inventory. New in 1999.

| Code | Description |
|---|---|
| 10 | Agricultural land |
| 11 | Cropland |
| 12 | Pasture (improved through cultural practices) |
| 13 | Idle farmland |
| 14 | Orchard |
| 15 | Christmas tree plantation |
| 20 | Rangeland |
| 30 | Developed |
| 31 | Cultural (business, residential, other intense human activity) |
| 32 | Rights-of-way (improved road, railway, power line) |
| 33 | Recreation (park, golf course, ski run) |
| 40 | Other (undeveloped beach, marsh, bog, non-census water) |
| 90 | Not sampled |
| 91 | Census water |
| 92 | Denied access |
| 93 | Hazardous |
| 94 | Not in the sample |

52. PRESNFCD Present nonforest code. A code to indicate the kind of land use occurring now for conditions that were previously classified as forest but are now classified as nonforest. New in annual inventory.

| Code | Description |
|---|---|
| 10 | Agricultural land |
| 11 | Cropland |
| 12 | Pasture (improved through cultural practices) |
| 13 | Idle farmland |
| 14 | Orchard |
| 15 | Christmas tree plantation |
| 20 | Rangeland |
| 30 | Developed |
| 31 | Cultural (business, residential, other intense human activity) |

32 Rights-of-way (improved road, railway, power line)
33 Recreation (park, golf course, ski run)
40 Other (undeveloped beach, marsh, bog, non-census water)
90 Not sampled
91 Census water
92 Denied access
93 Hazardous
94 Not in the sample

53. BALIVE Live tree basal area per unit area. Basal area in square-feet per acre of all live trees over 1 inch DBH/DRC sampled in the condition.

54. FLDAGE Field-recorded stand age. The stand age as assigned by the field crew. Based on the average total age, to the nearest year, of the trees in the field-recorded stand size class of the condition, determined using local procedures. For non-stocked stands, 0 is stored. If all of the trees in a condition class are of a species that by regional standards cannot be bored for age (e.g., mountain mahogany, tupelo), 998 is recorded. If tree cores are not counted in the field, but are collected and sent to the office for the counting of rings, 999 is recorded.

55. ALSTK All-live-tree stocking percent. The sum of stocking percent values of all live trees on the condition. The percent is then assigned to a stocking class, which is found in ALSTKCD.

56. GSSTK Growing-stock stocking percent. The sum of stocking percent values of all growing stock trees on the condition. The percent is then assigned to a stocking class, which is found in GSSTKCD.

57. FORTYPCDCALC

Calculated forest type code. Refer to Appendix D for a detailed list of forest type codes.

58. HABTYPCD1 Habitat type code 1. **Specific to Rocky Mountain, Pacific Northwest, and North Central Research Stations**. A code indicating the primary habitat type (or community type) for this condition. Habitat type captures information about both the overstory and understory vegetation and usually describes the vegetation that is predicted to become established after all successional stages of the ecosystem are completed without any disturbance. This code can be translated using the publication in which it was named and described (see HABTYPCD1_PUB_CD and HABYTYPCD1_DESCR_PUB_CD).

59. HABTYPCD1_PUB_CD

Habitat type code 1 publication code. **Specific to Rocky Mountain, Pacific Northwest, and North Central Research Stations.** A code to indicate the publication that lists the name for the primary condition habitat type code (HABTYPCD1). Contact the appropriate station for the publication.

60. HABTYPCD1_DESCR_PUB_CD

Habitat type code 1 description publication code. **Specific to Rocky Mountain, Pacific Northwest, and North Central Research Stations.** A code to indicate the publication that gives a description for habitat type code 1 (HABTYPCD1). This publication may or may not be the same publication that lists the name of the habitat type (HABTYPCD1_PUB_CD). Contact the appropriate station for the publication.

61. HABTYPCD2 Secondary condition habitat type. See HABTYPCD1.

62. HABTYPCD2_PUB_CD

Habitat type code 2 publication code. **Specific to Rocky Mountain, Pacific Northwest, and North Central Research Stations.** A code to indicate the publication that lists the name for the secondary condition habitat type code (HABTYPCD2). Contact the appropriate station for the publication.

63. HABTYPCD2_DESCR_PUB_CD

Habitat type code 2 description publication code. **Specific to Rocky Mountain, Pacific Northwest, and North Central Research Stations.** A code to indicate the publication that gives a description for habitat type code 2 (HABTYPCD2). This publication may or may not be the same publication that lists the name of the habitat type (HABTYPCD2_PUB_CD). Contact the appropriate station for the publication.

64. MIXEDCONFCD

Mixed conifer code. **Specific to Pacific Northwest Research Station.** All other Stations record null for this variable. Contact Pacific Northwest Research Station for more information. An indicator to show if there is a calculated forest type for mixed conifer site. Yes/No field (Y/N).

To classify as a mixed conifer site the condition class must be capable of being stocked with greater than 70% conifers and one of the following must be true:

1.) Douglas-fir predominates and the county is not Del Norte, Humbolt, Marin, Mendocino, Napa, San Mateo, Santa Clara, Santa Cruz, or Sonoma

2.) Sugar pine or incense-cedar predominate

3.) Ponderosa pine and/or Jeffrey pine, either singly or in combination, predominate, but make up less than 80% of the conifer stocking

4.) White fir and/or red fir and/or Shasta red fir, either singly or in combination, predominate, but make up less than 80% of the conifer stocking

On a mixed conifer site, a complex association of ponderosa pine, sugar pine, Douglas-fir, white fir, and red fir may exist. Incense-cedar may also be a component. Generally these five or six conifer species are intermixed, either as single trees or in small groups. Vertical mixing is also common with one to three species in the overstory and one or two species in the understory. Mixed conifer sites are often on east facing slopes of the coast range, and on the west-facing and higher elevation east-facing slopes of the Cascades and Sierra Nevadas.

65. VOL_LOC_GRP

Volume location group. An identifier to indicate what equations are used for volume, biomass, site index, etc. A volume group is usually designated for a geographic area, such as a State, multiple States, a group of counties, or an ecoregion. For the specific codes used in a particular Region or State, contact the FIA program responsible for that Region or State.

66. SITECLCDEST

Site productivity class code estimated. This is a field-recorded code that is an estimated or predicted indicator of site productivity. It is used as the value for SITECLCD if no valid site tree is available. When SITECLCDEST is used as SITECLCD, SITECL_METHOD is set to 6. For data stored in the database that were processed prior to the use of NIMS, this variable is null. Used only by NERS.

| Code | Description |
|---|---|
| 1 | 225+ cubic feet/acre/year |
| 2 | 165-224 cubic feet/acre/year |
| 3 | 120-164 cubic feet/acre/year |
| 4 | 85-119 cubic feet/acre/year |
| 5 | 50-84 cubic feet/acre/year |
| 6 | 20-49 cubic feet/acre/year |
| 7 | 0-19 cubic feet/acre/year |

67. SITETREE_TREE

    Site tree tree number. If an individual site index tree is used to calculate SICOND, this is the tree number of the site tree (SITETREE table, TREE column) used. Used only by NCRS.

68. SITECL_METHOD

    Site class method. A code identifying the method for determining site index or estimated site productivity class.

| Code | Description |
|---|---|
| 1 | Tree measurement (length, age, etc.) collected during this inventory. |
| 2 | Tree measurement (length, age, etc.) collected during a previous inventory. |
| 3 | Site index or site productivity class estimated either in the field or office. |
| 4 | Site index or site productivity class estimated by the height intercept method during this inventory. |
| 5 | Site index or site productivity class estimated using multiple site trees. |
| 6 | Site index or site productivity class estimated using default values. |

69. CREATED_BY The user who created the record.

70. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

71. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

72. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

73. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

74. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

75. CYCLE — Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

76. SUBCYCLE — Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

77. SOIL_ROOTING_DEPTH_PNW (**PNW**)

Soil rooting depth in PNW. Describes the soil depth (the depth tree roots can penetrate to) within each forest land condition class. Required for all forest condition classes. This variable is coded 1 when more than half of area in the condition class is estimated to be less than 20 inches deep. Ground pumice, decomposed granite, and sand all qualify as types of soil.

| Code | Description |
|---|---|
| 1 | < 20 inches |
| 2 | ≥ 20 inches |

78. GROUND_LAND_CLASS_PNW (**PNW**)

Present ground land class in PNW. A ground land class (GLC) description is assigned.

| Code | GLC | Description |
|---|---|---|
| 120 | Timberland | Forest land which is potentially capable of producing at least 20 cubic feet/acre/year at culmination in fully stocked, natural stands (1.4 cubic meters/hectare/year) of continuous crops of trees to industrial roundwood size and quality. Industrial roundwood requires species that grow to size and quality adequate to produce lumber and other manufactured products (exclude fence posts and fuel wood which are not considered manufactured). Timberland is characterized by no severe limitations on artificial or natural restocking with species capable of producing industrial roundwood. |

| | | |
|---|---|---|
| 141 | Other forest-rocky | Other forest land which can produce tree species of industrial roundwood size and quality, but which is unmanageable because the site is steep, hazardous, and rocky, or is predominantly nonstockable rock or bedrock, with trees growing in cracks and pockets. Other forest-rocky sites may be incapable of growing continuous crops due to inability to obtain adequate regeneration success. |
| 142 | Other forest-unsuitable site (wetland, subalpine or coastal conifer scrub) CA only | Other forest land which is unsuited for growing industrial roundwood because of one of the following environment factors: willow bogs, spruce bogs, sites with high water tables or even standing water for a portion of the year, and harsh sites due to extreme climatic and soil conditions. Trees present are often extremely slow growing and deformed. Examples: whitebark pine, lodgepole, or mountain hemlock stands at timberline; shore pine along the sparkling blue Pacific Ocean (Monterey, Bishop, and Douglas-fir); willow wetlands with occasional cottonwoods present; Sitka spruce-shrub communities bordering tidal flats and channels along the coast. Includes aspen stands in high-desert areas or areas where juniper/mountain mahogany are the predominant species. |
| 143 | Other forest-pinyon-juniper | Areas currently capable of 10 percent or more tree stocking with forest trees, with juniper species predominating. These areas are not now, and show no evidence of ever having been, 10 percent or more stocked with trees of industrial roundwood form and quality. Stocking capabilities indicated by live juniper trees or juniper stumps and juniper snags less than 25 years dead or cut. Ten percent juniper stocking means 10 percent crown cover at stand maturity. For western woodland juniper species, ten percent stocking means 5 percent crown cover at stand maturity. |
| 144 | Other forest-oak (formally oak woodland) | Areas currently 10 percent or more stocked with forest trees, with low quality forest trees of oak, gray pine, madrone, or other hardwood species predominating, and which are not now, and show no evidence of ever having been, 10 percent or more stocked with trees of industrial roundwood form and quality. Trees on these sites are usually short, |

| | | |
|---|---|---|
| | | slow growing, gnarled, poorly formed, and generally suitable only for fuel wood. The following types are included: blue oak, white oak, live oak, oak-gray pine. |
| 146 | Other forest-unsuitable site (OR & WA only) | Other forest land which is unsuited for growing industrial roundwood because of one of the following environment factors: willow bogs, spruce bogs, sites with high water tables or even standing water for a portion of the year, and harsh sites due to climatic conditions. Trees present are often extremely slow growing and deformed. Examples: whitebark pine or mountain hemlock stands at timberline, shore pine along the Pacific Ocean, willow wetlands with occasional cottonwoods present, and Sitka spruce-shrub communities bordering tidal flats and channels along the coast. Aspen stands in high-desert areas or areas where juniper/mountain mahogany are the predominant species are considered other forest-unsuitable site. |
| 148 | Other forest-Cypress (CA only) | Forest land with forest trees with cypress predominating. Shows no evidence of having had 10 percent or more cover of trees of industrial roundwood quality and species. |
| 149 | Other forest-Low Productivity (this code will be calculated in the office; field crews should never use this code) | Forestland capable of growing crops of trees to industrial roundwood quality, but not able to grow wood at the rate of 20 cubic feet/acre/year. Included are areas of low stocking potential and/or very low site index. |
| 150 | Other forest-curlleaf mountain mahogany | Areas currently capable of 10% or more tree stocking with forest trees, with curlleaf mountain mahogany species predominating. These areas are not now, and show no evidence of ever having been, 10% or more stocked with trees of industrial roundwood form and quality. 10% mahogany stocking means 5% crown cover at stand maturity. |

79. PLANT_STOCKABILITY_FACTOR_PNW (**PNW**)

Plant stockability factor in PNW. Plant stockability is a usually a computed percent used to discount potential MAI on plots that are not capable of achieving normal stocking levels. In many cases there is ether no equations developed for a location or the equations do not give reasonable results. In those situations the computed values are overridden by field or office judgment calls. This field stores a stockability percent used to override computed plant stockability. It is only populated when computed values are to be overridden.

80. STND_COND_CD_PNWRS

Stand condition code in PNW. This is a 1-digit code that best describes the condition of the stand within forest condition classes. Stand condition is defined here as " the size, density, and species composition of a plant community following disturbance and at various time intervals after disturbance." Information on stand condition is used in describing wildlife habitat.

| Code | Stand Condition | Definition |
|---|---|---|
| 0 | Not applicable | Condition class is juniper, chaparral, or curlleaf mountain mahogany forest type. |
| 1 | Grass-forb | Shrubs less than 40% crown cover and less than 5 feet tall; plot may range from being largely devoid of vegetation to dominance by herbaceous species (grasses and forbs); tree regeneration generally less than 5 feet tall and 40% cover. |
| 2 | Shrub | Shrubs 40% crown canopy or greater, of any height; trees less than 40% crown canopy and less than 1.0 inches DBH/DRC. When average stand diameter exceeds 1.0 inches DBH/DRC, plot is "open sapling" or "closed sapling." |
| 3 | Open sapling-poletimber | Average stand diameter 1.0-8.9 inches DBH/DRC, and tree crown canopy poletimber is less than 60%. |
| 4 | Closed sapling, pole, sawtimber | Average stand diameter is 1.0-21.0 inches DBH/DRC and crown cover is 60% or greater. |
| 5 | Open sawtimber | Average stand diameter is 9.0-21.0 inches DBH/DRC, and crown cover is less than 60%. |
| 6 | Large sawtimber | Average stand diameter exceeds 21.0 inches DBH/DRC; crown cover may be less than 100%; decay and decadence required for old-growth characteristics is generally lacking, successional trees required by old-growth |

| | | |
|---|---|---|
| | | may be lacking, and dead and down material required by old-growth is lacking. |
| 7 | Old-growth | Average stand diameter exceeds 21.0 inches DBH/DRC. Stands over 200 years old with at least two tree layers (overstory and understory), decay in living trees, snags, and down woody material. Some of the overstory layer may be composed of long-lived successional species (i.e., Douglas-fir, western redcedar.) |

81. STND_STRUC_CD_PNWRS

Stand structure code in PNW. The code that indicates the best overall structure of the stand.

| Code | Stand Structure | Definition |
|---|---|---|
| 1 | Even-aged single-storied | A single even canopy characterizes the stand. The greatest numbers of trees are in a height class represented by the average height of the stand; there are substantially fewer trees in height classes above and below this mean. The smaller trees are usually tall spindly members that have fallen behind their associates. The ages of trees usually do not differ by more than 20 years. |
| 2 | Even-aged two-storied | Stands composed of two distinct canopy layers, such as, an overstory with an understory sapling layer possibly from seed tree and shelterwood operations. This may also be true in older plantations, where shade-tolerant trees my become established. Two relatively even canopy levels can be recognized in the stand. Understory or overtopped trees are common. Neither canopy level is necessarily continuous or closed, but both canopy levels tend to be uniformly distributed across the stand. The average age of each level differs significantly from the other. |
| 3 | Uneven-aged | Theoretically, these stands contain trees of every age on a continuum from seedlings to mature canopy trees. In practice, uneven-aged stands are characterized by a broken or uneven canopy layer. Usually the largest number of trees is in the smaller diameter classes. As trees increase in diameter, their numbers diminish |

| | | |
|---|---|---|
| | | throughout the stand. Many times, instead of producing a negative exponential distribution of diminishing larger diameters, uneven-aged stands behave irregularly with waves of reproduction and mortality. Consider any stand with 3 or more structural layers as uneven-aged. Logging disturbances (examples are selection, diameter limit, and salvage cutting) will give a stand an uneven-aged structure. |
| 4 | Mosaic | At least two distinct size classes are represented and these are not uniformly distributed but are grouped in small repeating aggregations, or occur as stringers less than 120 feet wide, throughout the stand. Each size class aggregation is too small to be recognized and mapped as an individual stand. The aggregations may or may not be even-aged. |

82. STUMP_CD_PNWRS

Stump code in PNW. Indicates if a standing dead tree record is a stump (its bole was severed by human mechanical activity.)

| Code | Description |
|---|---|
| 0 | Not a stump |
| 1 | Is a stump |
| 2 | Is a stump with another tree growing out of it |

83. DISTANCE_WATER_SRS

Distance to water in SRS. Dropped in version 3.0 SRS field guide.

84. FIRE_SRS Fire in SRS. The presence or absence of fire on the condition since the last survey or within the last five years on new/replacement plots. Evidence of fire must occur within the subplot.

| Code | Description |
|---|---|
| 0 | No evidence of fire since last survey |
| 1 | Evidence of burning (either prescribed or wildfire) |

85. GRAZING_SRS

Grazing in SRS. The presence or absence of domestic animal grazing on the condition since the last survey or within the last five years on new/replacement plots. Evidence of grazing must occur within the subplot.

| Code | Description |
|---|---|
| 0 | No evidence of livestock use (by domestic animals) |
| 1 | Evidence of grazing (including dung, tracks, trails, etc.) |

86. LAND_USE_SRS

Present land use of the condition in SRS. The classification that indicates the land use of the condition. Codes 10, 30, 40 and 99 are used only for land not better described by one of the more detailed codes within each category.

01 Accessible timber land (SITE CLASS = 1-6)

02 Accessible other forest land (SITE CLASS = 7)

10 Agricultural land - Land managed for crops, pasture, or other agricultural use. The area must be at least 1.0 acre in size and 120.0 feet wide. Use the 10 code only for cases not better described by one of the following:

- 11 Cropland
- 12 Pasture (improved through cultural practices)
- 13 Idle farmland
- 14 Orchard
- 15 Christmas tree plantation
- 16 Maintained wildlife openings

20 Rangeland - Land primarily composed of grasses, forbs, or shrubs. This includes lands vegetated naturally or artificially to provide a plant cover managed like native vegetation and does not meet the definition of pasture. The area must be at least 1.0 acre in size and 120.0 feet wide.

30 Developed - Land used primarily by humans for purposes other than forestry or agriculture. Use the 30 code only for land not better described by one of the following:

- 31 Cultural: business, residential, and other places of intense human activity.
- 32 Rights-of-way: improved roads, railway, power lines, maintained canal
- 33 Recreation: parks, skiing, golf courses
- 34 Mining

40 Other - Land parcels greater than 1.0 acre in size and greater than 120.0 feet wide that do not fall into one of the uses described above. Examples include undeveloped beaches, barren land (rock, sand), marshes, bogs, ice, and snow.

41 Marsh
42 Beach

91 Census Water – Lakes, reservoirs, ponds, and similar bodies of water 4.5 acres in size and larger; and rivers, streams, canals,etc., 30 to 200 feet wide.

92 Noncensus water – Lakes, reservoirs, ponds, and similar bodies of water 1.0 acre to 4.5 acres in size. Rivers, streams, canals,etc., more than 200 feet wide.

99 Nonsampled – Plot area not sampled due to denied access, hazardous situation or other reasons (see COND_NONSAMPLE_REASN_CD for exact reason).

87. OPERABILITY_SRS

Operability in SRS. The viability of operating logging equipment in the vicinity of the condition. The code represents the most limiting class code that occurs on each forest condition.

| Code | Description |
|---|---|
| 0 | No problems |
| 1 | Seasonal access due to water conditions in wet weather |
| 2 | Mixed wet and dry areas typical of multi-channeled streams punctuated with dry islands |
| 3 | Broken terrain, cliffs, gullies, outcroppings, etc., which would severely limit equipment, access or use |
| 4 | Year-round water problems (includes islands) |
| 5 | Slopes 20 – 40% |
| 6 | Slope greater than 40% |

88. STAND_STRUCTURE_SRS

Stand structure. The description of the predominant canopy structure for the condition. Only the vertical position of the dominant and codominant trees in the stand are considered.

| Code | Description |
|---|---|
| 0 | Non-stocked – The condition is less than 10% stocked |
| 1 | Single-storied – Most of the dominant/codominant tree crowns form a single canopy (i.e., most of the trees are approximately the same height). |

| | |
|---|---|
| 2 | Two-storied – The dominant/codominant tree crowns form two distinct canopy layers or stories. |
| 3 | Multi-storied – More than two recognizable levels characterize the crown canopy. Dominant/codominant trees of many sizes (diameters and heights) for a multilevel canopy. |

89. TRTCD1_SRS Treatment code 1 in SRS. This variable is populated when the corresponding variable TRTCD = 10.

| Code | Description |
|---|---|
| 11 | Clearcut harvest – The removal of the majority of the merchantable trees in a stand; residual stand stocking is under 50 percent. |
| 12 | Partial harvest – Removal primarily consisting of highest quality trees. Residual consists of lower quality trees because of high grading or selection harvest. (Ex. Uneven aged, group selection, high grading, species selection) |
| 13 | Seed-tree/shelterwood harvest – Crop trees are harvested leaving seed source trees either in a shelterwood or seed tree. Also includes the final harvest of the seed trees. |
| 14 | Commercial thinning – The removal of trees (usually poletimber sized) from poletimber-sized stands leaving sufficient stocking of growing stock trees to feature in future stand development. Also included are thinning in sawtimber-sized stands where poletimber-sized (or log-sized) trees have been removed to improve quality of those trees featured in a final harvest. |
| 15 | Timber Stand Improvement (cut trees only) – The cleaning, release or other stand improvement involving non-commercial cutting applied to an immature stand that leaves sufficient stocking. Use code 50 [see TRTCD] for herbicide, girdling, and other TSI treatments that **do not involve cutting**. Use code 14 for commercial thinnings. |

90. TRTCD2_SRS Treatment code 1 in SRS. See TRTCD1_SRS.

91. TRTCD3_SRS Treatment code 1 in SRS. See TRTCD1_SRS.

**Subplot Condition Table (Oracle table name is SUBP_COND)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | INVYR | NUMBER(4) | Year (YYYY) |
| 4 | STATECD | NUMBER(4) | Coded |
| 5 | UNITCD | NUMBER(2) | Coded |
| 6 | COUNTYCD | NUMBER(3) | Coded |
| 7 | PLOT | NUMBER(5) | Number |
| 8 | SUBP | NUMBER(3) | Number |
| 9 | CONDID | NUMBER(1) | Number |
| 10 | CREATED_BY | VARCHAR2(30) | Character |
| 11 | CREATED_DATE | DATE | DD-MON-YYYY |
| 12 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 13 | MODIFIED_BY | VARCHAR2(30) | Character |
| 14 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 15 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 16 | MICRCOND_PROP | NUMBER(5,4) | Proportion |
| 17 | SUBPCOND_PROP | NUMBER(5,4) | Proportion |
| 18 | MACRCOND_PROP | NUMBER(5,4) | Proportion |
| 19 | NONFR_INCL_PCT_SUBP | NUMBER(3) | |
| 20 | NONFR_INCL_PCT_MACRO | NUMBER(3) | |
| 21 | CYCLE | NUMBER(2) | Number |
| 22 | SUBCYCLE | NUMBER(2) | Number |

| | |
|---|---|
| SCD_CND_FK_I | (PLT_CN, CONDID) |
| SCD_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT ,SUBP, CONDID) |
| SCD_PK | (CN) |
| SCD_PLT_FK_I | (PLT_CN) |
| SCD_SBP_FK_I | (PLT_CN, SUBP) |
| SCD_UK | (PLT_CN, SUBP, CONDID) |

1. CN — Sequence number. A unique sequence number used to identify a subplot condition record.

2. PLT_CN — Plot sequence number. Foreign key linking the subplot condition record to the plot record.

3. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

6. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

7. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

8. SUBP — Subplot number. Number of the subplot. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

9. CONDID — Condition class number. Unique identifying number assigned to each condition on a plot. A condition is initially defined by condition class status. Differences in reserved status, owner group, forest type, stand-size class, regeneration status, and stand density further define condition for forest land. Mapped nonforest conditions are also assigned numbers. At the time of the plot establishment, the condition class at plot center (the center of subplot 1) is usually designated as condition class 1. Other condition classes are assigned numbers sequentially at the time each condition class is delineated. On a plot, each sampled condition class must have a unique number that can change at remeasurement to reflect new conditions on the plot.

10. CREATED_BY — The user who created the record.

11. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

12. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

13. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

14. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

15. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

16. MICRCOND_PROP Microplot-condition proportion. Proportion of this microplot in this condition.

17. SUBPCOND_PROP Subplot-condition proportion. Proportion of this subplot in this condition.

18. MACRCOND_PROP Macroplot-condition proportion. Proportion of this macroplot in this condition.

19. NONFR_INCL_PCT_SUBP

    Nonforest inclusions percent on subplot. Non-forest inclusions are mapped and recorded by subplot/macroplot and condition class. This is done only if the non-forest inclusion is present within a mapped accessible forestland condition class in Oregon, Washington, and California, and is partially or entirely within the subplot's 58.9-foot fixed-radius plot.

    Nonforest inclusions lying within the 58.9-foot fixed-radius plot are mapped and labeld on the subplot diagram. For each accessible forestland condition class mapped on the subplot, estimate the area of the 24.0-foot fixed-radius plot area occupied by the mapped non-forest inclusions; then separately estimate the area of the entire 58.9-foot fixed-radius plot area (including the 24.0 ft subplot) occupied by the mapped non-forest inclusions. See Section 5.6.1 in the PNW regional field guide for how to map and estimate percentages. Record these percentages, their assigned condition class numbers and the type(s) of inclusion under "Inclusions %" on the subplot diagram. Then, record by condition class and by subplot/macroplot, these percentages and their assigned condition class

numbers in the PDR under "Non-forest inclusions" within SUBPLOT ATTRIBUTES. Record "00" in the "%" column for each forest condition class without non-forest inclusions. If all condition classes present on a subplot/macroplot are non-forest, record “00” in the “%” columns for both the 24.0 ft and 58.9 ft radius.

| Example: | Condition # 1 | | Condition # 2 | |
|---|---|---|---|---|
| | 24.0 feet | 58.9 feet | 24.0 feet | 58.9 ft |
| Rocks | 12% | 53% | 00% | 15% |

20. NONFR_INCL_PCT_MACRO

Nonforest inclusions percent on macroplot. Non-forest inclusions are mapped and recorded by subplot/macroplot and condition class. This is done only if the non-forest inclusion is present within a mapped accessible forestland condition class in Oregon, Washington, and California, and is partially or entirely within the subplot's 58.9-foot fixed-radius plot.

Nonforest inclusions lying within the 58.9-foot fixed-radius plot are mapped and labeld on the subplot diagram. For each accessible forestland condition class mapped on the subplot, estimate the area of the 24.0-foot fixed-radius plot area occupied by the mapped non-forest inclusions; then separately estimate the area of the entire 58.9-foot fixed-radius plot area (including the 24.0 ft subplot) occupied by the mapped non-forest inclusions. See Section 5.6.1 in the PNW regional field guide for how to map and estimate percentages. Record these percentages, their assigned condition class numbers and the type(s) of inclusion under "Inclusions %" on the subplot diagram. Then, record by condition class and by subplot/macroplot, these percentages and their assigned condition class numbers in the PDR under "Non-forest inclusions" within SUBPLOT ATTRIBUTES. Record "00" in the "%" column for each forest condition class without non-forest inclusions. If all condition classes present on a subplot/macroplot are non-forest, record “00” in the “%” columns for both the 24.0 ft and 58.9 ft radius.

| Example: | Condition # 1 | | Condition # 2 | |
|---|---|---|---|---|
| | 24.0 feet | 58.9 feet | 24.0 feet | 58.9 ft |
| Rocks | 12% | 53% | 00% | 15% |

21. CYCLE — Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

22. SUBCYCLE — Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

**Tree Table (Oracle table name is TREE)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | PREV_TRE_CN | VARCHAR2(34) | Unique index |
| 4 | INVYR | NUMBER(4) | Year (YYYY) |
| 5 | STATECD | NUMBER(4) | Coded |
| 6 | UNITCD | NUMBER(2) | Coded |
| 7 | COUNTYCD | NUMBER(3) | Coded |
| 8 | PLOT | NUMBER(5) | Number |
| 9 | SUBP | NUMBER(3) | Number |
| 10 | TREE | NUMBER(9) | Number |
| 11 | CONDID | NUMBER(1) | Number |
| 12 | AZIMUTH | NUMBER(3) | Degrees |
| 13 | DIST | NUMBER | Feet |
| 14 | PREVCOND | NUMBER(1) | Number |
| 15 | PREVSUBC | NUMBER(2) | Number |
| 16 | STATUSCD | NUMBER(1) | Coded |
| 17 | SPCD | NUMBER | Coded |
| 18 | SPGRPCD | NUMBER(2) | Coded |
| 19 | DIA | NUMBER(5,2) | Inches |
| 20 | DIAHTCD | NUMBER(1) | Coded |
| 21 | HT | NUMBER(3) | Feet |
| 22 | HTCD | NUMBER(2) | Coded |
| 23 | ACTUALHT | NUMBER(3) | Feet |
| 24 | TREECLCD | NUMBER(2) | Coded |
| 25 | CR | NUMBER(3) | Percent |
| 26 | CCLCD | NUMBER(2) | Coded |
| 27 | TREEGRCD | NUMBER(2) | Coded |
| 28 | AGENTCD | NUMBER(2) | Coded |
| 29 | CULL | NUMBER(3) | Percent |
| 30 | DAMLOC1 | NUMBER(2) | Coded |
| 31 | DAMTYP1 | NUMBER(2) | Coded |
| 32 | DAMSEV1 | NUMBER(2) | Coded |
| 33 | DAMLOC2 | NUMBER(2) | Coded |
| 34 | DAMTYP2 | NUMBER(2) | Coded |
| 35 | DAMSEV2 | NUMBER(2) | Coded |

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 36 | DECAYCD | NUMBER(2) | Coded |
| 37 | STOCKING | NUMBER(7,4) | Percent |
| 38 | WDLDSTEM | NUMBER(3) | Number |
| 39 | VOLCFNET | NUMBER(11,6) | Cu. ft./tree |
| 40 | VOLCFGRS | NUMBER(11,6) | Cu. ft./tree |
| 41 | VOLCSNET | NUMBER(11,6) | Cu. ft./tree |
| 42 | VOLCSGRS | NUMBER(11,6) | Cu. ft./tree |
| 43 | VOLBFNET | NUMBER(11,6) | Bd. ft./tree |
| 44 | VOLBFGRS | NUMBER(11,6) | Bd. ft./tree |
| 45 | VOLCFSND | NUMBER(11,6) | Cu. ft./tree |
| 46 | GROWCFGS | NUMBER(11,6) | Cu. ft./year/tree |
| 47 | GROWBFSL | NUMBER(11,6) | Bd. ft./year/tree |
| 48 | GROWCFAL | NUMBER(11,6) | Cu. ft./year/tree |
| 49 | MORTCFGS | NUMBER(11,6) | Cu. ft./tree |
| 50 | MORTBFSL | NUMBER(11,6) | Bd. ft./tree |
| 51 | MORTCFAL | NUMBER(11,6) | Cu. ft./tree |
| 52 | REMVCFGS | NUMBER(11,6) | Cu. ft./tree |
| 53 | REMVBFSL | NUMBER(11,6) | Bd. ft./tree |
| 54 | REMVCFAL | NUMBER(11,6) | Cu. ft./tree |
| 55 | DRYBIOT | NUMBER(13,6) | Ovendry lbs./tree |
| 56 | DRYBIOM | NUMBER(13,6) | Ovendry lbs./tree |
| 57 | DIACHECK | NUMBER(2) | Coded |
| 58 | MORTYR | NUMBER(4) | Year |
| 59 | SALVCD | NUMBER(2) | Coded |
| 60 | UNCRCD | NUMBER(3) | Percent |
| 61 | CPOSCD | NUMBER(2) | Coded |
| 62 | CLIGHTCD | NUMBER(2) | Coded |
| 63 | CVIGORCD | NUMBER(2) | Coded |
| 64 | CDENCD | NUMBER(3) | Coded |
| 65 | CDIEBKCD | NUMBER(3) | Coded |
| 66 | TRANSCD | NUMBER(3) | Coded |
| 67 | TREEHISTCD | NUMBER(2) | Coded |
| 68 | DIACALC | NUMBER(5,2) | Inches |
| 69 | BHAGE | NUMBER(4) | Years |
| 70 | TOTAGE | NUMBER(4) | Years |
| 71 | CULLDEAD | NUMBER(3) | Percent |

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 72 | CULLFORM | NUMBER(3) | Percent |
| 73 | CULLMSTOP | NUMBER(3) | Percent |
| 74 | CULLBF | NUMBER(3) | Percent |
| 75 | CULLCF | NUMBER(3) | Percent |
| 76 | BFSND | NUMBER(3) | Percent |
| 77 | CFSND | NUMBER(3) | Percent |
| 78 | SAWHT | NUMBER(2) | Feet |
| 79 | BOLEHT | NUMBER(2) | Feet |
| 80 | FORMCL | NUMBER(1) | Coded |
| 81 | HTCALC | NUMBER(3) | Feet |
| 82 | HRDWD_CLUMP_CD | NUMBER(1) | Coded |
| 83 | SITREE | NUMBER(3) | Feet |
| 84 | CREATED_BY | VARCHAR2(30) | Character |
| 85 | CREATED_DATE | DATE | DD-MON-YYYY |
| 86 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 87 | MODIFIED_BY | VARCHAR2(30) | Character |
| 88 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 89 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 90 | MORTCD | NUMBER(1) | Coded |
| 91 | HTDMP | NUMBER(3,1) | Feet |
| 92 | ROUGHCULL | NUMBER(2) | Percent |
| 93 | MIST_CL_CD | NUMBER(1) | Coded |
| 94 | CULL_FLD | NUMBER(2) | Percent |
| 95 | RECONCILECD | NUMBER(1) | Coded |
| 96 | PREVDIA | NUMBER(5,2) | Inches |
| 97 | FGROWCFGS | NUMBER(11,6) | Cu. ft./year/tree |
| 98 | FGROWBFSL | NUMBER(11,6) | Bd. ft./year/tree |
| 99 | FGROWCFAL | NUMBER(11,6) | Cu. ft./year/tree |
| 100 | FMORTCFGS | NUMBER(11,6) | Cu. ft./tree |
| 101 | FMORTBFSL | NUMBER(11,6) | Bd. ft./tree |
| 102 | FMORTCFAL | NUMBER(11,6) | Cu. ft./tree |
| 103 | FREMVCFGS | NUMBER(11,6) | Cu. ft./tree |
| 104 | FREMVBFSL | NUMBER(11,6) | Bd. ft./tree |
| 105 | FREMVCFAL | NUMBER(11,6) | Cu. ft./tree |
| 106 | P2A_GRM_FLG | VARCHAR2(1) | |
| 107 | TREECLCD_NERS | NUMBER(2) | Coded |

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 108 | TREECLCD_SRS | NUMBER(2) | Coded |
| 109 | TREECLCD_NCRS | NUMBER(2) | Coded |
| 110 | TREECLCD_RMRS | NUMBER(2) | Coded |
| 111 | STANDING_DEAD_CD | NUMBER(2) | Coded |
| 112 | PREV_STATUS_CD | NUMBER(1) | |
| 113 | PREV_WDLDSTEM | NUMBER(3) | |
| 114 | TPA_UNADJ | NUMBER(11,6) | |
| 115 | TPAMORT_UNADJ | NUMBER(11,6) | |
| 116 | TPAREMV_UNADJ | NUMBER(11,6) | |
| 117 | TPAGROW_UNADJ | NUMBER(11,6) | |
| 118 | CYCLE | NUMBER(2) | Number |
| 119 | SUBCYCLE | NUMBER(2) | Number |
| 120 | BORED_CD_PNWRS | NUMBER(1) | |
| 121 | DAMLOC1_PNWRS | NUMBER(2) | |
| 122 | DAMLOC2_PNWRS | NUMBER(2) | |
| 123 | DIACHECK_PNWRS | NUMBER(1) | |
| 124 | DMG_AGENT1_CD_PNWRS | NUMBER(2) | |
| 125 | DMG_AGENT2_CD_PNWRS | NUMBER(2) | |
| 126 | DMG_AGENT3_CD_PNWRS | NUMBER(2) | |
| 127 | MIST_CL_CD_PNWRS | NUMBER(1) | |
| 128 | SEVERITY1_CD_PNWRS | NUMBER(1) | |
| 129 | SEVERITY1A_CD_PNWRS | NUMBER(2) | |
| 130 | SEVERITY1B_CD_PNWRS | NUMBER(1) | |
| 131 | SEVERITY2_CD_PNWRS | NUMBER(1) | |
| 132 | SEVERITY2A_CD_PNWRS | NUMBER(2) | |
| 133 | SEVERITY2B_CD_PNWRS | NUMBER(1) | |
| 134 | SEVERITY3_CD_PNWRS | NUMBER(1) | |
| 135 | UNKNOWN_DAMTYP1_PNWRS | NUMBER(1) | |
| 136 | UNKNOWN_DAMTYP2_PNWRS | NUMBER(1) | |

| | |
|---|---|
| TRE_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT, SUBP,TREE) |
| TRE_PK | (CN) |
| TRE_PLT_FK_I | (PLT_CN) |
| TRE_UK | (PLT_CN, SUBP, TREE) |

1. CN — Sequence number. A unique sequence number used to identify a tree record.

2. PLT_CN — Plot sequence number. Foreign key linking the tree record to the plot record.

3. PREV_TRE_CN

   Previous tree sequence number. Foreign key linking the tree to the previous inventory's tree record for this tree. Only populated on remeasured annual plots.

4. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

5. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

6. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each state. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

7. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

8. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

9. SUBP — Subplot number. Number of the subplot on which the tree was measured. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

10. TREE — Tree record number. A number used to uniquely identify a tree on a subplot.

11. CONDID — Condition class number. Unique identifying number assigned to each condition on a plot. A condition is initially defined by condition class status. Differences in reserved status, owner group, forest type, stand-size class, regeneration status, and stand density further define condition for forest land. Mapped nonforest conditions are also assigned numbers. At the time of the plot establishment, the condition class at plot center (the

center of subplot 1) is usually designated as condition class 1. Other condition classes are assigned numbers sequentially at the time each condition class is delineated. On a plot, each sampled condition class must have a unique number that can change at remeasurement to reflect new conditions on the plot.

12. AZIMUTH — Azimuth. The direction, to the nearest degree, from subplot center (microplot center for saplings) to the center of the base of the tree (geographic center for multi-stemmed woodland species). Due north is represented by 360 degrees.

13. DIST — Horizontal distance. The horizontal distance in feet from subplot center (microplot center for saplings) to the pith at the base of the tree (geographic center for multi-stemmed woodland species).

14. PREVCOND — Previous condition number. Identifies the condition within the plot on which the tree occurred at the previous inventory.

15. PREVSUBC — Previous subcycle number. Identifies the subcycle in which the tree was recorded at the previous inventory. (In some instances a plot may have been measured more than once during an inventory cycle. Subcycle is then needed to uniquely identify the previous condition.).

16. STATUSCD — Present tree status code. Identifies whether the sample tree is live, cut, or dead. Includes dead and cut trees, which are required to estimate aboveground biomass and net annual volume for growth, mortality, and removals. Note: New and replacement plots use only codes 1 and 2. This code is not used when querying data for change estimates.

| Code | Description |
|---|---|
| 0 | No status |
| 1 | Live tree |
| 2 | Dead tree |
| 3 | Removed - Cut and removed by direct human activity related to harvesting, silviculture or land clearing. This tree is assumed to be utilized. |

17. SPCD — Species code. An FIA tree species code. Refer to Appendix F for codes.

18. SPGRPCD — Species group code. An FIA species group number, which is used to produce many of the standard presentation tables. The assignment of individual species (SPCD) to these groups is shown in Appendix F. Individual FIA programs may further break these species groups down for published tables, but this is a common list that all published standard presentation tables must match.

19. DIA — Current diameter. The current diameter (in inches) of the sample tree at the point of diameter measurement. Check the DIAHTCD variable to

determine the measurement point. DIA for live trees contains the measured value. DIA for cut and dead trees presents problems associated with uncertainty of when the tree was cut or died as well as structural deterioration of dead trees. Consult individual units for explanations of how DIA is collected for dead and cut trees.

20. DIAHTCD — Length to diameter measurement code. The height above ground at which the diameter was obtained on the sample tree. Previously called Height of diameter measurement code in "The Forest Inventory and Analysis Database: Database description and Users Manual Version 1.7."

| Code | Description |
|---|---|
| 1 | Breast height (DBH) |
| 2 | Root collar (DRC) |
| 3 | Stump |

21. HT — Total length. The total length of a sample tree (in feet) from the ground to the tip of the apical meristem. The total length of a tree is not always its actual length. If the main stem is broken, the actual length is measured or estimated and the missing piece is added to the actual length to estimate total length. The amount added is determined by measuring the broken piece if it can be located on the ground; otherwise it is estimated. Phase 2 CORE - All live tally trees $\geq$ 5.0 in DBH/DRC; Phase 2 CORE OPTIONAL - All live tally trees $\geq$ 1.0 in DBH/DRC and all standing dead tally trees $\geq$ 5.0 in DBH/DRC; Phase 3 CORE - All live tally trees $\geq$ 1.0 in DBH/DRC

22. HTCD — Length method code. A code to indicate how length was determined. Phase 2 CORE - All live tally trees $\geq$ 5.0 in DBH/DRC; Phase 2 CORE OPTIONAL - All live tally trees $\geq$ 1.0 in DBH/DRC and all standing dead tally trees $\geq$ 5.0 in DBH/DRC; Phase 3 CORE - All live tally trees $\geq$ 1.0 in DBH/DRC

| Code | Description |
|---|---|
| 1 | Field measured (total and actual length) |
| 2 | Total length visually estimated in the field, actual length measured. |
| 3 | Total and actual lengths are visually estimated |

23. ACTUALHT — Actual length of tree. The length of the tree to the nearest foot from ground level to the highest remaining portion of the tree still present and attached to the bole. Recorded on trees with broken or missing tops. Phase 2 CORE - All live and standing dead tally trees (with broken or missing tops) $\geq$ 5.0 in DBH/DRC; Phase 2 CORE OPTIONAL - All live tally trees (with broken or missing tops) 1.0 – 4.9 in DBH/DRC; Phase 3 CORE - All live tally trees (with broken or missing tops) $\geq$1.0 in DBH/DRC

24. TREECLCD Tree class code. The general quality of the tree. For cut, dead, and sound dead trees measured in a periodic inventory, tree class of the tree at the time it died or was cut is estimated. For dead and sound dead trees measured in an annual inventory, tree class is that of the tree at the time of current measurement and is used where current estimates are calculated.

| Code | Description |
|---|---|
| 2 | Growing stock: All trees of commercial species that meet certain merchantability standards. Excludes rough or rotten cull trees. |
| 3 | Rough cull: Trees that do not now, or prospectively, have at least one solid 8-foot section, reasonably free of form defect, on the merchantable bole or have 67 percent or more of the merchantable volume cull; and more than half of this cull is due to sound dead wood cubic-foot loss or severe form defect volume loss. In California, Oregon, and Washington inventories 75 percent or more cull, rather than 67 percent or more cull, applies. This class also contains all trees of noncommercial species, or those species where SPGRPCD equals 23 (western woodland softwoods), 43 (eastern noncommercial hardwoods), or 48 (western woodland hardwoods). Refer to Appendix F for species that have these SPGRPCD codes. |
| 4 | Rotten cull: Trees with 67 percent or more of the merchantable volume cull, and more than half of this cull is due to rotten or missing cubic-foot volume loss. PNW uses a 75-percent cutoff. |

25. CR Compacted crown ratio. The percent of the tree bole supporting live, healthy foliage (the crown is ocularly compacted to fill in gaps) when compared to total length. Expressed as a percent of total tree length.

26. CCLCD Crown class code. Primarily indicates the amount of sunlight received as opposed to the conventional "crown position" found in forestry textbooks.

| Code | Description |
|---|---|
| 1 | Open grown: Trees with crowns that have received full light from above and from all sides throughout all or most of their life, particularly during early development. |
| 2 | Dominant: Trees with crowns extending above the general level of the canopy and receiving full light from above and partly from the sides; larger than the average trees in the stand, and with crowns well developed, but possibly somewhat crowded on the sides. |
| 3 | Codominant: Trees with crowns forming part of the general level of the crown cover and receiving full light from above, but comparatively little from the side. Usually with medium crowns more or less crowded on the sides. |
| 4 | Intermediate: Trees shorter than those in the preceding two classes, with crowns either below or extending into the canopy formed by the dominant and codominant trees, receiving little direct light |

from above, and none from the sides; usually with small crowns very crowded on the sides.

5 Overtopped: Trees with crowns entirely below the general canopy level and receiving no direct light either from above or the sides.

27. TREEGRCD Tree grade code. **Specific to North Central, Northeastern, and Southern Research Stations.** All other Stations record null for this variable. Contact North Central, Northeastern, or Southern Research Station for more information, as procedures to grade trees are different for each program. This item is nonzero for all sawtimber-size trees regardless of status; however, it is not measured on all sawtimber-size trees on every plot. Sawtimber-size trees that are graded but do not contain a gradeable log are given a tree grade 5. Sawtimber-size trees that are not graded because of sampling design have no grade. Trees smaller than sawtimber receive a tree grade of zero.

| Code | Description |
|---|---|
| 0 | Tree too small to grade |
| 1 | Tree grade 1 |
| 2 | Tree grade 2 |
| 3 | Tree grade 3 |
| 4 | Graded and contains a gradeable log but does not meet grade 3 standards |
| 5 | Graded but does not contain a gradeable log (local use trees). |

28. AGENTCD Cause of death (agent) code. Beginning in the year 1999 this variable will be collected on only dead and cut trees. Before 1999, this variable was collected on all trees (live, dead, and cut). Cause of damage was recorded for live trees if the presence of damage or pathogen activity was serious enough to reduce the quality or vigor of the tree. When a tree was damaged by more than one agent, the most severe damage was coded. When no damage was observed on a live tree, 00 was recorded. Damage recorded for dead trees was the cause of death. When the cause of death could not be determined for a tree, 99 was recorded. Each FIA program records specific codes that may differ from one State to the next. These codes fall within the ranges listed below. For the specific codes used in a particular State, contact the FIA program responsible for that State. CORE: SAMPLE KIND = 2 plots: all PREVIOUSPAST TREE STATUS = 1 and PRESENT TREE STATUS = 2 or 3; or PRESENT TREE STATUS = 2 and RECONCILE = 1, 2, or 3; CORE OPTIONAL: SAMPLE KIND = 1 plots; all MORTALITY = 1

| Code | Description |
|---|---|
| 00 | No agent recorded (only allowed on live trees in data prior to 1999) |
| 10 | Insect |
| 20 | Disease |
| 30 | Fire |
| 40 | Animal |
| 50 | Weather |
| 60 | Vegetation (e.g., competition or vines) |
| 70 | Unknown/not sure/other – includes death from human activity not related to silvicultural or landclearing activity (accidental, random, etc). TREE NOTES required. |
| 80 | Silvicultural or landclearing activity (death caused by harvesting or other silvicultural activity, including girdling, chaining, etc., or to landclearing activity. |

29. CULL — Rotten and missing cull. The percent of the cubic-foot volume in a live or dead tally tree that is rotten or missing.

30. DAMLOC1 — Damage location 1. A code to indicate where damage (meeting or exceeding a severity threshold, as defined in the field guide) is present on the tree. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7)

| Code | Description |
|---|---|
| 0 | No damage |
| 1 | Roots (exposed) and stump (up to 12 inches from ground level) |
| 2 | Roots, stump, and lower bole |
| 3 | Lower bole (lower half of bole between stump and base of live crown) |
| 4 | Lower and upper bole |
| 5 | Upper bole (upper half of bole between stump and base of live crown) |
| 6 | Crownstem (main stem within the live crown) |
| 7 | Branches (> 1 inch diameter at junction with main stem and within the live crown) |
| 8 | Buds and shoots of current year |
| 9 | Foliage |

31. DAMTYP1 — Damage type 1. A code to indicate the kind of damage (meeting or exceeding a severity threshold, as defined in the field guide) present. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7)

| Code | Description |
|---|---|
| 01 | Canker, gall |
| 02 | Conk, fruiting body, or sign of advanced decay |
| 03 | Open wound |

| | |
|---|---|
| 04 | Resinosis or gumosis |
| 05 | Crack or seam |
| 11 | Broken bole or broken root within 3 feet of bole |
| 12 | Broom on root or bole |
| 13 | Broken or dead root further than 3 feet from bole |
| 20 | Vines in the crown |
| 21 | Loss of apical dominance, dead terminal |
| 22 | Broken or dead branches |
| 23 | Excessive branching or brooms within the live crown |
| 24 | Damaged shoots, buds, or foliage |
| 25 | Discoloration of foliage |
| 31 | Other |

32. DAMSEV1 Damage severity 1. A code to indicate how much of the tree is affected. Valid severity codes vary by damage type and damage location and must exceed a threshold value, as defined in the field guide. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7).

| Code | Description |
|---|---|
| 0 | 01 to 09 % of location affected |
| 1 | 10 to 19 % of location affected |
| 2 | 20 to 29 % of location affected |
| 3 | 30 to 39 % of location affected |
| 4 | 40 to 49 % of location affected |
| 5 | 50 to 59 % of location affected |
| 6 | 60 to 69 % of location affected |
| 7 | 70 to 79 % of location affected |
| 8 | 80 to 89 % of location affected |
| 9 | 90 to 99 % of location affected |

33. DAMLOC2 Damage location 2. A code to indicate where secondary damage (meeting or exceeding a severity threshold, as defined in the field guide) is present. Use same codes as DAMLOC1. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7).

34. DAMTYP2 Damage type 2. A code to indicate the kind of secondary damage (meeting or exceeding a severity threshold, as defined in the field guide) present. Use same codes as DAMTYP1. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7).

35. DAMSEV2 Damage severity 2. A code to indicate how much of the tree is affected by the secondary damage. Valid severity codes vary by damage type and damage location and must exceed a threshold value, as defined in the field guide. Use same codes as DAMSEV1. New in annual inventory. (*Core* prior to field guide 1.7, *Core Optional* beginning with field guide 1.7).

36. DECAYCD Decay class code. A code to indicate the stage of decay in a standing dead tree. New in annual inventory.

| Code | Description |
|---|---|
| 1 | All limbs and branches are present; the top of the crown is still present; all bark remains; sapwood is intact, with minimal decay; heartwood is sound and hard. |
| 2 | There are few limbs and no fine branches; the top may be broken; a variable amount of bark remains; sapwood is sloughing with advanced decay; heartwood is sound at base but beginning to decay in the outer part of the upper bole. |
| 3 | Only limb stubs exist; the top is broken; a variable amount of bark remains; sapwood is sloughing; heartwood has advanced decay in upper bole and is beginning at the base. |
| 4 | Few or no limb stubs remain; the top is broken; a variable amount of bark remains; sapwood is sloughing; heartwood has advanced decay at the base and is sloughing in the upper bole. |
| 5 | No evidence of branches remains; the top is broken; less than 20% of the bark remains; sapwood is gone; heartwood is sloughing throughout. |

37. STOCKING Tree stocking. The stocking value computed for each live tree. Stocking values are computed using several specific species equations that were developed from normal yield tables and stocking charts. Resultant values are a function of diameter. The stocking of individual trees is used to calculate GSSTK, GSSTKCD, ALSTK, and ALSTKCD on the COND table.

38. WDLDSTEM Woodland tree species stem count. Used for tree species where diameter is measured at the root collar. For a stem to be counted, it must have a minimum stem size of 1 inch in diameter and 1 foot in length. Null if not a woodland species.

39. VOLCFNET Net cubic-foot volume. The net volume of wood in the central stem of a sample tree 5.0 inches diameter or larger, from a 1-foot stump to a minimum 4-inch top DOB, or to where the central stem breaks into limbs all of which are less than 4.0 inches DOB. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information. Trees with DIA less than 5.0 inches have null in this field. All trees measured after 1998 with DIA 5.0 inches or larger (including dead and cut trees) will have entries in this field. Does not include rotten, missing, and form cull (volume loss due to rotten, missing, and form cull defect has been deducted).

40. VOLCFGRS Gross cubic-foot volume. The total volume of wood in the central stem of sample tree 5.0 inches diameter or larger, from a 1-foot stump to a minimum 4-inch top DOB, or to where the central stem breaks into limbs all of which are less than 4.0 inches DOB. This is a per tree value and

must be multiplied by TPA_UNADJ to obtain per acre information. Trees with DIA less than 5.0 inches have null in this field. All trees measured after 1998 with DIA 5.0 inches or larger (including dead and cut trees) have entries in this field. Includes rotten, missing and form cull (volume loss due to rotten, missing, and form cull defect has not been deducted).

41. VOLCSNET Net cubic-foot volume in the saw-log portion. The net volume of wood in the central stem of a sample commercial species tree of sawtimber size (9.0 inches DBH minimum for softwoods, 11.0 inches DBH minimum for hardwoods), from a 1-foot stump to a minimum top DOB, (7.0 inches for softwoods, 9.0 inches for hardwoods) or to where the central stem breaks into limbs, all of which are less than the minimum top DOB. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information. Trees with DIA less than 9.0 inches (11.0 inches for hardwoods) have null in this field. All larger trees have entries in this field if they are growing-stock trees (TREECLCD = 2 and STATUSCD = 1). All rough and rotten trees (TREECLCD = 3 or 4) and dead and cut trees (STATUSCD = 2 or 3) have null in this field.

42. VOLCSGRS Gross cubic-foot volume in the saw-log portion. This is the total volume of wood in the central stem of a sample commercial species tree of sawtimber size (9.0 inches DBH minimum for softwoods, 11.0 inches DBH minimum for hardwoods), from a 1-foot stump to a minimum top DOB (7.0 inches for softwoods, 9.0 inches for hardwoods), or to where the central stem breaks into limbs, all of which are less than the minimum top DOB. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information. Trees with DIA less than 9.0 inches (11.0 inches for hardwoods), have null in this field. All larger trees have entries in this field if they are growing-stock trees (TREECLCD = 2 and STATUSCD = 1). All rough and rotten trees (TREECLCD = 3 or 4) and dead and cut trees (STATUSCD = 2 or 3) have null in this field.

43. VOLBFNET Net board-foot volume in the saw-log portion. This is the net volume of wood in the central stem of a sample commercial species tree of sawtimber size (9.0 inches DBH minimum for softwoods, 11.0 inches DBH minimum for hardwoods), from a 1-foot stump to a minimum top DOB (7.0 inches for softwoods, 9.0 inches for hardwoods), or to where the central stem breaks into limbs all of which are less than the minimum top DOB. Volume is based on International 1/4-inch rule. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per unit area information. Trees with DIA less than 9.0 inches (11.0 inches for hardwoods) have zero in this field. All larger trees should have entries in this field if they are growing-stock trees (TREECLCD = 2 and STATUSCD = 1). All rough and rotten trees (TREECLCD = 3 or 4) and dead and cut trees (STATUSCD = 2 or 3) have null in this field.

44. VOLBFGRS Gross board-foot volume in the saw-log portion. This is the total volume of wood in the central stem of a sample commercial species tree of

sawtimber size (9.0 inches DBH minimum for softwoods, 11.0 inches DBH minimum for hardwoods), from a 1-foot stump to a minimum top DOB (7.0 inches for softwoods, 9.0 inches for hardwoods), or to where the central stem breaks into limbs all of which are less than the minimum top DOB. Volume is based on International ¼-inch rule. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per unit area information. Trees with DIA less than 9.0 inches (11.0 inches for hardwoods) have zero in this field. All larger trees should have entries in this field if they are growing-stock trees (TREECLCD = 2 and STATUSCD = 1). All rough and rotten trees (TREECLCD = 3 or 4) and dead and cut trees (STATUSCD = 2 or 3) have null in this field.

45. VOLCFSND Sound cubic-foot volume. The volume of sound wood in the central stem of a sample tree 5.0 inches diameter or larger from a 1-foot stump to a minimum 4-inch top DOB or to where the central stem breaks into limbs all of which are less than 4.0 inches DOB. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information. Trees with DIA less than 5.0 inches have null in this field. All trees with DIA 5.0 inches or larger (including dead trees) have entries in this field. Does not include rotten and missing cull (volume loss due to rotten and missing cull defect has been deducted).

46. GROWCFGS Net annual merchantable cubic-foot growth of a growing-stock tree on timberland. This is the net change in cubic-foot volume per year of this tree (for remeasured plots, $(V_2-V_1)/(t_2-t_1)$; where $_1$ and $_2$ denote the past and current measurement, respectively, V is volume, and t indicates year of measurement). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by TPAGROW_UNADJ.

47. GROWBFSL Net annual merchantable board-foot (International ¼-inch rule) growth of a sawtimber size tree on timberland. This is the net change in board-foot volume per year of this tree (for remeasured plots $(V_2-V_1)/(t_2-t_1)$). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by TPAGROW_UNADJ.

48. GROWCFAL Net annual sound cubic-foot growth of a live tree on timberland. The net change in cubic-foot volume per year of this tree (for remeasured plots $(V_2-V_1)/(t_2-t_1)$). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by

TPAGROW_UNADJ. GROWCFAL differs from GROWCFGS by including all trees, regardless of tree class.

49. MORTCFGS Cubic-foot volume of a growing-stock tree on timberland for mortality purposes. Represents the cubic-foot volume of a growing-stock tree at time of death. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ.

50. MORTBFSL Board-foot volume of a sawtimber size tree on timberland for mortality purposes. Represents the board-foot (International ¼-inch rule) volume of a sawtimber tree at time of mortality. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ.

51. MORTCFAL Sound cubic-foot volume of a tree on timberland for mortality purposes. Represents the cubic-foot volume of the tree at time of mortality. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ. MORTCFAL differs from MORTCFGS by including all trees, regardless of tree class.

52. REMVCFGS Cubic-foot volume of a growing-stock tree on timberland for removal purposes. Represents the cubic-foot volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ.

53. REMVBFSL Board-foot volume of a sawtimber size tree on timberland for removal purposes. Represents the board-foot (International ¼-inch rule) volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ.

54. REMVCFAL Sound cubic-foot volume of a tree on timberland for removal purposes. Represents the cubic-foot volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ. REMVCFAL differs from REMVCFGS by including all trees, regardless of tree class.

55. DRYBIOT Total gross biomass oven dry weight. The total aboveground biomass of a sample tree 1.0 inch diameter or larger, including all tops and limbs (but excluding foliage). This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information. Calculated in oven dry pounds per tree. This field should have an entry if DIA is 1.0 inch or larger, regardless of STATUSCD or TREECLCD; zero otherwise. For dead or cut trees, this number represents the biomass at the time of death or last measurement.

56. DRYBIOM Merchantable stem biomass ovendry weight. The total gross biomass (including bark) of a tree 5.0 inches DBH or larger from a 1-foot stump to a minimum 4-inch top DOB of the central stem. This is a per tree value and must be multiplied by TPA_UNADJ to obtain per acre information.

Calculated in oven dry pounds per tree. This field should have an entry if DIA is 5.0 inches or larger, regardless of STATUSCD or TREECLCD; zero otherwise. For dead or cut trees, this number represents the biomass at the time of death or last measurement.

57. DIACHECK Diameter check code. A code to indicate the reliability of the diameter measurement. New in annual inventory.

| Code | Description |
|---|---|
| 0 | Diameter accurately measured . |
| 1 | Diameter estimated. |
| 2 | Diameter measured at different location than previous measurement (remeasurement trees only). |
| 5 | Diameter modeled in the office (used with periodic inventories) |

Note: If both codes 1 and 2 apply, code 2 is used.

58. MORTYR Mortality year. (*Core optional*). The estimated year in which a remeasured tree died or was cut. New in annual inventory.

59. SALVCD Salvable dead code. A standing or down dead tree considered merchantable by regional standards. Contact the appropriate FIA program for information on how this code is assigned for a particular State.

| Code | Description |
|---|---|
| 0 | Dead not salvable |
| 1 | Dead salvable |

60. UNCRCD Uncompacted live crown ratio. Percentage determined by dividing the live crown length by the actual tree length. Expressed as a percentage of the total tree length. Phase 2 (CORE OPTIONAL) – All live tally trees $\geq$ 5.0 in DBH/DRC; Phase 3 (CORE) – All live tally trees $\geq$ 1.0 in DBH/DRC

61. CPOSCD Crown position code. The relative position of each tree in relation to the overstory canopy. (*Core* on phase 3 plots only)

| Code | Description |
|---|---|
| 1 | Superstory |
| 2 | Overstory |
| 3 | Understory |
| 4 | Open canopy |

62. CLIGHTCD Crown light exposure code. A code to indicate the amount of light being received by the tree crown. Collected for all live trees at least 5 inches DBH/DRC. (*Core* on phase 3 plots; *Core Optional* on phase 2 plots)

| Code | Description |
|---|---|
| 0 | The tree receives no full light because it is shaded by vegetation |
| 1 | Receives full light from the top or 1 side |
| 2 | Receives full light from the top and 1 side (or 2 sides without the top) |
| 3 | Receives full light from the top and 2 sides (or 3 sides without the top) |
| 4 | Receives full light from the top and 3 sides |
| 5 | Receives full light from the top and 4 sides |

63. CVIGORCD Crown vigor code. A code to indicate the vigor of sapling crowns. Collected for live trees between 1 and 4.9 inches DBH/DRC (*Core* on phase 3 plots; *Core Optional* on phase 2 plots).

| Code | Description |
|---|---|
| 1 | Saplings must have an uncompacted live crown ratio of 35 or higher, have less than 5 percent dieback (deer/rabbit browse is not considered as dieback but is considered missing foliage) and 80 percent or more of the foliage present is normal or at least 50 percent of each leaf is not damaged or missing. Twigs and branches that are dead because of normal shading are not included. |
| 2 | Saplings do not meet class 1 or 3 criteria. They may have any uncompacted live crown ratio, may or may not have dieback and may have between 21 and 100 percent of the foliage classified as normal. |
| 3 | Saplings may have any uncompacted live crown ratio and have 1 to 20 percent normal foliage or the percent of foliage missing combined with the percent of leaves that are over 50 percent damaged or missing should equal 80 percent or more of the live crown. Twigs and branches that are dead because of normal shading are not included. Code is also used for saplings that have no crown by definition |

64. CDENCD Crown density code. A code to indicate how dense the tree crown is, estimated in percent classes. Collected for all live trees at least 5 inches DBH/DRC. Crown density is the amount of crown branches, foliage and reproductive structures that blocks light visibility through the crown. (*Core* on phase 3 plots; *Core Optional* on phase 2 plots).

| Code | Description |
|---|---|
| 00 | 0% |
| 05 | 1-5% |
| 10 | 6-10% |
| 15 | 11-15% |

| | |
|---|---|
| . | . |
| . | . |
| . | . |
| 95 | 91-95% |
| 99 | 96-100% |

65. CDIEBKCD Crown dieback code. A code to indicate the amount of dead material in the crown, estimated in percent classes. Collected for all live trees at least 5 inches DBH/DRC. (*Core* on phase 3 plots; *Core Optional* on phase 2 plots).

| Code | Description |
|---|---|
| 00 | 0% |
| 05 | 1-5% |
| 10 | 6-10% |
| 15 | 11-15% |
| . | . |
| . | . |
| . | . |
| 95 | 91-95% |
| 99 | 96-100% |

66. TRANSCD Foliage transparency code. A code to indicate the amount of light penetrating the crown, estimated in percent classes. Collected for all live trees at least 5 inches DBH/DRC. (*Core* on phase 3 plots; *Core Optional* on phase 2 plots).

| Code | Description |
|---|---|
| 00 | 0% |
| 05 | 1-5% |
| 10 | 6-10% |
| 15 | 11-15% |
| . | . |
| . | . |
| . | . |
| 95 | 91-95% |
| 99 | 96-100% |

67. TREEHISTCD Tree history code. **Specific to North Central, Northeastern, and Southern Research Stations.** All other Stations record null for this variable. Contact North Central, Northeastern, or Southern Research Station for more information. Identifies the tree with detailed information as to whether the tree is live, dead, cut, removed due to land use change, etc.

68. DIACALC Current diameter (calculated), in inches. **Specific to North Central and Southern Research Stations.** All other Stations record null for this

variable. Contact North Central or Southern Research Station for more information. If the diameter is unmeasurable (i.e. the tree is cut or dead), the diameter is calculated and stored in this variable.

69. BHAGE — Breast height age. **Specific to Pacific Northwest Research and Rocky Mountain Stations.** All other Stations record null for this variable. Contact Pacific Northwest or Rocky Mountain Research Station for more information. The tree's age at breast height.

70. TOTAGE — Total age. **Specific to Pacific Northwest and Rocky Mountain Research Stations.** All other Stations record null for this variable. Contact Pacific Northwest or Rocky Mountain Research Station for more information. The tree's total age.

71. CULLDEAD — Dead cull. **Specific to Rocky Mountain Research Station.** All other Stations record null for this variable. Contact Rocky Mountain Research Station for more information. The percent of the gross cubic-foot volume that is in dead cull.

72. CULLFORM — Form cull. **Specific to Rocky Mountain Research Station.** All other Stations record null for this variable. Contact Rocky Mountain Research Station for more information. The percent of the gross cubic-foot volume that is in form defect cull.

73. CULLMSTOP — Missing top cull. **Specific to Rocky Mountain Research Station.** All other Stations record null for this variable. Contact Rocky Mountain Research Station for more information. The percent of the gross cubic-foot volume that is in cull due to a missing top.

74. CULLBF — Board-foot cull. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The percent of the gross board-foot volume that is in cull due to rot or form.

75. CULLCF — Cubic-foot cull. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The percent of the gross cubic-foot volume that is in cull due to rot or form.

76. BFSND — Board-foot-cull soundness. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The percent of the board-foot cull that is sound (due to form).

77. CFSND — Cubic-foot-cull soundness. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The percent of the cubic-foot cull that is sound (due to form).

78. SAWHT — Sawlog length. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The length of a tree, recorded to a 7-inch top (9-inch for hardwoods), where at least one 8-foot log, merchantable or not, is present. On broken-off trees, sawlog length is recorded to the point of the break.

79. BOLEHT — Bole length. **Specific to Northeastern Research Station.** All other Stations record null for this variable. Contact Northeastern Research Station for more information. The length of a tree, recorded to a 4-inch top, where at least one 4-foot section is present. On broken-off trees, bole length is recorded to the point of the break.

80. FORMCL — Hardwood form class code. **Specific to Pacific Northwest Research Station.** All other Stations record null for this variable. Contact Pacific Northwest Research Station for more information. Recorded for all live hardwood trees tallied that are > 5.0 inch DBH/DRC This field is used in calculating tree volume.

| Code | Description |
|---|---|
| 1 | First 8 feet above stump is straight. (A log is considered straight if a line drawn through the centers of both ends of the log does not pass outside the curve of the log.) |
| 2 | First 8 feet above stump is not straight but at least one straight log elsewhere in the tree exists. |
| 3 | No logs anywhere in the tree due to form. Includes various free form trees. |

81. HTCALC — Calculated total length. **Specific to Southern Research Station.** All other Stations record null for this variable. Contact Southern Research Station for more information.

82. HRDWD_CLUMP_CD

Hardwood clump. **Specific to Pacific Northwest Research Station.** All other Stations record null for this variable. Contact Pacific Northwest Research Station for more information. A discount factor on hardwoods when determining stocking. A 1-digit code indicating if a hardwood is part of a clump. The clump is assigned a clump number, and the number is recorded for each hardwood tallied that is part of the clump. If a hardwood is not part of a clump, 0 is recorded for the tree. Clumps with tallied trees are numbered in consecutive order on a subplot starting with 1. Clump data are used in adjusting stocking estimates; trees growing in clumps contribute less stocking than those growing as individuals. Collected for all live hardwood trees >= 1.0 inches DBH/DRC., and for live hardwood seedlings. Values are 0 to 9.

83. SITREE Calculated site index (in feet). **Specific to North Central Research Station.** All other Stations record null for this variable. Contact North Central Research Station for more information. Computed for every tree. The site index represents the average total length that dominant and co-dominant trees in fully-stocked, even-aged stands (of the same species as this tree) will obtain at key ages (usually 25 or 50 years).

84. CREATED_BY The user who created the record.

85. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

86. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

87. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

88. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

89. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

90. MORTCD Mortality code. Used for a tree that was alive within past five years, but has died. (*Core Optional*)

| Code | Description |
|---|---|
| 0 | Tree does not qualify as mortality |
| 1 | Tree does qualify as mortality |

91. HTDMP Height to diameter measurement point. For trees measured directly at 4.5 ft above ground, this item is blank. If the diameter is not measured at 4.5 ft, the actual length from the ground, to the nearest 0.1 foot, at which the diameter was measured for each tally tree, 1.0 inch DBH/DRC and larger. (*Core Optional*)

92. ROUGHCULL Rough cull. Percentage of sound dead cull, as a percent of the merchantable bole/portion of the tree. (*Core Optional*)

93. MIST_CL_CD Mistletoe class code. A rating of dwarf mistletoe infection. Recorded on all live conifer species except juniper. Using the Hawksworth six-class rating system, the live crown is divided into thirds, and each third is rated using the following scale: 0 is for no visible infection, 1 for less than 50% of branches infected, 2 for more than 50% of branches infected. The ratings for each third are summed together to yield the Hawksworth rating (*Core Optional*)

| Code | Description |
|---|---|
| 0 | Hawksworth tree DMR rating of 0, no infection |
| 1 | Hawksworth tree DMR rating of 1, light infection |
| 2 | Hawksworth tree DMR rating of 2, light infection |
| 3 | Hawksworth tree DMR rating of 3, medium infection |
| 4 | Hawksworth tree DMR rating of 4, medium infection |
| 5 | Hawksworth tree DMR rating of 5, heavy infection |
| 6 | Hawksworth tree DMR rating of 6, heavy infection |

94.CULL_FLD Rotten/missing cull. The percent rotten or missing cubic-foot cull for all live tally trees $\geq$ 5.0 inches DBH/DRC (*Core*) and all standing dead tally trees $\geq$ 5.0 inches DBH/DRC (*Core Optional*). The percentage of rotten and missing cubic-foot volume, to the nearest 1 percent. When estimating volume loss (tree cull), only consider the cull on the merchantable bole/portion of the tree, from a 1-foot stump to a 4-inch top. Do not include any cull estimate above actual length. For western woodland species, the merchantable portion is between the point of DRC measurement to a 1.5-inch DOB top.

95. RECONCILECD

Reconcile code. Recorded for remeasurement locations only. A code to indicate the reason a tree either enters or is no longer a part of the inventory.

| Code | Description |
|---|---|
| 1 | Ingrowth or reversions – either a new tally tree not qualifying as through growth or a new tree on land that was formerly nonforest and now qualifies as forest land (includes reversion or encroachments). |
| 2 | Through growth – new tally tree 5 inches DBH/DRC and larger, within the microplot |
| 3 | Missed live – a live tree missed at previous inventory and that is live, dead, or removed now |

4 Missed dead – a dead tree missed at previous inventory and that is dead or removed now
5 Shrank – live tree that shrank below threshold diameter on microplot/subplot/macroplot plot
6 Missing (moved) – tree was correctly tallied in previous inventory, but has now moved is now missing due to natural causes such as landslide, fire, etc.beyond the radius of the plot due to natural causes (i.e., small earth movement, hurricane). Tree must be either live before and still alive now or dead before and dead now. If tree was live before and now dead, this is a mortality tree and should have PRESENT TREE STATUS = 2 (not 0).
7 Cruiser error – erroneously tallied at previous inventory
8 Procedural change – tree was tallied at the previous inventory, but is no longer tallied due to a definition or procedural change
9 Tree was sampled before, but now the area where the tree was located is nonsampled. All trees on the nonsampled area have RECONCILE = 9.

96 . PREVDIA Previous diameter. The previous diameter (in inches) of the sample tree at the point of diameter measurement. Populated for remeasured trees.

97. FGROWCFGS Net annual merchantable cubic-foot growth of a growing-stock tree on forest land. This is the net change in cubic-foot volume per year of this tree (for remeasured plots, $(V_2-V_1)/(t_2-t_1)$; where $_1$ and $_2$ denote the past and current measurement, respectively, V is volume, and t indicates year of measurement). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by TPAGROW_UNADJ.

98. FGROWBFSL Net annual merchantable board-foot (International ¼ -inch rule) growth of a sawtimber tree on forest land. This is the net change in board-foot volume per year of this tree (for remeasured plots $(V_2-V_1)/(t_2-t_1)$). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by TPAGROWUNADJ.

99. FGROWCFAL Net annual sound cubic-foot growth of a live tree on forest land. The net change in cubic-foot volume per year of this tree (for remeasured plots $(V_2-V_1)/(t_2-t_1)$). Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2=0$) but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. To expand to a per acre value, multiply by TPAGROW_UNADJ. FGROWCFAL differs from FGROWCFGS by including all trees, regardless of tree class.

100. FMORTCFGS Cubic-foot volume of a growing-stock tree for mortality purposes on forest land. Represents the cubic-foot volume of a growing-stock tree at time of mortality. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ.

101. FMORTBFSL Board-foot volume of a sawtimber tree for mortality purposes on forest land. Represents the board-foot (International ¼-rule) volume of a sawtimber tree at time of mortality. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ.

102. FMORTCFAL Sound cubic-foot volume of a tree for mortality purposes on forest land. Represents the cubic-foot volume of the tree at time of mortality. To obtain estimates of annual per acre mortality, multiply by TPAMORT_UNADJ. FMORTCFAL differs from FMORTCFGS by including all trees, regardless of tree class.

103. FREMVCFGS Cubic-foot volume of a growing-stock tree for removal purposes on forest land. Represents the cubic-foot volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ.

104. FREMVBFSL Board-foot volume of a sawtimber size tree for removal purposes on forest land. Represents the board-foot (International ¼-rule) volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ.

105. FREMVCFAL Sound cubic-foot volume of the tree for removal purposes on forest land. Represents the cubic-foot volume of the tree at time of removal. To obtain estimates of annual per acre removals, multiply by TPAREMV_UNADJ. FREMVCFAL differs from FREMVCFGS by including all trees, regardless of tree class.

106. P2A_GRM_FLG

Periodic to annual growth, removal, and mortality flag. Used to indicate if this tree is used in computing growth, removal, and mortality estimates from periodic inventories to annual inventories.

107. TREECLCD_NERS

Tree class code for NERS **(Specific to NERS [Northeastern Research Station])**

1 Preferred
2 Acceptable
3 Rough cull
4 Rotten cull
5 Dead
6 Snag

108. TREECLCD_SRS

Tree class code for SRS **(Specific to SRS [Southern Research Station])**

| Code | Description |
|---|---|
| 2 | Growing stock |
| 3 | Rough cull |
| 4 | Rotten cull |

109. TREECLCD_NCRS

Tree class code for NCRS **(Specific to NCRS [North Central Research Station])** Tree class reflects tree suitability for timber products.

| Code | Description |
|---|---|
| 20 | Growing stock |
| 30 | Rough cull, salvable, and salvable-down |
| 31 | Short log cull |
| 40 | Rotten cull |

110. TREECLCD_RMRS

Tree class code for RMRS **(Specific to RMRS [Rocky Mountain Research Station])**

| | |
|---|---|
| 1 | Sound – live timber species |
| 2 | All live woodland species |
| 3 | Rough – live timber species |
| 4 | Rotten – live timber species |
| 5 | Hard dead |
| 6 | Soft dead |

111. STANDING_DEAD_CD

Standing dead code. A code to indicate if a tree qualifies as standing dead. To qualify as a standing dead tally tree, the dead tree must be at least 5.0 inches in diameter, have a bole that has an unbroken actual length of at least 4.5 feet, and lean less than 45 degrees from vertical as measured from the base of the tree to 4.5 feet. New in field guide 2.0.

For western woodland species with multiple stems, a tree is considered down if more than 2/3 of the volume is no longer attached or upright; cut and removed volume is not considered. For western woodland species with single stems to qualify as a standing dead tally tree, dead trees must

be at least 5.0 inches in diameter, be at least 1.0 foot in unbroken ACTUAL LENGTH, and lean less than 45 degrees from vertical.

| Code | Description |
|---|---|
| 0 | No – tree does not qualify as standing dead |
| 1 | Yes – tree does qualify as standing dead |

112. PREV_STATUS_CD

Previous tree status code. Tree status that was recorded at the previous inventory on all tally trees ≥ 1.0 in DBH.

| Code | Description |
|---|---|
| 1 | Live tree – live tree at the previous inventory |
| 2 | Dead tree – standing dead at the previous inventory |

113. PREV_WDLDSTEM

Previous woodland stem count. Woodland tree species stem count that was recorded at the previous inventory.

114. TPA_UNADJ Trees per acre unadjusted. The value for this column is set to a constant derived from the subplot, microplot, or macroplot radius on which the tree is sampled and the theoretical number of them. For plots with PLOT.DESIGNCD equal 1, TPA_UNADJ equals 6.018046 for trees sampled on subplots, 74.965282 for trees sampled on microplots, and 0.999188 for trees sampled on macroplots for plots collected under the annual inventory system where fixed radius plots were used. Variable radius plots were often used for periodic inventories so the values in TPA_UNADJ will decrease as tree diameters increase.

115. TPAMORT_UNADJ

Mortality trees per acre unadjusted. Mortality trees per acre per year that have not been adjusted for denied access, hazardous, and out-of-sample conditions. The unadjusted values are the raw values based on the sampling design and should be used for the estimation-on-the-fly procedures.

116. TPAREMV_UNADJ

Removal trees per acre unadjusted. Removal trees per acre per year that have not been adjusted for denied access, hazardous, and out-of-sample conditions. The unadjusted values are the raw values based on the

sampling design and should be used for the estimation-on-the-fly procedures.

117. TPAGROW_UNADJ

Growth trees per acre unadjusted. Growth trees per acre that have not been adjusted for denied access, hazardous, and out-of-sample conditions. The unadjusted values are the raw values based on the sampling design and should be used for the estimation-on-the-fly procedures.

118. CYCLE Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

119. SUBCYCLE Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

120. BORED_CD_PNWRS

Tree bored code for PNW. Used in conjunction with tree age.

| Code | Description |
|---|---|
| 1 | Trees bored or 'whorl counted' at the current inventory |
| 2 | Tree age derived from a previous inventory |
| 3 | Tree age was extrapolated |

121. DAMLOC1_PNWRS

Damage location 1 in PNW. The location on the tree where Damage Agent 1 is found.

| Code | Location | Definition |
|---|---|---|
| 0 | | No damage found. |
| 1 | Roots | Above ground up to 12 inches on bole. |
| 2 | Bole | Main stem(s) starting at 12 inches above the ground, including forks up to a 4 inch top. (A fork is at least equal to 1/3 diameter of the bole, and occurs at an angle <45 degrees in relation to the bole. This is not a valid location code for woodland species; use only locations 1,3,4and 4. |
| 3 | Branch | All other woody material. Primary branch(s) occur at an angle $\geq$ 45 ° in relation to the bole. |
| 4 | Foliage | All leaves, buds, and shoots. |

122. DAMLOC2_PNWRS

Damage location 2 in PNW. See DAMLOC1_PNWRS.

123. DIACHECK_PNWRS

Diameter check in PNW. A separate estimate of the diameter without the obstruction if the diameter was estimated because of moss/vine/obstruction, etc.

| Code | Description |
|---|---|
| 5 | Diameter estimated because of moss. |
| 6 | Diameter estimated because of vines. |
| 7 | Diameter estimated (double nail diameter) |

124. DMG_AGENT1_CD_PNWRS

Damage agent 1 in PNW. Damage Agent is a 2-digit code with values 01 to 91. For Agent and Severity 1, 2 and 3: the agent and severity codes indicate the type of agents that were present on a tree and describe their severity. Several damaging agents are automatically of highest importance and should be coded before any other agents; these agents are grouped as Class I Agents. Class I insects, diseases, or physical injuries can seriously affect vegetation. Failure to account for these agents can result in large differences in predicted outcomes for tree growth, survival, vegetative composition and structure. Class II agents can be important in local situations; recording their incidence and severity provides valuable information for those situations. Class II agents are recoded when present but only after all Class I agents.

Agents and their severity ratings are grouped by broad category. Each category has a general agent and specific agents listed. The general codes should be used if there is any question as to the identity of the specific damaging agent.

**CLASS I AGENTS**

**Bark beetles:**

| Code | Agent |
|---|---|
| 01 | General/other bark beetle |
| 02 | Mountain pine beetle |
| 03 | Douglas-fir beetle |
| 04 | Spruce beetle |
| 05 | Western pine beetle |
| 06 | Pine engraver beetle |
| 07 | Fir engraver beetle |
| 08 | Silver fir beetle |
| 09 | Red turpentine beetle |
| 26 | Jeffrey pine beetle |

| Code | Severity |
|---|---|
| 1 | Unsuccessful current attack |
| 2 | Successful current attack |
| 3 | Last year's successful attack |
| 4 | Older dead |
| 5 | Top kill |

Note: Bark beetles often attack trees weakened by root disease fungi. Carefully evaluate trees suffering bark beetle attack for evidence of root disease.

**Defoliators:**

| Code | Agent |
|---|---|
| 10 | General/other |
| 11 | Western blackheaded budworm |
| 12 | Pine butterfly |
| 13 | Douglas-fir tussock moth |
| 14 | Larch casebearer |
| 15 | Western spruce or Modoc budworm |
| 16 | Western hemlock looper |
| 17 | Sawflies |
| 18 | Needle and sheath miners |
| 19 | Gypsy moth |

| Code | Severity |
|---|---|
| 1 to 9 | Divide live crown into thirds. Rate each third separately based on the following classes: 0 - No detectable defoliation 1 - Up to 33% of foliage (old and new) missingaffected 2 - 34 to 66% of foliage missingaffected 3 - 67 to 100% of foliage missingaffected Obtain severity rating by adding ratings for each third. Record total. |

**Root diseases: (see Appendix** Error! Reference source not found. **Of the PNW regional field guide for identification of individual root disease symptoms)**

| Code | Agent |
|---|---|
| 60 | General/other |
| 61 | Annosus root disease |
| 62 | Armillaria root disease |
| 63 | Black stain root disease |
| 65 | Laminated root rot |
| 66 | Port-Orford-cedar root disease |

| Code | Severity |
|---|---|
| 1 | Tree is a live tally tree within 30 ft of a tree or stump that has a root disease to which the tally tree is susceptible. Enter the agent code. |
| 2 | Live tally tree with signs or symptoms diagnostic for root disease such as characteristic decay, stain, ectotrophic mycelia, mycelial fans, conks or excessive resin flow at the root collar. No visible crown deterioration. |
| 3 | Live tally tree with signs or symptoms diagnostic for root disease such as characteristic decay, stain, ectotrophic mycelia, mycelial fans, conks, or excessive resin flow at the root collar. Visible crown deterioration such as thinning chlorotic foliage, reduced terminal growth, and/or stress cones. |

**White pine blister rust:**

| Code | Agent |
|---|---|
| 36 | White pine blister rust |

| Code | Severity |
|---|---|
| 1 | Branch infections located more than 2.0 ft from tree bole. |
| 2 | Branch infections located 0.5 to 2.0 ft from bole. |
| 3 | Bole infections present, Or: branch infections within 0.5 ft of bole. |

**Sudden oak death (tanoak, coast live oak, black oak)**

| Code | Agent |
|---|---|
| 31* | Sudden Oak Death Symptoms |

| Code | Severity |
|---|---|
| 1 | Bleeding present on bole |
| 2 | Bleeding present on bole and adjacent mortality present |
| 3 | Laboratory confirmed Sudden Oak Death (NOT to be coded by the field crew) |

Follow the instructions in section **Error! Reference source not found.** on page **Error! Bookmark not defined.** of the PNW regional field guide anytime code 31 is used.

**CLASS II AGENTS:**

**Other insects:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 20 | General | 1 | Bottlebrush or shortened leaders, 0-2 forks on the tree's stem, Or: less than 20% of the branches affected, Or: <50% of the bole has visible larvel galleries. |
| 21 | Shoot moths | | |
| 22 | Weevils | | |
| 23 | Wood borers | | |
| 24 | Balsam wooly adelgid (aphid) | | |
| 25 | Sitka spruce terminal weevil | 2 | 3 or more forks on the tree's bole, Or: 20% or more of the branches are affected, Or: the terminal leader is dead, Or: ≥50% of the bole as visible larval galleries. |

**Stem-branch cankers:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 40 | General/other | 1 | Branch infections present. <50% of the crown affected. |
| 41 | Western gall rust (Pipo, Pico) | | |
| 42 | Commandra blister rust (Pipo) | 2 | Branch infections present. ≥50% of the crown affected, Or: any infection on the bole. |
| 43 | Stalactiform rust (Pico) | | |
| 44 | Atropellis canker (Pinus spp.) | | |
| 45 | Cytospora or Phomopsis (Psme, Abies spp.) | | |
| 33 | Diplodia blight | | |

**Pitch Canker**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 32 | Pitch Canker (CA Pinus spp) | 1 | no bole canker + < 10 infected branch tips |
| | | 2 | no bole canker + ≥ 10 infected branch tips |
| | | 3 | 1 or more bole cankers + < 10 infected branch tips |
| | | 4 | 1 or more bole cankers + ≥ 10 infected branch tips |

**Stem decays:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 46 | General/other | 1 | 1 conk on the stem or present at ground level. |
| 47 | Red ring rot (P. pini) | 2 | 2 or more conks separated by < 16 ft on bole. |
| 48 | Indian paint rot (E. tinctorium) | 3 | 2 or more conks separated by ≥ 16 ft on bole. |
| 49 | Brown cubical rot (P. schweinitzii) | 4 | No conks. Visible decay in the interior of the bole. Do not include decay found only as a result of coring the tree. |

**Special agents:**

| Code | Agent | Severity/Instructions |
|---|---|---|
| 50 | Suppression | No severity rating. Code this agent if tree is overtopped by other trees and will not live 10 more years, Or: will prevent a sapling from reaching 5.0 in d.b.h./d.r.c. |
| 51 | Excessively deformed sapling | No severity rating. Code this agent on live trees (1.0-4.9 in d.b.h./d.r.c.) that will never produce a minimum log. A minimum log for conifers is 16.0 ft long, and, for hardwoods, 8.0 ft long. |

**Foliar pathogens:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 55 | General/other | 1 | <20% of foliage affected, Or: <20% of crown in brooms. |
| 56 | Rhabdocline (only on Psme) | | |
| 57 | Elytroderma (only on Pipo) | | |
| 58 | Broom rusts (only on Abies, | 2 | ≥20% of foliage affected, Or: >20% of crown in Picea, and Juoc - Gymnosporagium) brooms. |
| 59 | Swiss needle cast [only on Psme] | | |

**Animal agents:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 70 | Animal: general/unknown | 1 | <20% of the crown is affected. Bole damage is restricted to less than half of circumference. |
| 71 | Mountain beaver | | |
| 72 | Livestock | | |
| 73 | Deer or elk | 2 | ≥20% of the crown is affected. Bole damage to half or more of circumference. |
| 74 | Porcupines | | |
| 75 | Pocket gophers, squirrels, mice voles, rabbits, hares. | | |
| 76 | Beaver | | |
| 77 | Bear | | |
| 78 | Human (not logging) | | |

**Weather agents:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 80 | Weather: general/unknown | 1 | <20% of the crown is affected. |
| 81 | Windthrow or wind breakage | | |
| 82 | Snow/ice bending or breakage | 2 | ≥20% of the crown is affected, Or: any damage to the bole. |
| 83 | Frost damage on shoots | | |
| 84 | Winter desiccation | | |
| 85 | Drought/moisture deficiency | | |
| 86 | Sun scald | | |
| 87 | Lightning | | |

**Physical Injury:**

| Code | Agent | Code | Severity |
|---|---|---|---|
| 90 | Other: general/unknown | 1 | <20% of the crown affected. |
| 91 | Logging damage | | |
| 92 | Fire: basal scars or scorch | 2 | ≥20% of the crown affected, Or: any damage to the bole. |
| 93 | Improper planting | | |
| 94 | Air pollution or other chemical damage | | |

**Physical Defect:**

| Code | Severity |
|---|---|
| 95 | Unspecified physical defect 0 Severity is not rated |
| 96 | Broken/Missing Top |
| 97 | Dead top |
| 98 | Forks and Crooks (only if caused by old top out or dead top) |
| 99 | Checks/bole cracks |

Only codes 96, and 97 are of much importance.
Code 95, 98, and 99 only after any other agents present are coded.
Codes 90 and 95 require a comment in Tree Notes.

125. DMG_AGENT2_CD_PNWRS

DAMAGE AGENT 2 in PNW. See DAM_AGENT1_CD_PNWRS.

126. DMG_AGENT3_CD_PNWRS

DAMAGE AGENT 3 in PNW. Damage Agent is a 2-digit code with values 01 to 91.

127. MIST_CL_CD_PNWRS

Mistletoe class code in PNW. A code that indicates the extent and severity of mistletoe infection for all live conifer and oak trees ≥ 1.0 inches DBH/DRC. All live conifer species, except juniper species and incense cedar, ≥ 1.0 in diameter are rated for dwarf mistletoe (*Arceuthobium* spp.) infection. The Hawksworth six-class rating system is used. The live crown is divided into thirds and each third is rated using the following scale.

| Code | Mistletoe | Description |
|---|---|---|
| 0 | No visible infection | None |
| 1 | Light infection | < 50 percent of the total branches infected |
| 2 | Heavy infection | ≥ 50 percent of the total branches infected |

The three individual ratings are summed to obtain a total mistletoe class (0 to 6) for the tree.

128. SEVERITY1_CD_PNWRS

Damage severity 1 in PNW for years 2001-2004. Damage severity depends on the damage agent coded (see the table listed under DMG_AGENT1_CD_PNWRS.) This is a 2-digit code that indicates either percent of location damaged (01-99), or the appropriate class of damage (values vary from 0-9 depending on the specific Damage Agent.)

129. SEVERITY1A_CD_PNWRS

Damage severity 1 in PNW. Damage severity depends on the damage agent coded (see the table listed under DMG_AGENT1_CD_PNWRS.) This is a 2-digit code that indicates either percent of location damaged (01-99), or the appropriate class of damage (values vary from 0-4 depending on the specific Damage Agent.)

130. SEVERITY1B_CD_PNWRS

Damage severity B in PNW. Damage severity B is only coded when the Damage Agent is white pine blister rust (36).

| Code | Description |
|---|---|
| 1 | Branch infections located more than 2.0 feet from tree bole. |
| 2 | Branch infections located 0.5 to 2.0 ft from tree bole. |

| | |
|---|---|
| 3 | Branch infection located within 0.5 ft of tree bole OR tree bole infection present. |

131. SEVERITY2_CD_PNWRS

Damage severity 2 in PNW for years 2001-2004. Damage severity depends on the damage agent coded (see the table listed under DMG_AGENT1_CD_PNWRS.) This is a 2-digit code that indicates either percent of location damaged (01-99), or the appropriate class of damage (values vary from 0-9 depending on the specific Damage Agent.)

132. SEVERITY2A_CD_PNWRS

Damage severity 2A in PNW starting in 2005. See SEVERITY1A_CD_PNWRS.

133. SEVERITY2B_CD_PNWRS

Damage severity 2B in PNW starting in 2005. See SEVERITY1B_CD_PNWRS.

134. SEVERITY3_CD_PNWRS

Damage severity 3 in PNW for years 2001-2004. Damage severity depends on the damage agent coded (see the table listed under DMG_AGENT1_CD_PNWRS.) This is a 2-digit code that indicates either percent of location damaged (01-99), or the appropriate class of damage (values vary from 0-9 depending on the specific Damage Agent.)

135. UNKNOWN_DAMTYP1_PNWRS

Unknown damage type 1 in PNW. Indicates the sign or symptom recorded when UNKNOWN damage code 90 is used.

| Code | Description |
|---|---|
| 1 | canker/gall |
| 2 | open wound |
| 3 | resinosis |
| 4 | broken |
| 5 | damaged or discolored foliage |
| 6 | other |

136 UNKNOWN_DAMTYP2_PNWRS

Unknown damage type 2 in PNW. See UNKNOWN_DAMTYP1_PNWRS,

**Seedling Table (Oracle table name is SEEDLING)**

| | Column Name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | INVYR | NUMBER(4) | Year (YYYY) |
| 4 | STATECD | NUMBER(4) | Coded |
| 5 | UNITCD | NUMBER(2) | Coded |
| 6 | COUNTYCD | NUMBER(3) | Coded |
| 7 | PLOT | NUMBER(5) | Number |
| 8 | SUBP | NUMBER(3) | Number |
| 9 | CONDID | NUMBER(1) | Number |
| 10 | SPCD | NUMBER | Coded |
| 11 | SPGRPCD | NUMBER(2) | Coded |
| 12 | STOCKING | NUMBER(7,4) | Percent |
| 13 | TREECOUNT | NUMBER(3) | Number |
| 14 | TOTAGE | NUMBER(3) | Years |
| 15 | CREATED_BY | VARCHAR2(30) | Character |
| 16 | CREATED_DATE | DATE | DD-MON-YYYY |
| 17 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 18 | MODIFIED_BY | VARCHAR2(30) | Character |
| 19 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 20 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 21 | TREECOUNT_CALC | NUMBER | |
| 22 | TPA_UNADJ | NUMBER(11,6) | |
| 23 | CYCLE | NUMBER(2) | Number |
| 24 | SUBCYCLE | NUMBER(2) | Number |

| | |
|---|---|
| SDL_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT ,SUBP, CONDID, SPCD) |
| SDL_PK | (CN) |
| SDL_PLT_FK_I | (PLT_CN) |
| SDL_UK | (PLT_CN, SUBP, CONDID, SPCD) |

1. CN Sequence number. A unique index used to easily identify a seedling

2. PLT_CN — Plot sequence number. Foreign key linking the seedling record to the plot record.

3. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. UNITCD — Survey unit number. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

6. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

7. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

8. SUBP — Subplot number. Number of the subplot on which the seedling count was measured. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

9. CONDID — Condition class number. Unique identifying number assigned to each condition on a plot. A condition is initially defined by condition class status. Differences in reserved status, owner group, forest type, stand-size class, regeneration status, and stand density further define condition for forest land. Mapped nonforest conditions are also assigned numbers. At the time of the plot establishment, the condition class at plot center (the center of subplot 1) is usually designated as condition class 1. Other condition classes are assigned numbers sequentially at the time each condition class is delineated. On a plot, each sampled condition class must have a unique number that can change at remeasurement to reflect new conditions on the plot.

10. SPCD — Species code. A standard tree species code. Refer to Appendix F for codes.

11. SPGRPCD — Species group code. An FIA species group number. This number is used to produce many of the standard presentation tables. Individual species and corresponding tree species group codes are shown in Appendix F.

Individual FIA programs may further break these species groups down for published tables, but this is a common list that all published standard presentation tables must match.

12. STOCKING Tree stocking. The stocking value assigned to each count of seedlings, by species. Stocking is a relative term used to describe (in percent) the adequacy of a given stand density in meeting a specific management objective. Species or forest type stocking functions were used to assess the stocking contribution of individual trees. These functions, which were developed using stocking guides, relate the area occupied by an individual tree to the area occupied by a tree of the same size growing in a fully stocked stand of like trees. The stocking of individual trees is used in the calculation of GSSTKCD and ALSTKCD on the condition record.

13. TREECOUNT Tree count. Seedling count. Indicates the number of seedlings (DIA < 1.0 inch) present on the microplot. Conifer seedlings are at least 6 inches tall and hardwood seedlings are at least 12 inches tall. Began in field guide 2.0. Prior to field guide 2.0, the national core procedure was to record the actual seedling count up to six seedlings and then record 6+ if more than six seedlings were present. However, the following regions collected the actual seedling count prior to field guide 2.0: Rocky Mountain Research Station (RMRS) and North Central Research Station (NCRS). For data collected prior to field guide 2.0 and TREECOUNT is null, a value of 6 in TREECOUNT_CALC (variable 21 below) probably represents more than 6 seedlings.

14. TOTAGE Total age. **Specific to Rocky Mountain Research Station.** All other Stations record null for this variable. Contact Rocky Mountain Research Station for more information. Total age for a representative seedling, within each count, by species.

15. CREATED_BY The user who created the record.

16. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

17. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

21. TREECOUNT_CALC

    Tree count used in calculations. This attribute is set either to COUNTCD, which has been dropped, or TREECOUNT. Prior to field guide 2.0, the national core procedure was to record the actual seedling count up to six seedlings and then record 6+ if more than six seedlings were present. However, the following regions collected the actual seedling count prior to field guide 2.0: Rocky Mountain Research Station (RMRS) and North Central Research Station (NCRS). For data collected prior to field guide 2.0 and TREECOUNT is null, a value of 6 in TREECOUNT_CALC probably represents more than 6 seedlings.

22. TPA_UNADJ Trees per acre unadjusted. The value for this column is set to a constant derived from the microplot radius on which the tree is sampled and the theoretical number of them. For plots with PLOT.DESIGNCD equal 1, TPA_UNADJ equals 74.965282.

23. CYCLE Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

24. SUBCYCLE Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

**Site Tree Table (Oracle table name is SITETREE)**

| | Column Name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | PREV_SIT_CN | VARCHAR2(34) | |
| 4 | INVYR | NUMBER(4) | Year (YYYY) |
| 5 | STATECD | NUMBER(4) | Coded |
| 6 | UNITCD | NUMBER(2) | Coded |
| 7 | COUNTYCD | NUMBER(3) | Coded |
| 8 | PLOT | NUMBER(5) | Number |
| 9 | CONDID | NUMBER(1) | Number |
| 10 | TREE | NUMBER(4) | Number |
| 11 | SPCD | NUMBER | Coded |
| 12 | DIA | NUMBER(5,2) | Inches |
| 13 | HT | NUMBER(3) | Feet |
| 14 | AGEDIA | NUMBER(3) | Years |
| 15 | SPGRPCD | NUMBER(2) | Coded |
| 16 | SITREE | NUMBER(3) | Feet |
| 17 | SIBASE | NUMBER(3) | Years |
| 18 | CREATED_BY | VARCHAR2(30) | Character |
| 19 | CREATED_DATE | DATE | DD-MON-YYYY |
| 20 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 21 | MODIFIED_BY | VARCHAR2(30) | Character |
| 22 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 23 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |
| 24 | SUBP | NUMBER(3) | Number |
| 25 | AZIMUTH | NUMBER(3) | Degrees |
| 26 | DIST | NUMBER(4,1) | Feet |
| 27 | METHOD | NUMBER(2) | Number |
| 28 | SITREE_EST | NUMBER(3) | Feet |
| 29 | VALIDCD | NUMBER(1) | Number |
| 30 | COND_CLASS_LIST | VARCHAR2(5) | Character |
| 31 | SITREE_EQU_NO_PNWRS | NUMBER(3) | |
| 32 | CYCLE | NUMBER(2) | Number |
| 33 | SUBCYCLE | NUMBER(2) | Number |

| | |
|---|---|
| SIT_CND_FK_I | (PLT_CN, CONDID) |
| SIT_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT, CONDID, TREE) |
| SIT_PK | (CN) |
| SIT_PLT_FK_I | (PLT_CN) |
| SIT_UK | (PLT_CN, CONDID, TREE) |

1. CN — Sequence number. A unique sequence number used to identify a site tree record.

2. PLT_CN — Plot sequence number. Foreign key linking the site tree record to the plot record.

3. PREV_SIT_CN

   Previous site tree sequence number. Foreign key linking the site tree to the previous inventory's site tree record for this tree. Only populated on remeasured annual plots.

4. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

5. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

6. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

7. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

8. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

9. CONDID — Condition class number. Unique identifying number assigned to each condition on a plot. A condition is initially defined by condition class status. Differences in reserved status, owner group, forest type, stand-size class, regeneration status, and stand density further define condition for forest land. Mapped nonforest conditions are also assigned numbers. At

the time of the plot establishment, the condition class at plot center (the center of subplot 1) is usually designated as condition class 1. Other condition classes are assigned numbers sequentially at the time each condition class is delineated. On a plot, each sampled condition class must have a unique number that can change at remeasurement to reflect new conditions on the plot.

10. TREE — Tree number. A number used to uniquely identify a site tree on a condition.

11. SPCD — Species code. A standard tree species code. Refer to Appendix F for codes.

12. DIA — Diameter. The current diameter (in inches) of the tree at the point of diameter measurement (DBH/DRC).

13. HT — Sitetree length. The total length of a sample tree (in feet) from the ground to the top of the main stem.

14. AGEDIA — Tree age at diameter. Age (in years) of tree at the point of diameter measurement (DBH/DRC). Age is determined by an increment sample.

15. SPGRPCD — Species group code. An FIA species group number, which is used to produce many of the standard presentation tables. The assignment of individual species (SPCD) to these groups is shown in Appendix F. Individual FIA programs may further break these species groups down for published tables, but this is a common list that all published standard presentation tables must match.

16. SITREE — Site index. Site index (in feet) of the tree.

17. SIBASE — Site index base age. The base age (in years) of the site index curves used to derive site index.

18. CREATED_BY — The user who created the record.

19. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

20. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

21. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

22. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

23. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

24. SUBP — Subplot number. Number of the subplot on which the site tree was measured. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit. (*Core Optional*)

25. AZIMUTH — Azimuth. The direction, to the nearest degree, from subplot center to the center of the base of the tree (geographic center for multi-stemmed woodland species). Due north is represented by 360 degrees. (*Core Optional*)

26. DIST — Horizontal distance. The horizontal distance in feet from subplot center (microplot center for saplings) to the pith at the base of the tree (geographic center for multi-stemmed woodland species). (*Core Optional*)

27. METHOD — Site tree method code. The method for determining the site index.

| Code | Description |
|---|---|
| 1 | Tree measurements (length, age, etc.) collected during this inventory. |
| 2 | Tree measurements (length, age, etc.) collected during a previous inventory. |
| 3 | Site index estimated either in the field or office. |
| 4 | Site index determined by the height intercept method during this inventory. |

28. SITREE_EST — The estimated site index or the site index determined by the height intercept method.

29. VALIDCD Validity code. Indicator of validity of site index calculation for this tree. If the site calculation for this tree was successful, this variable is set to 1.

| Code | Description |
|---|---|
| 0 | Tree failed in site index calculations |
| 1 | Tree was successful in site index calculations |

30. COND_CLASS_LIST

Condition class list. List of all condition classes that the site index data from this tree represent.

31. SITREE_EQU_NO_PNWRS

K for King's, P for Primary

**HIERARCHY OF METHOD SELECTION: "HOW TO DECIDEMETHOD"**

1. If adding to an existing set of site trees, use the same method used previously, if the method is known. It is rare that a new set of trees will be collected if trees had been collected before. These exceptions are: A stand that was mature, 200 years old, for example, and is now a young plantation; or when the species for the stand changes. If in doubt, get a new set of site trees, following the method that applies at the current visit.

2. Use King's method in the coastal (west of the Cascade Mountains) Douglas-fir type, if possible. Very specific rules apply in selecting site trees when using King's method; do not use King's method unless these rules can be satisfied.

3. For OR and WA: Always use the Primary method when King's cannot be met.

4. For CA:

   a) Use King's if the criteria are met. If not, then go to "b."
   b) Decide if the area is a Mixed conifer site. If yes, use the Mixed conifer method. If not, go to "c."
   c) Use the Primary method.

**KING'S SELECTION METHOD**

1. King's method is the preferred selection method for 1) Douglas-fir and grand fir and for 2) western hemlock and Sitka spruce (do not mix these two groups of species).

2. Use this method only if the overall stand is < 130 years old and below 3000 feet in elevation.

3. Within the area of the standard layout, locate an approximately circular area that is moderately or well-stocked by a group of 25 mainstand a) Douglas-fir and grand firs or b) western hemlock and Sitka spruce trees (do not mix these two groups of species) and is representative of the site being sampled. A very rough rule of thumb: this approximately circular area should not have a "diameter" greater than 120 to 130 feet. When determining the 25 trees, count only trees with normally-formed tops (no trees with forked tops or top out); do not include understory trees that are both younger and shorter than the general crown canopy. If you believe the stocking does not perfectly match the definition for King's, but you can find 5 or 10 suitable site trees, then King's is preferred.

4. From the 25 trees in the clump, select the 5 trees with the largest DBH as site trees (the "1/5 rule") if the average breast height age of trees in the clump is >30 years. If the average age is < 30 years, go to step 5.

5. Sometimes only very young trees are available. Although site trees under 30 years breast-high age are undesirable, select site trees between 15 and 30 years old (age at breast age) if no others are available. Do not use trees less than 15 years old at breast height. Select from a clump of 50 mainstand Douglas-fir and grand firs or western hemlock and Sitka spruce trees (do not mix these two groups of species), taking 10 with largest DBH as site trees. Include only trees with normally formed tops (no trees with forked tops or top out); do not include understory trees that are both younger and shorter than the general crown canopy.

6. Any site tree with a clear history of suppression should be rejected, and the next largest tree selected IF it is suitable. However select a suppressed tree over a shorter, suppression-free tree of the same age.

7. Whether the crew gets 5 or 10 trees, the site index should be within 20.

8. If there are no suitable site trees selected within the plot area, select trees from a nearby group on the same general aspect and elevation, and note that the site trees were obtained off the plot in "Present Condition/Past Disturbance" on the PLOT RECORD.

**PRIMARY SELECTION METHOD, CONIFERS**

This selection method was previously known as the McArdles' selection method, but now includes several different equations. Use this method if King's method can't be used in Oregon and Washington. In California, use this method if King's or Mixed Conifer methods can't be used.

1. Select three dominant trees of the same species representative of the plot area.

2. Site trees should be evenly distributed across the condition class area if possible.

3. Select trees that are and have been free from suppression for their entire lives. A tree that has been suppressed will have closely-space annual growth rings on all or part of its increment core. Be particularly careful when in residual stands from which the dominant trees have been harvested.

4. Select site trees that have their original tops and show no signs of previous top breakage such as crooks and forks.

5. Trees greater than 50 years old are desirable, but younger trees may be selected if none are available. Trees 60 to 120 years old are most desirable, but younger trees may be used if needed.

6. Do not use trees younger than 15 years old at breast height.

7. For this method, some of the species will be associated with 50 year site equations, and the site index should not vary by more than 20. Other species are associated with 100 year site equations and should not vary by more than 30. These "100 year species" are: Douglas-fir at high elevation (above 3,000 feet), noble fir, mountain hemlock, Coulter pine, ponderosa pine, western white pine, and lodgepole pine, or when using the mixed-conifer selection method.

8. If it is necessary to use true fir site trees, be very sure that they are not released understory trees. Never select true fir trees under 50 years old (breast height age). In Oregon and Washington, select a Pacific silver fir only as a last resort. Avoid Pacific silver fir in older stands due to likelihood of history of suppression. In California, choose red fir over white fir when possible, since white fir is frequently suppressed.

9. Other conifers that are a last resort include Pacific yew, Incense cedar, and western redcedar. If other conifers are available, do not use these species. If one must use Pacific yew, only bore one tree. If one must choose either Incense cedar or western redcedar as site trees, then bore three trees and try to keep the site index within 30. Do not bore any other cedar species unless they are the only option, then get one tree to fulfill the national requirement.

**PRIMARY SELECTION METHOD, HARDWOODS**

1. Hardwoods are the last resort for site tree selection. When in a mixed hardwood and conifer stand, always choose the conifer. For example,

when in a mixed black oak and Douglas-fir stand, select Douglas-fir site trees. When in a stand of mixed red or white alder and a conifer, choose the conifer.

2. When in a hardwood stand that is incapable of growing suitable conifers, choose one or three hardwood trees, depending on species.

3. Red alder and bigleaf maple are both being planted commercially and there are site indices developed for them. When in a stand of red alder with no suitable conifers present, select three red alder trees. If in a mixed stand of red alder and bigleaf maple and or white alder, choose three red alder trees. If in a stand of white alder, with no conifers available, choose three white alder trees for site. It would be an unusual situation to have to bore bigleaf maple for site trees. If one were in a stand of bigleaf maple with no suitable conifers or red alder present, then get three trees. For red alder, bigleaf maple, or white alder, the site index should fall within 20. Do not mix species.

4. Other hardwood species also have a site index developed and one should get one site tree if there are no suitable conifers present. These species are: black oak, blue oak, coast live oak, tanoak, and Pacific madrone. Do not select one black oak instead of three conifers. Always choose conifers form the stand if they are available.

5. For all other hardwood species, if no suitable conifers are present, select one tree to meet the national requirement. All Populus species, including black cottonwood, quaking aspen, balsam poplar and paper birch, if selected as a site tree to meet the national requirement, should be bored outside the plot area.

**MIXED CONIFER SELECTION METHOD**

Use this method for the mixed conifer type in California ONLY: For this method, rules under "Primary Selection method" apply with the exceptions noted below. Use the descriptions of Ponderosa pine and mixed conifer types under "site descriptions" below when deciding whether to use this method. Note: if the area is within a ponderosa pine stand that does not meet the mixed conifer definition, ponderosa pine is the first choice for site trees. If there are no ponderosa pines suitable, then use Douglas-fir or white fir and follow these criteria as if it met the definition for a mixed conifer stand.

1. Select three dominant trees on a plot. They can be a mix of ponderosa pine, Douglas-fir, white fir, and red fir. If additional site trees are needed to get enough, sugar pine and Jeffrey pine can also be used. Do not use any other species when within this forest type.

2. Be aware that true firs are more shade-tolerant than pines and may have been subject to suppression. Be aware that overstory removal is

sometimes used in this type, and remaining trees may have been subject to suppression.

3. Site index should fall within 30.

4. Use trees that are at least 50 years old whenever possible. Ideally, trees should be within 60 and 120 years old. Do not use trees that are less than 15 years old at breast height.

32. CYCLE — Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

33. SUBCYCLE — Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

**Boundary Table (Oracle table name is BOUNDARY)**

| | Column Name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | PLT_CN | VARCHAR2(34) | Character |
| 3 | INVYR | NUMBER(4) | Year (YYYY) |
| 4 | STATECD | NUMBER(4) | Coded |
| 5 | UNITCD | NUMBER(2) | Coded |
| 6 | COUNTYCD | NUMBER(3) | Coded |
| 7 | PLOT | NUMBER(5) | Number |
| 8 | SUBP | NUMBER(3) | Number |
| 9 | SUBPTYP | NUMBER(1) | Coded |
| 10 | BNDCHG | NUMBER(1) | Coded |
| 11 | CONTRAST | NUMBER(1) | Number |
| 12 | AZMLEFT | NUMBER(3) | Degrees |
| 13 | AZMCORN | NUMBER(3) | Degrees |
| 14 | DISTCORN | NUMBER | Feet |
| 15 | AZMRIGHT | NUMBER(3) | Degrees |
| 16 | CYCLE | NUMBER(2) | Number |
| 17 | SUBCYCLE | NUMBER(2) | Number |
| 18 | CREATED_BY | VARCHAR2(30) | Character |
| 19 | CREATED_DATE | DATE | DD-MON-YYYY |
| 20 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 21 | MODIFIED_BY | VARCHAR2(30) | Character |
| 22 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 23 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| BND_NAT_I | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT, SUBP, SUBPTYP, AZMLEFT, AZMRIGHT) |
| BND_PK | (CN) |
| BND_PLT_FK_I | (PLT_CN) |
| BND_UK | (PLT_CN, SUBP, SUBPTYP, AZMLEFT, AZMRIGHT) |

1. CN Sequence number. A unique sequence number used to identify a boundary record.

2. PLT_CN — Plot sequence number. Foreign key linking the boundary record to the plot record.

3. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

6. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

7. PLOT — Phase 2 plot number. An identifier for a plot. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot.

8. SUBP — Subplot number. Number of the subplot on which the boundary was measured. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

9. SUBPTYP — Plot type code. Specifies whether the boundary data are for a subplot, microplot, or macroplot.

| Code | Description |
|---|---|
| 1 | Subplot boundary |
| 2 | Microplot boundary |
| 3 | Macroplot boundary |

10. BNDCHG — Boundary change code. A code to indicate the relationship between previously recorded and current boundary information. Set to null for new plots (KINDCD = 1 or 3 [see PLOT Table]).

| Code | Description |
|---|---|
| 0 | No change – boundary is the same as indicated on plot map by previous crew. |
| 1 | New boundary, or boundary data have been changed to reflect an actual on-the-ground physical change resulting in a difference from the boundaries recorded. |

2 Boundary has been changed to correct an error from a previous crew.
3 Boundary has been changed to reflect a change in variable definition.

11. CONTRAST Contrasting condition. The condition class number of the condition class that contrasts with the condition class located at the subplot center (for boundaries on the subplot or macroplot) or at the microplot center (for boundaries on the microplot), e.g., the condition class present on the other side of the boundary.

12. AZMLEFT Left azimuth. The azimuth, to the nearest degree, from the subplot, microplot, or macroplot plot center to the farthest left point (facing the contrasting condition class) where the boundary intersects the subplot, microplot, or macroplot plot circumference.

13. AZMCORN Corner azimuth. The azimuth, to the nearest degree, from the subplot, microplot, or macroplot plot center to a corner or curve in a boundary. If a boundary is best described by a straight line between the two circumference points, then 000 is recorded for AZMCORN.

14. DISTCORN Corner distance. The horizontal distance, to the nearest 1 foot, from the subplot, microplot, or macroplot plot center to the boundary corner point. Null when AZMCORN equals 000; populated when AZMCORN is greater than 000.

15. AZMRIGHT Right azimuth. The azimuth, to the nearest degree, from subplot, microplot, or macroplot plot center to the farthest right point (facing the contrasting condition) where the boundary intersects the subplot, microplot, or macroplot plot circumference.

16. CYCLE Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

17. SUBCYCLE Inventory subcycle number. For an annual inventory that takes n years to measure all plots, subcycle shows in which of the n years of the cycle the data were measured. Subcycle is 0 for a periodic inventory.

18. CREATED_BY The user who created the record.

19. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

20. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

21. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

22. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

23. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Evaluation Group Table (Oracle table name is POP_EVAL_GRP)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | EVAL_CN_FOR_EXPALL | VARCHAR2(34) | Character |
| 3 | EVAL_CN_FOR_EXPCURR | VARCHAR2(34) | Character |
| 4 | EVAL_CN_FOR_EXPVOL | VARCHAR2(34) | Character |
| 5 | EVAL_CN_FOR_EXPGROW | VARCHAR2(34) | Character |
| 6 | EVAL_CN_FOR_EXPMORT | VARCHAR2(34) | Character |
| 7 | EVAL_CN_FOR_EXPREMV | VARCHAR2(34) | Character |
| 8 | RSCD | NUMBER(2) | Number |
| 9 | EVAL_GRP | NUMBER(6) | Number |
| 10 | EVAL_GRP_DESCR | VARCHAR2(255) | Character |
| 11 | STATECD | NUMBER(4) | Number |
| 12 | LAND_ONLY | VARCHAR2(1) | Coded |
| 13 | CREATED_BY | VARCHAR2(30) | Character |
| 14 | CREATED_DATE | DATE | DD-MON-YYYY |
| 15 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 16 | MODIFIED_BY | VARCHAR2(30) | Character |
| 17 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 18 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| PEG_PEV_FK_2_I | (EVAL_CN_FOR_EXPCURR) |
| PEG_PEV_FK_3_I | (EVAL_CN_FOR_EXPGROW) |
| PEG_PEV_FK_4_I | (EVAL_CN_FOR_EXPMORT) |
| PEG_PEV_FK_5_I | (EVAL_CN_FOR_EXPREMV) |
| PEG_PEV_FK_6_I | (EVAL_CN_FOR_EXPVOL) |
| PEG_PEV_FK_I | (EVAL_CN_FOR_EXPALL) |
| PEG_PK | (CN) |
| PEG_UK | (RSCD,EVAL_GRP) |

1. CN — Sequence number. A unique sequence number used to identify an evaluation group record.

2. EVAL_CN_FOR_EXPALL

   Evaluation sequence number for making current estimates of area, where the sample includes denied-access and hazardous plots, but excludes outside-of-the-population plots.

3. EVAL_CN_FOR_EXPCURR

   Evaluation sequence number for making current estimates of area, where the sample excludes outside-of-the-population, denied-access, and hazardous plots. This is the sequence number for the evaluation that is used to generate estimates of forestland and timberland.

4. EVAL_CN_FOR_EXPVOL

   Evaluation sequence number for current estimates of volume (based on number of sampled plots only). This is the sequence number for the evaluation that is used to generate current estimates of volume, biomass, and number of trees.

5. EVAL_CN_FOR_EXPGROW

   Evaluation sequence number for current estimates of net average annual growth (based on number of sampled plots only). This is the sequence number for the evaluation that is used to generate current estimates of net growth.

6. EVAL_CN_FOR_EXPMORT

   Evaluation sequence number for current estimates of average annual mortality (based on number of sampled plots only). This is the sequence number for the evaluation that is used to generate current estimates of average annual mortality.

7. EVAL_CN_FOR_EXPREMV

   Evaluation sequence number for current estimates of average annual removals (based on number of sampled plots only). This is the sequence number for the evaluation that is used to generate current estimates of average annual removals.

8. RSCD — Region or Station Code. Identification number of the Forest Service Region or Station that provided the inventory data (see SURVEY table for codes.)

9. EVAL_GRP — Evaluation group. An evaluation group identifies the evaluations that were used in producing a core set of reports. In some cases one evaluation will be used for area and volume and another evaluation for growth, removals and mortality.

10. EVAL_GRP_DESCR

    Evaluation group description. In most cases this will be taken from the title of a statistical or analytical report, e.g., “Minnesota’s Forest Resources in 2004 (RB-NC-262).”

11. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table. For evaluations that do not conform to the boundaries of a single state the value of STATECD should be set to 99.

12. LAND_ONLY Land only. Indicates area used in stratifying evaluations.

| Code | Description |
|---|---|
| Y | Only census land was used in the stratification process. |
| N | Census land and water were used in the stratification process. |

13. CREATED_BY

    The user who created the record.

14. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

15. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

16. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

17. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

18. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Evaluation Table (Oracle table name is POP_EVAL)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | RSCD | NUMBER(2) | Number |
| 3 | EVALID | NUMBER(6) | Number |
| 4 | EVAL_DESCR | VARCHAR2(255) | Character |
| 5 | STATECD | NUMBER(4) | Number |
| 6 | LOCATION_NM | VARCHAR2(255) | Character |
| 7 | REPORT_YEAR_NM | VARCHAR2(255) | Character |
| 8 | NOTES | VARCHAR2(2000) | Character |
| 9 | CREATED_BY | VARCHAR2(30) | Character |
| 10 | CREATED_DATE | DATE | DD-MON-YYYY |
| 11 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 12 | MODIFIED_BY | VARCHAR2(30) | Character |
| 13 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 14 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

PEV_PK (CN)

PEV_UK (RSCD, EVALID)

1. CN Sequence number. A unique sequence number used to identify an evaluation record.

2. RSCD Region or Station Code. Identification number of the Forest Service Region or Station that provided the inventory data (see SURVEY table for codes.)

3. EVALID Evaluation identifier. Within a station identifies a set of field plots and associated phase 1 summary data used to make population estimates.

4. EVAL_DESCR Evaluation description. A description of the area being evaluated (often a state), the time period of the evaluation, the type of expansion factors computed (e.g. EXPMORT), the extent of the estimation units (e.g. county), and the kind of stratification.

5. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

6. LOCATION_NM

   Location name. Geographic area as it would appear in the title of a report.

7. REPORT_YEAR_NM

   Report year. The reporting year(s) as it would appear in the title of a report.

8. NOTES — Notes. Notes should include information about the stratification method. May include citation for any publications that used the evaluation was used.

9. CREATED_BY

   The user who created the record.

10. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

11. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

12. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

13. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY

14. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Estimation Unit Table (Oracle table name is POP_ESTN_UNIT)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | EVAL_CN | VARCHAR2(34) | Character |
| 3 | RSCD | NUMBER(2) | Coded |
| 4 | EVALID | NUMBER(6) | Number |
| 5 | ESTN_UNIT | NUMBER(6) | Number |
| 6 | ESTN_UNIT_DESCR | VARCHAR2(255) | Character |
| 7 | STATECD | NUMBER(4) | Number |
| 8 | AREALAND_EU | NUMBER(12,2) | Acres |
| 9 | AREATOT_EU | NUMBER(12,2) | Acres |
| 10 | AREA_USED | NUMBER(12,2) | Acres |
| 11 | AREA_SOURCE | VARCHAR2(50) | Character |
| 12 | P1PNTCNT_EU | NUMBER(12) | Number |
| 13 | CREATED_BY | VARCHAR2(30) | Character |
| 14 | CREATED_DATE | DATE | DD-MON-YYYY |
| 15 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 16 | MODIFIED_BY | VARCHAR2(30) | Character |
| 17 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 18 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| PEU_FK_I | (EVAL_CN) |
| PEU_PK | (CN) |
| PEU_UK | (RSCD, EVALID, ESTN_UNIT) |

1. CN — Sequence number. A unique sequence number used to identify an estimation unit stratum record.

2. EVAL_CN — Evaluation sequence number. Foreign key linking the Estimation Unit record to the Evaluation record.

3. RSCD — Region or Station Code. Identification number of the Forest Service Region or Station that provided the inventory data (see SURVEY table for codes). Combined with EVALID (below), this provides a link to the PLOT table via the RSCD_EVAL_EXPxxxx variables to identify which stratification method was used to populate the multiple expansion factors on the PLOT table.

4. EVALID — Evaluation identifier. Within a station identifies a set of field plots and associated phase 1 summary data used to make population estimates.

5. ESTN_UNIT — Estimation unit. The particular geographic area for which a particular computation applies. Estimation units are determined by a combination of sampling intensity and geographical boundaries.

6. ESTN_UNIT_DESCR

   Estimation unit description. A description of the estimation unit (e.g., name of the county.)

7. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table. For evaluations that do not conform to the boundaries of a single state the value of STATECD should be set to 99.

8. AREALAND_EU

   Land area within the estimation unit. The area of land in acres enclosed by the estimation unit. Census water is excluded.

9. AREATOT_EU

   Total area within the estimation unit. This includes land and census water enclosed by the estimation unit.

10. AREA_USED — Area used to calculate all expansion factors. Is equivalent to AREATOT_EU if a station estimates all area, including census water; and to AREALAND_EU if a station estimates land area only.

11. AREA_SOURCE

    Area Source identifies where the area estimates came from. Usually the area source is either the U.S. Census Bureau or area estimates based on pixel counts.

12. P1PNTCNT_EU

    Phase 1 point count for the estimation unit. For remotely sensed data this will be the total number of pixels in the estimation unit.

13. CREATED_BY

    The user who created the record.

14. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

15. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

16. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

17. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY

18. MODIFIED_IN _INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Stratum Table (Oracle table name is POP_STRATUM)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | ESTN_UNIT_CN | VARCHAR2(34) | Character |
| 3 | RSCD | NUMBER(2) | Coded |
| 4 | EVALID | NUMBER(6) | Number |
| 5 | ESTN_UNIT | NUMBER(6) | Number |
| 6 | STRATUMCD | NUMBER(6) | Number |
| 7 | STRATUM_DESCR | VARCHAR2(255) | Character |
| 8 | STATECD | NUMBER(4) | Number |
| 9 | P1POINTCNT | NUMBER(12) | Character |
| 10 | P2POINTCNT | NUMBER(12) | Acres |
| 11 | EXPNS | NUMBER(13,4) | Acres |
| 12 | ADJ_FACTOR_MACR | NUMBER(5,4) | Acres |
| 13 | ADJ_FACTOR_SUBP | NUMBER(5,4) | Acres |
| 14 | ADJ_FACTOR_MICR | NUMBER(5,4) | Acres |
| 15 | CREATED_BY | VARCHAR2(30) | Character |
| 16 | CREATED_DATE | DATE | DD-MON-YYYY |
| 17 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 18 | MODIFIED_BY | VARCHAR2(30) | Character |
| 19 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 20 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| PSM_PEU_FK_I | (ESTN_UNIT_CN) |
| PSM_PK | (CN) |
| PSM_UK | (RSCD, EVALID, ESTN_UNIT, STRATUMCD) |

1. CN — Sequence number. A unique sequence number used to identify an estimation unit stratum record.

2. ESTN_UNIT_CN

   Estimation unit sequence number. Foreign key linking the Stratum record to the Estimation unit record.

3. RSCD — Region or Station Code. Identification number of the Forest Service Region or Station that provided the inventory data (see SURVEY table for codes). Combined with EVALID (below), this provides a link to the PLOT table via the RSCD_EVAL_EXPxxxx variables to identify which

stratification method was used to populate the multiple expansion factors on the PLOT table.

4. EVALID — Evaluation identifier. Within a station identifies a set of field plots and associated phase 1 summary data used to make population estimates.

5. ESTN_UNIT — Estimation unit. The particular geographic area for which a particular computation applies. Estimation units are determined by a combination of sampling intensity and geographical boundaries.

6. STRATUMCD — Stratum code. A number used to uniquely identify a stratum within an estimation unit.

7. STRATUM_DESCR

   Stratum description. Stratum are usually based on land use (e.g. forest or nonforest) but may also be based on other criteria such as ownership (e.g. private/public/national forest).

8. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table. For evaluations that do not conform to the boundaries of a single state the value of STATECD should be set to 99.

9. P1POINTCNT

   Phase 1 point count. For remotely sensed data this will be the number of pixels in the stratum.

10. P2POINTCNT

    Phase 2 point count. The number of field plots that are within the stratum.

11. EXPNS — Area expansion factor in acres. The area expansion factor can be used to estimate population totals for an estimation unit only when all of the plots are used. Using area expansion factors to report on a subset of the data, such as all private lands or lands in the aspen forest type) will result in approximate answer. To get an unbiased estimate for reporting on a subset of the data the procedures outlined in chapter 4 should be used.

12. ADJ_FACTOR_MACR

    Adjustment factor for the macroplot. This adjustment factor should be applied to the MACRPROP_UNADJ on the condition record when generating population estimates to take into account “out of population” and “denied access” portions of macroplots within the stratum.

13. ADJ_FACTOR_SUBP

    Adjustment factor for the subplot. This adjustment factor should be applied to the SUBPPROP_UNADJ on the condition record when generating population estimates to take into account "out of population" and "denied access" portions of subplots within the stratum.

14. ADJ_FACTOR_MICR

    Adjustment factor for the microplot. This adjustment factor should be applied to the MICRPROP_UNADJ on the condition record when generating population estimates to take into account "out of population" and "denied access" portions of microplots within the stratum.

15. CREATED_BY

    The user who created the record.

16. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

17. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN _INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Plot Stratum Assignment Table (Oracle table name is POP_PLOT_STRATUM_ASSGN)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | CN | VARCHAR2(34) | Character |
| 2 | STRATUM_CN | VARCHAR2(34) | Character |
| 3 | PLT_CN | VARCHAR2(34) | Character |
| 4 | STATECD | NUMBER(4) | Coded |
| 5 | INVYR | NUMBER(4) | Year (YYYY) |
| 6 | UNITCD | NUMBER(2) | Coded |
| 7 | COUNTYCD | NUMBER(3) | Coded |
| 8 | PLOT | NUMBER(5) | Number |
| 9 | RSCD | NUMBER(2) | Coded |
| 10 | EVALID | NUMBER(6) | Number |
| 11 | ESTN_UNIT | NUMBER(6) | Number |
| 12 | STRATUMCD | NUMBER(6) | Coded |
| 13 | CREATED_BY | VARCHAR2(30) | Character |
| 14 | CREATED_DATE | DATE | DD-MON-YYYY |
| 15 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 16 | MODIFIED_BY | VARCHAR2(30) | Character |
| 17 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 18 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| PPSA_PK | (CN) |
| PPSA_PLT_FK_I | (PLT_CN) |
| PPSA_PSM_FK_I | (STRATUM_CN) |
| PPSA_UK | (PLT_CN, STRATUM_CN) |
| PPSA_UK2 | (STATECD, INVYR, UNITCD, COUNTYCD, PLOT, RSCD, EVALID, ESTN_UNIT, STRATUMCD) |

1. CN — Sequence number. A unique sequence number used to identify a population plot stratum assignment record.

2. STRATUM_CN

   Stratum sequence number. Foreign key linking the population plot stratum assignment record to the population stratum record.

3. PLT_CN — Plot sequence number. Foreign key linking the population plot stratum assignment record to the plot record.

4. STATECD — State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. INVYR — Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

6. UNITCD — Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each state. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.

7. COUNTYCD — County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

8. PLOT — Phase 2 plot number. An identifier for a plot. Along with INVYR, STATECD, UNITCD, COUNTYCD, PLOT may be used to uniquely identify a plot.

9.. RSCD — Region or Station Code. Identification number of the Forest Service Region or Station that provided the inventory data (see SURVEY table for codes).

10. EVALID — Evaluation identifier. Within a station identifies a set of field plots and associated phase 1 summary data used to make population estimates.

11. ESTN_UNIT — Estimation unit. A geographic area upon which stratification is performed. . Sampling intensity must be uniform within an estimation unit.

12. STRATUMCD — Stratum code. The code used for a particular stratum, which is unique within an RSCD, EVALID, ESTN_UNIT.

13. CREATED_BY — The user who created the record.

14. CREATED_DATE

    The date the record was created. Date will be in the form DD-MON-YYYY.

15. CREATED_IN_INSTANCE

    The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

16. MODIFIED_BY

    The user who modified the record. This field will be null if the data have not been modified since initial creation.

17. MODIFIED_DATE

    The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

18. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Attribute Table (Oracle table name is POP_ATTRIBUTE)**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | ATTRIBUTE_NBR | NUMBER(3) | Number |
| 2 | ATTRIBUTE_DESCR | VARCHAR2(255) | Character |
| 3 | EXPRESSION | VARCHAR2(255) | Character |
| 4 | WHERE_CLAUSE | VARCHAR2(255) | Character |
| 5 | CREATED_BY | VARCHAR2(30) | Character |
| 6 | CREATED_DATE | DATE | DD-MON-YYYY |
| 7 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 8 | MODIFIED_BY | VARCHAR2(30) | Character |
| 9 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 10 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

PAE_PK (ATTRIBUTE_NBR)

1. ATTRIBUTE_NBR

   Attribute number. A numeric code used to identify an Attribute record. See codes and descriptions in chapter 4, table 4.2.

2. ATTRIBUTE_DESCR

   Attribute description. Examples include "Area of forestland(acres)" or "All live biomass on forestland oven-dry(tons)". See codes and descriptions in chapter 4, table 4.2.

3. EXPRESSION

   Expression. SQL expression that identifies variables that are used to generate population estimate identified by ATTRIBUTE_DESCR (chapter 4, table 4.2).

4. WHERE_CLAUSE

   Where clause. SQL where clause that identifies the appropriate method for joining tables and screening records to generate population estimate identified by ATTRIBUTE_DESCR (chapter 4, table 4.2).

5. CREATED_BY

   The user who created the record.

6. CREATED_DATE

   The date the record was created. Date will be in the form DD-MON-YYYY.

7. CREATED_IN_INSTANCE

   The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

8. MODIFIED_BY

   The user who modified the record. This field will be null if the data have not been modified since initial creation.

9. MODIFIED_DATE

   The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

10. MODIFIED_IN_INSTANCE

    The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Population Evaluation Attribute Table (Oracle table name is POP_EVAL_ATTRIBUTE**

| | Column name | Oracle data type | Value or unit of measure |
|---|---|---|---|
| 1 | EVAL_CN | VARCHAR2(34) | Character |
| 2 | ATTRIBUTE_NBR | NUMBER(3) | Number |
| 3 | CREATED_BY | VARCHAR2(30) | Character |
| 4 | CREATED_DATE | DATE | DD-MON-YYYY |
| 5 | CREATED_IN_INSTANCE | NUMBER(6) | Number |
| 6 | MODIFIED_BY | VARCHAR2(30) | Character |
| 7 | MODIFIED_DATE | DATE | DD-MON-YYYY |
| 8 | MODIFIED_IN_INSTANCE | NUMBER(6) | Number |

| | |
|---|---|
| PEA_PAE_FK_I | (ATTRIBUTE_NBR) |
| PEA_PEV_FK_I | (EVAL_CN) |
| PEA_UK | (EVAL_CN, ATTRIBUTE_NBR) |

1. EVAL_CN Evaluation sequence number. Foreign key linking the population evaluation attribute record to the population evaluation record.

2. ATTRIBUTE_NBR

   Attribute number. Foreign key linking the population evaluation attribute record to the population attribute record.

3. CREATED_BY

   The user who created the record.

4. CREATED_DATE

   The date the record was created. Date will be in the form DD-MON-YYYY.

5. CREATED_IN_INSTANCE

   The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

6. MODIFIED_BY

   The user who modified the record. This field will be null if the data have not been modified since initial creation.\

7. MODIFIED_DATE

   The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

8. MODIFIED_IN_INSTANCE

   The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

# Chapter 4 – Calculating Population Estimates and Their Associated Sampling Errors

Estimation requires the specification of an attribute of interest (the quantity that is being estimated) and the area and time frame over which the attribute is to be estimated. The metadata that describes these are contained in the FIADB tables POP_EVAL_GRP, POP_ATTRIBUTE, and POP_EVAL_ATTRIBUTE. An understanding of these three tables is necessary to successfully calculate population estimates.

## POP_EVAL_GRP

To understand the POP_EVAL_GRP table you must first understand what is meant by an evaluation. In almost every case an evaluation is the combination of a set of plots (the sample) and a set of set of phase 1 (remotely sensed stratified) data that can be used to produce population estimates for a state (in rare circumstances an evaluation may be created to produce a population estimates for a region other than a State – such as the Black Hills National Forest).

Throughout this chapter we use the 2005 Minnesota report (Miles et al, 2007) as an example. Three evaluations - three distinct sets of plots combined with a stratification based on classified LandSat TM imagery- were used to generate various population estimates for this report. One evaluation used all the plots (including plots that were denied access or hazardous) to generate estimates of the total land area of the State broken down into classes that include hazardous and denied access. A second evaluation used the same plots as the first evaluation with the exception of the exclusion of a small number of plots where no measurements could be taken because the plots were entirely denied access or hazardous. This second evaluation was used to estimate the other current inventory attributes (area, volume, number of trees, biomass, …) into various classes where denied access or hazardous is not considered a valid class. A third evaluation used only those plots from the second evaluation that were measured at two points in time. This third evaluation was used to generate population estimates for components of change attributes (growth, mortality, and removals).

Table 4.1 contains a partial listing of the columns in the POP_EVAL_GRP table and their corresponding values for the Minnesota 2005 report. The evaluation group description (EVAL_GRP_DESCR) identifies the area that is covered by the evaluation group and the inventory years for the plots selected. The evaluation group control number (CN) uniquely identifies each record in the POP_EVAL_GRP table. The next six variables (EVAL_CN_FOR_EXPALL, EVAL_CN_FOR_EXPCURR, EVAL_CN_FOR_EXPVOL, EVAL_CN_FOR_EXPGROW, EVAL_CN_FOR_EXPMORT, and EVAL_CN_FOR_EXPREMV) are all foreign keys linking this POP_EVAL_GRP record to records in the POP_EVAL table.

Table 4.1 POP_EVAL_GRP table values for the Minnesota 2005 report.

| Column | Value |
|---|---|
| EVAL_GRP_DESCR | Minnesota: 2001;2002;2003;2004;2005 |
| CN | 446501010839 |
| EVAL_CN_FOR_EXPALL | 445993010839 |
| EVAL_CN_FOR_EXPCURR | 445994010839 |
| EVAL_CN_FOR_EXPVOL | 445994010839 |
| EVAL_CN_FOR_EXPGROW | 445995010839 |
| EVAL_CN_FOR_EXPMORT | 445995010839 |
| EVAL_CN_FOR_EXPREMV | 445995010839 |
| RSCD | 23 |
| EVAL_GRP | 272005 |

To calculate the total area of all land in Minnesota, including the area in denied access and hazardous, you would use the POP_EVAL record with a CN value of "445993010839" which corresponds to the value in EVAL_CN_FOR_EXPALL.

To calculate the area of forestland or timberland you would use the POP_EVAL record with a CN value of "445994010839" which corresponds to the value in EVAL_CN_FOR_EXPCURR. The values in EVAL_CN_FOR_EXPCURR and EVAL_CN_FOR_EXPVOL are the same which means that for the Minnesota 2005 report you would use the same POP_EVAL record to calculate volume, number of trees, and biomass that you would use to compute forestland and timberland area.

The values in EVAL_CN _FOR_EXPGROW, EVAL_CN_FOR_EXPMORT, and EVAL_CN_FOR_EXPREMV are all the same ("445995010839"), therefore only one POP_EVAL record is used to compute growth, mortality, and removals for the Minnesota 2005 report.

## POP_ATTRIBUTE

The POP_ATTRIBUTE table provides information on the type of population estimates that can be produced (ATTRIBUTE_DESCR) from data in the FIADB and information that can be used in developing database queries (EXPRESSION and WHERE_CLAUSE) (table 4.2). The list is not exhaustive and will be added to over time.

Table 4.2. POP_ATTRIBUTE table - list of population estimates that can be generated from the FIADB.

| ATTRIBUTE_NBR | ATTRIBUTE_DESCR | EXPRESSION | WHERE_CLAUSE |
|---|---|---|---|
| 1 | Area of land(acres) | c.condprop_unadj | and c.cond_status_cd in (1,2,3) |
| 2 | Area of forestland(acres) | c.condprop_unadj | and c.cond_status_cd=1 |
| 3 | Area of timberland(acres) | c.condprop_unadj | and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) |

| ATTRIBUTE_NBR | ATTRIBUTE_DESCR | EXPRESSION | WHERE_CLAUSE |
|---|---|---|---|
| 4 | Number of all live trees on forestland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 and t.dia>=1.0 |
| 5 | Number of growing-stock trees on forestland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 and t.treeclcd=2 and t.dia>=1.0 |
| 6 | Number of standing dead trees 5""+ dbh on forestland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=2 and t.standing_dead_cd=1 and t.dia>=5.0 |
| 7 | Number of all live trees on timberland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.dia>=1.0 |
| 8 | Number of growing-stock trees on timberland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.treeclcd=2 and t.dia>=1.0 |
| 9 | Number of standing dead trees 5""+ dbh on timberland(trees) | t.tpa_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=2 and t.standing_dead_cd=1 and t.dia>=5.0 |
| 10 | All live biomass on forestland oven-dry(tons) | t.tpa_unadj*t.drybiot/2000 | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 11 | All live merchantable biomass on forestland oven-dry(tons) | t.tpa_unadj*t.drybiom/2000 | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 12 | All live merchantable biomass on timberland oven-dry(tons) | t.tpa_unadj*t.drybiom/2000 | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 |
| 13 | All live biomass on timberland oven-dry (tons) | t.tpa_unadj*t.drybiot/2000 | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 |
| 14 | Volume of all live on forestland(cuft) | t.tpa_unadj*t.volcfnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 15 | Volume of growing-stock on forestland(cuft) | t.tpa_unadj*t.volcfnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 and t.treeclcd=2 |
| 16 | Volume of sawlog portion on forestland(cuft) | t.tpa_unadj*t.volcsnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 and t.treeclcd=2 |
| 17 | Volume of all live on timberland(cuft) | t.tpa_unadj*t.volcfnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and |

| ATTRIBUTE_NBR | ATTRIBUTE_DESCR | EXPRESSION | WHERE_CLAUSE |
|---|---|---|---|
| 18 | Volume of growing-stock on timberland(cuft) | t.tpa_unadj*t.volcfnet | c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.treeclcd=2 |
| 19 | Volume of sawlog portion on timberland(cuft) | t.tpa_unadj*t.volcsnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.treeclcd=2 |
| 20 | Volume of sawtimber on forestland(bdft) | t.tpa_unadj*t.volbfnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 and t.treeclcd=2 |
| 21 | Volume of sawtimber on timberland(bdft) | t.tpa_unadj*t.volbfnet | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) and t.statuscd=1 and t.treeclcd=2 |
| 22 | All live gross sawtimber volume on forestland(bdft) | t.tpa_unadj*volbfgrs | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 23 | All live gross volume on forestland(cuft) | t.tpa_unadj*volcsgrs | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 24 | All live sound volume on forestland(cuft) | t.tpa_unadj*volcfsnd | and t.plt_cn=c.plt_cn and t.condid=c.condid and c.cond_status_cd=1 and t.statuscd=1 |
| 25 | Net growth of all live on forestland(cuft per year) | t.tpagrow_unadj*fgrowcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 26 | Net growth of growing stock on forestland(cuft per year) | t.tpagrow_unadj*fgrowcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 27 | Net growth of sawtimber on forestland(bdft per year) | t.tpagrow_unadj*fgrowbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 28 | Net growth of all live on timberland(cuft per year) | t.tpagrow_unadj*growcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 29 | Net growth of growing-stock on timberland(cuft per year) | t.tpagrow_unadj*t.growcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 30 | Net growth of sawtimber on timberland(bdft per year) | t.tpagrow_unadj*t.growbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 31 | Mortality of all live on forestland(cuft per year) | t.tpamort_unadj*fmortcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 32 | Mortality of all live trees on forestland(trees per year) | t.tpamort_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid |

| ATTRIBUTE_NBR | ATTRIBUTE_DESCR | EXPRESSION | WHERE_CLAUSE |
|---|---|---|---|
| 33 | Mortality of growing-stock on forestland(cuft per year) | t.tpamort_unadj*fmortcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 34 | Mortality of sawtimber on forestland(cuft per year) | t.tpamort_unadj*fmortbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 35 | Mortality of all live on timberland(cuft per year) | t.tpamort_unadj*mortcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 36 | Mortality of all live trees on timberland(trees per year) | t.tpamort_unadj | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 37 | Mortality of growing-stock on timberland(cuft per year) | t.tpamort_unadj*t.mortcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 38 | Mortality of sawtimber on timberland(bdft per year) | t.tpamort_unadj*t.mortbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 39 | Removals of all live on forestland(cuft per year) | t.tparemv_unadj*fremvcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 40 | Removals of growing stock on forestland(cuft per year) | t.tparemv_unadj*fremvcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 41 | Removals of sawtimber on forestland(cuft per year) | t.tparemv_unadj*fremvbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 42 | Removals of all live on timberland(cuft per year) | t.tparemv_unadj*remvcfal | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 43 | Removals of growing-stock on timberland(cuft per year) | t.tparemv_unadj*t.remvcfgs | and t.plt_cn=c.plt_cn and t.condid=c.condid |
| 44 | Removals of sawtimber on timberland(bdft per year) | t.tparemv_unadj*t.remvbfsl | and t.plt_cn=c.plt_cn and t.condid=c.condid and t.treeclcd=2 |
| 45 | Number of live seedlings on forestland(seedlings) | s.tpa_unadj | and s.plt_cn=c.plt_cn and s.condid=c.condid and c.cond_status_cd=1 |
| 46 | Number of live seedlings on timberland(seedlings) | s.tpa_unadj | and s.plt_cn=c.plt_cn and s.condid=c.condid and c.cond_status_cd=1 and c.reservcd=0 and c.siteclcd in (1,2,3,4,5,6) |

## POP_EVAL_ATTRIBUTE

The POP_EVAL_ATTRIBUTE table identifies population estimate that can be generated from the FIADB. Currently there are 46 population estimates identified in the POP_ATTRIBUTE table. All 46 of these population estimates can be generated for the Minnesota 2005 report. Table 4.3 identifies the evaluation that should be used to generate any given population estimate for the Minnesota 2005 report. The first column in table 4.3 contains EVAL_CN which can be linked back to the CN number in the POP_EVAL table. The second column in table 4.3 contains ATTRIBUTE_NBR which can be linked back to ATTRIBUTE_NBR in the POP_ATTRIBUTE table. The first row in table 4.3 has an EVAL_CN value of “44599301839” for and an

ATTRIBUTE_NBR value of "1". This means that the evaluation with a CN value of "44599301839" was used to generate the estimate for ATTRIBUTE_NBR 1 -"Area of land(acres)" - in Minnesota for the 2005 report. Forest and timberland area population estimates along with number of trees, number of seedlings, volumes and biomass (ATTRIBUTE_NBRs 2 through 24, 45 and 46) were estimated for the Minnesota 2005 report using evaluation "44599401839" (see the italicized values in table 4.3). Growth, removals and mortality estimates (ATTRIBUTE_NBRs 25 through 44) were generated using evaluation "44599501839" (see the bold values in table 4.3).

Table 4.3 POP_EVAL_ATTRIBUTE records for the Minnesota 2005 report.

| EVAL_CN | ATTRIBUTE_NBR |
|---|---|
| 445993010839 | 1 |
| *445994010839* | *2* |
| *445994010839* | *3* |
| *445994010839* | *4* |
| *445994010839* | *5* |
| *445994010839* | *6* |
| *445994010839* | *7* |
| *445994010839* | *8* |
| *445994010839* | *9* |
| *445994010839* | *10* |
| *445994010839* | *11* |
| *445994010839* | *12* |
| *445994010839* | *13* |
| *445994010839* | *14* |
| *445994010839* | *15* |
| *445994010839* | *16* |
| *445994010839* | *17* |
| *445994010839* | *18* |
| *445994010839* | *19* |
| *445994010839* | *20* |
| *445994010839* | *21* |
| *445994010839* | *22* |
| *445994010839* | *23* |
| *445994010839* | *24* |
| *445994010839* | *45* |
| *445994010839* | *46* |
| **445995010839** | **25** |
| **445995010839** | **26** |
| **445995010839** | **27** |
| **445995010839** | **28** |
| **445995010839** | **29** |
| **445995010839** | **30** |
| **445995010839** | **31** |
| **445995010839** | **32** |
| **445995010839** | **33** |
| **445995010839** | **34** |

| | |
|---|---|
| **445995010839** | **35** |
| **445995010839** | **36** |
| **445995010839** | **37** |
| **445995010839** | **38** |
| **445995010839** | **39** |
| **445995010839** | **40** |
| **445995010839** | **41** |
| **445995010839** | **42** |
| **445995010839** | **43** |
| **445995010839** | **44** |

Not all 46 population estimates can be calculated for every published FIA report. For example, most inventories conducted prior to 1999 are only able to report volumes for timberland. Tree measurements were not taken on reserved and unproductive forestland so it is not possible to generate population estimates of volume on all forestland. Growth, removals and mortality information is also not available for many of these earlier inventories.

## Calculation of population estimates

The following Oracle™ SQL script generates the forestland area estimate for the 2005 Minnesota report.

```
-- Example 4.1 Estimate forestland area for Minnesota 2005 report.
SELECT pop_eval.eval_descr,
       ROUND(SUM(c.condprop_unadj *
              pop_stratum.expns *
              decode(c.prop_basis,'MACR',pop_stratum.adj_factor_macr,pop_stratum.adj_factor_subp)
                   )) UNITS
          FROM pop_plot_stratum_assgn,
               pop_stratum,
               pop_estn_unit,
               pop_eval,
               plot p,
               cond c
         WHERE  pop_eval.cn in ('445994010839')
           and  pop_eval.cn = pop_estn_unit.eval_cn
           AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
           AND pop_plot_stratum_assgn.stratum_cn = pop_stratum.cn
           AND pop_plot_stratum_assgn.plt_cn = p.cn
           AND c.plt_cn = p.cn
           and c.cond_status_cd = 1
 GROUP BY pop_eval.eval_descr
```

Which produces the following estimate:

| EVAL_DESCR | UNITS |
|---|---|
| Minnesota: 2001-2005 area/volume | 16300691 |

The area estimate (and all other population estimates) is the sum of the product of 3 quantities:

1- The attribute of interest. In the case of example 4.1 the attribute of interest is “Area of forestland(acres)” and the corresponding value in the EXPRESSION column of Table 4.2 for this ATTRIBUTE_DESCR is: **“cond.condprop_unadj”**
2- The appropriate population expansion factor: **“pop_stratum.expns”**

3- The appropriate stratum adjustment factor:
**"decode(c.prop_basis,'MACR',pop_stratum.adj_factor_macr,pop_stratum.adj_factor_subp)"**

In Example 4.2 the script is modified to generate forestland area estimates broken down by stand size class (defined by COND.STDSZCD. Output from this script is shown in table 4.4. The COL_STR column contains stand-size class information (1=large diameter, 2=medium diameter, 3=seedling/sapling, and 5=nonstocked). And the UNITS column contains acres.

-- Example 4.2 Estimate forestland area by STDSZCD for Minnesota 2005

```
SELECT pop_eval.eval_descr,c.stdszcd,
       ROUND(SUM(c.condprop_unadj *
                 pop_stratum.expns *

decode(c.prop_basis,'MACR',pop_stratum.adj_factor_macr,pop_stratum.adj_factor_subp)
                    )) UNITS
          FROM pop_plot_stratum_assgn,
               pop_stratum,
               pop_estn_unit,
               pop_eval,
               plot p,
               cond c
         WHERE  pop_eval.cn in ('445994010839')
           and  pop_eval.cn = pop_estn_unit.eval_cn
           AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
           AND pop_plot_stratum_assgn.stratum_cn = pop_stratum.cn
           AND pop_plot_stratum_assgn.plt_cn = p.cn
           AND c.plt_cn = p.cn
           and c.cond_status_cd = 1
 GROUP BY pop_eval.eval_descr,c.stdszcd
```

**Table 4.4 Output from SQL script in Example 4.2**

| EVAL_DESCR | STDSZCD | UNITS |
|---|---|---|
| Minnesota: 2001-2005 area/volume | 1 | 4360333 |
| Minnesota: 2001-2005 area/volume | 2 | 6115963 |
| Minnesota: 2001-2005 area/volume | 3 | 5565974 |
| Minnesota: 2001-2005 area/volume | 5 | 258420 |

This SQL script can be modified to generate other population estimates. Go to the POP_ATTRIBUTE table and select values from the EXPRESSION and WHERE_CLAUSE columns for the population estimate you are interested in and then insert these values into the shaded EXPRESSION box and shaded WHERE_CLAUSE box below. You will also need to insert the evaluation CN value into the shaded EVAL_CN box and if the estimate requires tree information you should insert ", tree t" into the shaded ADDITIONAL_FROM box. If you are reporting number of seedlings you should insert ", seedling s".

-- Example 4.3 Estimate any attribute for any specified evaluation

```
SELECT pop_eval.eval_descr,
       ROUND(SUM(EXPRESSION *
              pop_stratum.expns *
              decode(c.prop_basis,'MACR',pop_stratum.adj_factor_macr,pop_stratum.adj_factor_subp)
                  )) UNITS
          FROM pop_plot_stratum_assgn,
               pop_stratum,
               pop_estn_unit,
               pop_eval,
               plot p,
               cond c
ADDITIONAL_FROM
         WHERE  pop_eval.cn in ( EVAL_CN )
           and  pop_eval.cn = pop_estn_unit.eval_cn
           AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
           AND pop_plot_stratum_assgn.stratum_cn = pop_stratum.cn
           AND pop_plot_stratum_assgn.plt_cn = p.cn
           AND c.plt_cn = p.cn
          WHERE_CLAUSE
GROUP BY pop_eval.eval_descr
```

Note that when you need to run retrievals across multiple states (evaluations) that the value of the shaded EVAL_CN box can be: "'445994010839','446050010839','445980010839'". An example of a multiple state retrieval is presented in example 4.4. This example also illustrates how to include information from the tree table in order to generate volume estimates. This information is available in Table 4.2 row number 14 where the ATTRIBITE_DESCR=" Volume of all live on forestland(cuft)".

-- Example 4.4 Estimate Volume of all live on forestland(cuft) for multiple evaluations (States).

```
SELECT pop_eval.eval_descr,
       p.statecd,
       ROUND(SUM(t.tpa_unadj * t.volcfnet * pop_stratum.expns *
                 decode(c.prop_basis,
                        'MACR',
                        pop_stratum.adj_factor_macr,
                        pop_stratum.adj_factor_subp))) UNITS
  FROM pop_plot_stratum_assgn,
       pop_stratum,
       pop_estn_unit,
       pop_eval,
       plot p,
       cond c,
       tree t
 WHERE pop_eval.cn in ('445994010839', '446050010839', '445980010839')
   and pop_eval.cn = pop_estn_unit.eval_cn
   and pop_estn_unit.cn = pop_stratum.estn_unit_cn
   and pop_plot_stratum_assgn.stratum_cn = pop_stratum.cn
   and pop_plot_stratum_assgn.plt_cn = p.cn
   and c.plt_cn = p.cn
   and t.plt_cn = c.plt_cn
   and t.condid = c.condid
   and c.cond_status_cd = 1
   and t.statuscd = 1
 GROUP BY pop_eval.eval_descr, p.statecd
```

**Table 4.5 Output from SQL script in Example 4.4**

| EVAL_DESCR | STATECD | UNITS |
|---|---|---|
| Michigan: 2001-2005 area/volume | 26 | 30528458349 |
| Minnesota: 2001-2005 area/volume | 27 | 17681241495 |
| Wisconsin: 2001-2005 area/volume | 55 | 22324772591 |

## Calculation of population estimates and sampling errors

The following Oracle™ SQL script was used to generate a forestland area and associated sampling error for the 2005 Minnesota report. Output from this script is shown in table 4.6.

```
--Example 4.5 Forestland area estimate, sampling error and variance for Minnesota, 2005.
select rowstr,estimated_value,
round(sqrt(Var_of_estimate_eq_4_6)/estimated_value*100,2) se_stratified_sampling,
round(sqrt(Var_of_estimate_eq_4_7)/estimated_value*100,2) se_double_sampling,
total_plots, non_zero_plots ,Var_of_estimate_eq_4_6, Var_of_estimate_eq_4_7
from (
select rowstr,       sum(estimated_value) estimated_value,
       sum(Var_of_estimate_eq_4_6) Var_of_estimate_eq_4_6,
       sum(Var_of_estimate_eq_4_7) Var_of_estimate_eq_4_7,
       sum(Non_zero_plots) Non_zero_plots,       sum(total_plots) Total_plots
  from (select rowstr,
               round(sum(area_used * (nvl(Y_sum, 0) / p2pointcnt) *(p1pointcnt / p1pntcnt_eu)),
0) Estimated_value,
               SUM(p2pointcnt) Total_plots,
               sum(plots_in_cell) Non_zero_plots,
               area_used * area_used / sum(p2pointcnt) *
               (sum((p1pointcnt / p1pntcnt_eu) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                    ((nvl(Y_sum, 0) / p2pointcnt) *
                    (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) +
               area_used * area_used / (sum(p2pointcnt) * sum(p2pointcnt)) *
               (sum((1 - (p1pointcnt / p1pntcnt_eu)) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                    ((nvl(Y_sum, 0) / p2pointcnt) *
                    (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) Var_of_estimate_eq_4_6,
               area_used * area_used *
               sum(((p1pointcnt - 1) / (p1pntcnt_eu - 1)) *
                   (p1pointcnt / p1pntcnt_eu) *
                   (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                   ((nvl(Y_sum, 0) / p2pointcnt) *
                   (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1))) +
               area_used * area_used * (1 / (p1pntcnt_eu - 1)) *
               variance((p1pointcnt / p1pntcnt_eu) * nvl(Y_sum, 0) /
                        p2pointcnt) * count(*) Var_of_estimate_eq_4_7
          from (SELECT stratum_summary.rowstr, stratum_summary.estn_unit_cn,
                       sum(y_adj) Y_sum,
                       sum(y_adj * y_adj) Y_sqr_sum,
                       sum(plots_in_cell) plots_in_cell,
                       stratum_summary.p1pointcnt, stratum_summary.p2pointcnt,
                       stratum_summary.area_used, stratum_summary.p1pntcnt_eu
                  FROM (SELECT p.cn,
                               1 plots_in_cell,
                               pop_stratum.cn stratum_cn,
                               pop_estn_unit.cn estn_unit_cn,
                               pop_eval.cn eval_cn,
                               SUM(nvl(c.condprop_unadj, 0) *
                                   decode(c.prop_basis,
                                          'MACR',
                                          pop_stratum.adj_factor_macr,
                                          pop_stratum.adj_factor_subp)) y_adj
                          FROM pop_plot_stratum_assgn ppsa,
                               pop_stratum,
                               pop_estn_unit,
                               pop_eval,
                               plot p,
                               cond c
                         WHERE pop_eval.cn='445994010839'
                           and pop_eval.cn = pop_estn_unit.eval_cn
```

```
                        AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
                        AND ppsa.stratum_cn = pop_stratum.cn
                        AND ppsa.plt_cn = p.cn
                        AND c.plt_cn = p.cn
                        and c.cond_status_cd = 1
                      GROUP BY p.cn, pop_stratum.cn,
                               pop_estn_unit.cn, pop_eval.cn) plot_summary,
                     (select pop_eval.eval_descr rowstr, pop_STRATUM.CN stratum_cn,
                             pop_estn_unit.CN estn_unit_cn, pop_eval.cn eval_cn,
                             p1pointcnt, p2pointcnt, area_used, p1pntcnt_eu
                        from pop_estn_unit, pop_stratum, pop_eval
                       WHERE pop_eval.cn='445994010839'
                         and pop_estn_unit.eval_cn = pop_eval.cn
                         and pop_stratum.estn_unit_cn = pop_estn_unit.cn) stratum_summary
                where stratum_summary.estn_unit_cn = plot_summary.estn_unit_cn(+)
                  and stratum_summary.stratum_cn = plot_summary.stratum_cn(+)
                  and stratum_summary.eval_cn = plot_summary.eval_cn(+)
                GROUP BY stratum_summary.rowstr, stratum_summary.stratum_cn,
                         stratum_summary.estn_unit_cn, stratum_summary.p1pointcnt,
                         stratum_summary.p2pointcnt, stratum_summary.area_used,
                         stratum_summary.p1pntcnt_eu)
        group by rowstr, area_used, p1pntcnt_eu, estn_unit_cn)
group by rowstr
) where Var_of_estimate_eq_4_7 > 0
```

**Table 4.6 Output from SQL script in Example 4.5**

| ROWSTR | ESTIMATED_VALUE | SE_STRATIFIED_SAMPLING | SE_DOUBLE_SAMPLING | TOTAL_PLOTS | NON_ZERO_PLOTS | VAR_OF_ESTIMATE_EQ_4_6 | VAR_OF_ESTIMATE_EQ_4_7 |
|---|---|---|---|---|---|---|---|
| Minnesota: 2001-2005 area/volume | 16,300,689 | 0.59 | 0.6 | 17,883 | 5,801 | 9,332,359,826 | 9,624,240,585 |

The following Oracle™ SQL script was used to generate a forestland area estimates by STDSZCD and their associated sampling errors for the 2005 Minnesota report. Output from this script is shown in table 4.7.

--Example 4.6 Forestland area estimates, sampling errors and variances by STDSZCD for Minnesota, 2005

```
select rowstr,colstr,estimated_value,
round(sqrt(Var_of_estimate_eq_4_6)/estimated_value*100,2) se_stratified_sampling,
round(sqrt(Var_of_estimate_eq_4_7)/estimated_value*100,2) se_double_sampling,
total_plots, non_zero_plots ,Var_of_estimate_eq_4_6, Var_of_estimate_eq_4_7
from (
select rowstr,       colstr,       sum(estimated_value) estimated_value,
       sum(Var_of_estimate_eq_4_6) Var_of_estimate_eq_4_6,
       sum(Var_of_estimate_eq_4_7) Var_of_estimate_eq_4_7,
       sum(Non_zero_plots) Non_zero_plots,       sum(total_plots) Total_plots
  from (select rowstr,               colstr,
               round(sum(area_used * (nvl(Y_sum, 0) / p2pointcnt) *(p1pointcnt / p1pntcnt_eu)),
0) Estimated_value,
               SUM(p2pointcnt) Total_plots,
               sum(plots_in_cell) Non_zero_plots,
               area_used * area_used / sum(p2pointcnt) *
               (sum((p1pointcnt / p1pntcnt_eu) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                    ((nvl(Y_sum, 0) / p2pointcnt) *
                    (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) +
               area_used * area_used / (sum(p2pointcnt) * sum(p2pointcnt)) *
               (sum((1 - (p1pointcnt / p1pntcnt_eu)) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
```

```
          ((nvl(Y_sum, 0) / p2pointcnt) *
          (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) Var_of_estimate_eq_4_6,
      area_used * area_used *
      sum(((p1pointcnt - 1) / (p1pntcnt_eu - 1)) *
          (p1pointcnt / p1pntcnt_eu) *
          (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
          ((nvl(Y_sum, 0) / p2pointcnt) *
          (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1))) +
      area_used * area_used * (1 / (p1pntcnt_eu - 1)) *
      variance((p1pointcnt / p1pntcnt_eu) * nvl(Y_sum, 0) /
               p2pointcnt) * count(*) Var_of_estimate_eq_4_7
from (SELECT stratum_summary.rowstr,
             stratum_summary.colstr,
             stratum_summary.estn_unit_cn,
             sum(y_adj) Y_sum,
             sum(y_adj * y_adj) Y_sqr_sum,
             sum(plots_in_cell) plots_in_cell,
             stratum_summary.p1pointcnt,
             stratum_summary.p2pointcnt,
             stratum_summary.area_used,
             stratum_summary.p1pntcnt_eu
        FROM (SELECT p.cn,
                     1 plots_in_cell,
                     pop_stratum.cn stratum_cn,
                     pop_estn_unit.cn estn_unit_cn,
                     pop_eval.cn eval_cn,
                     decode(c.stdszcd,
                            1,'Large',
                            2,'Medium',
                            3,'Seedling/sapling',
                            4,'Chaparral',
                            5,'Nonstocked') colstr,
                     SUM(nvl(c.condprop_unadj, 0) *
                         decode(c.prop_basis,
                                'MACR',
                                pop_stratum.adj_factor_macr,
                                pop_stratum.adj_factor_subp)) y_adj
                FROM pop_plot_stratum_assgn ppsa,
                     pop_stratum,
                     pop_estn_unit,
                     pop_eval,
                     plot p,
                     cond c
               WHERE pop_eval.cn='445994010839'
                 and pop_eval.cn = pop_estn_unit.eval_cn
                 AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
                 AND ppsa.stratum_cn = pop_stratum.cn
                 AND ppsa.plt_cn = p.cn
                 AND c.plt_cn = p.cn
                 and c.cond_status_cd = 1
               GROUP BY p.cn,
                        pop_stratum.cn,
                        pop_estn_unit.cn,
                        pop_eval.cn,
                        decode(c.stdszcd,
                               1,'Large',
                               2,'Medium',
                               3,'Seedling/sapling',
                               4,'Chaparral',
                               5,'Nonstocked')) plot_summary,
             (select cl.colstr,
                     pop_eval.eval_descr rowstr,
                     pop_STRATUM.CN stratum_cn,
                     pop_estn_unit.CN estn_unit_cn,
                     pop_eval.cn eval_cn,
                     p1pointcnt,
                     p2pointcnt,
                     area_used,
                     p1pntcnt_eu
                from (select 'Large' colstr from dual union all
                      select 'Medium' colstr from dual union all
                      select 'Seedling/sapling' colstr from dual union all
                      select 'Chaparral' colstr from dual union all
                      select 'Nonstocked' colstr from dual) cl,
```

```
                        pop_estn_unit,
                        pop_stratum,
                        pop_eval
                  WHERE pop_eval.cn='445994010839'
                    and pop_estn_unit.eval_cn = pop_eval.cn
                    and pop_stratum.estn_unit_cn = pop_estn_unit.cn) stratum_summary
              where stratum_summary.colstr = plot_summary.colstr(+)
                and stratum_summary.estn_unit_cn = plot_summary.estn_unit_cn(+)
                and stratum_summary.stratum_cn = plot_summary.stratum_cn(+)
                and stratum_summary.eval_cn = plot_summary.eval_cn(+)
              GROUP BY stratum_summary.rowstr,
                       stratum_summary.colstr,
                       stratum_summary.stratum_cn,
                       stratum_summary.estn_unit_cn,
                       stratum_summary.p1pointcnt,
                       stratum_summary.p2pointcnt,
                       stratum_summary.area_used,
                       stratum_summary.p1pntcnt_eu)
      group by rowstr, colstr, area_used, p1pntcnt_eu, estn_unit_cn)
group by rowstr, colstr
) where Var_of_estimate_eq_4_7 > 0
```

**Table 4.7 Output from SQL script in Example 4.6**

| ROWSTR | COLSTR | ESTIMATED_VALUE | SE_STRATIFIED_SAMPLING | SE_DOUBLE_SAMPLING | TOTAL_PLOTS | NON_ZERO_PLOTS | VAR_OF_ESTIMATE_EQ_4_6 | VAR_OF_ESTIMATE_EQ_4_7 |
|---|---|---|---|---|---|---|---|---|
| Minnesota: 2001-2005 area/volume | Large | 4,360,334 | 2.17 | 2.21 | 17,883 | 1,785 | 8,934,147,602 | 9,244,966,536 |
| Minnesota: 2001-2005 area/volume | Nonstocked | 258,421 | 9.44 | 9.55 | 17,883 | 141 | 594,781,277 | 609,365,524 |
| Minnesota: 2001-2005 area/volume | Seedling/ sapling | 5,565,973 | 1.83 | 1.85 | 17,883 | 2,204 | 10,366,718,242 | 10,574,548,480 |
| Minnesota: 2001-2005 area/volume | Medium | 6,115,964 | 1.74 | 1.76 | 17,883 | 2,453 | 11,339,209,341 | 11,632,574,488 |

The users of these SQL scripts should be aware of several things:

1) Note that the values in the **ESTIMATED_VALUE** column in table 4.7 do not exactly match the values in the UNITS column of table 4.4 due to differences in rounding. These rounding differences are very small and should not be of concern to users. Note that in all cases the differences were 1 acre.
2) In Table 4.6 and 4.7 two different sampling errors are computed. Note that the unit of measure on both sampling errors is percent, that is the sampling error of these estimated values is computed to be $\left(\sqrt{estimated_variance}/estimated_value\right)*100$. The difference between these two sampling error estimates is relatively small, with the first being calculated based on equation 4.6 in Bechtold and Patterson, 2005, and the second

calculated based on equation 4.7. The stratified sampling estimate of sampling error is appropriate for most inventories completed after 1999 when FIA began using classified LandSat TM and other satellite imagery for stratification. Older inventory estimates are based on photo dot sampling and double sampling for stratification and the second sampling error is appropriate.

3) Besides estimates, sampling errors and variances these scripts also provide two plot counts. The first is the total number of plots (samples) in the evaluation. The second is the number of plots in the sample where the attribute being estimated was observed. In the Minnesota 2005 example there are a total of 17,883 locations in the State where FIA has a plot location and was able to measure the plot and measure any forest land on that plot. This number excludes plots where field crews could not obtain the permission of the land owner to measure the plot, and plots where hazardous condition existed that prevented crews from safely working in the area. The small number (5,801 in table 4.6) is the number of plots where the attribute defined by the row (in this case forestland) was actually observed.
4) It is appropriate to sum estimates across classes to obtain estimates of totals. For example, adding the estimated areas in the 4 stand size classes in table 4.7 (4,360,334+6,115,964+258,421+5,565,973=16,300,692) which is the estimated value in tables 4.6 (accounting for rounding errors as discussed above).
5) It is **not** appropriate to sum sampling errors, variances, or number of plots across class to obtain these numbers for totals. Summing the non-zero plot values will double count any plot where the classification attribute (in this case STDSZCD) occurs more than once with different values on the plot (for example a plot that has 2 subplots in a large diameter condition and two subplots in a small diameter condition). Summing sampling errors or variances is totally inappropriate and would typically grossly over estimate the values for the totals.

The SQL script in the following two examples (4.6 and 4.7) can be modified to generate other population estimates and their associated sampling errors. Go to the POP_ATTRIBUTE table and select values for EXPRESSION and WHERE_CLAUSE for the population estimate you are interested in and then insert these values into the shaded EXPRESSION box and shaded WHERE_CLAUSE box below. You will also need to insert the evaluation CN value into the EVAL_CN box and if the estimate requires tree information you should insert ", tree t" into the ADDITIONAL_FROM box. . If you are reporting number of seedlings you should insert ", seedling s".

--Example 4.7 Estimates, sampling errors and variances for user specified attributes and evaluations.

```
select rowstr,estimated_value,
round(sqrt(Var_of_estimate_eq_4_6)/estimated_value*100,2) se_stratified_sampling,
round(sqrt(Var_of_estimate_eq_4_7)/estimated_value*100,2) se_double_sampling,
total_plots, non_zero_plots ,Var_of_estimate_eq_4_6, Var_of_estimate_eq_4_7
from (
select rowstr,       sum(estimated_value) estimated_value,
       sum(Var_of_estimate_eq_4_6) Var_of_estimate_eq_4_6,
       sum(Var_of_estimate_eq_4_7) Var_of_estimate_eq_4_7,
       sum(Non_zero_plots) Non_zero_plots,       sum(total_plots) Total_plots
  from (select rowstr,
               round(sum(area_used * (nvl(Y_sum, 0) / p2pointcnt)
                    *(p1pointcnt / p1pntcnt_eu)), 0) Estimated_value,
               SUM(p2pointcnt) Total_plots,    sum(plots_in_cell) Non_zero_plots,
               area_used * area_used / sum(p2pointcnt) *
```

```
            (sum((p1pointcnt / p1pntcnt_eu) * p2pointcnt *
                 (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                 ((nvl(Y_sum, 0) / p2pointcnt) *
                 (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) +
            area_used * area_used / (sum(p2pointcnt) * sum(p2pointcnt)) *
            (sum((1 - (p1pointcnt / p1pntcnt_eu)) * p2pointcnt *
                 (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                 ((nvl(Y_sum, 0) / p2pointcnt) *
                 (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) Var_of_estimate_eq_4_6,
            area_used * area_used *
            sum(((p1pointcnt - 1) / (p1pntcnt_eu - 1)) *
                (p1pointcnt / p1pntcnt_eu) *
                (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                ((nvl(Y_sum, 0) / p2pointcnt) *
                (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1))) +
            area_used * area_used * (1 / (p1pntcnt_eu - 1)) *
            variance((p1pointcnt / p1pntcnt_eu) * nvl(Y_sum, 0) /
                     p2pointcnt) * count(*) Var_of_estimate_eq_4_7
        from (SELECT stratum_summary.rowstr, stratum_summary.estn_unit_cn,
                     sum(y_adj) Y_sum,  sum(y_adj * y_adj) Y_sqr_sum,
                     sum(plots_in_cell) plots_in_cell,
                     stratum_summary.p1pointcnt, stratum_summary.p2pointcnt,
                     stratum_summary.area_used, stratum_summary.p1pntcnt_eu
                FROM (SELECT p.cn, 1 plots_in_cell,
                             pop_stratum.cn stratum_cn,
                             pop_estn_unit.cn estn_unit_cn,
                             pop_eval.cn eval_cn,
                             SUM(nvl(EXPRESSION, 0) *
                                 decode(c.prop_basis,
                                        'MACR',
                                        pop_stratum.adj_factor_macr,
                                        pop_stratum.adj_factor_subp)) y_adj
                           FROM pop_plot_stratum_assgn ppsa,   pop_stratum,
                                pop_estn_unit,                 pop_eval,
                                plot p,                        cond c
                                ADDITIONAL_FROM

                          WHERE pop_eval.cn in ( EVAL_CN )
                            and pop_eval.cn = pop_estn_unit.eval_cn
                            AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
                            AND ppsa.stratum_cn = pop_stratum.cn
                            AND ppsa.plt_cn = p.cn
                            AND c.plt_cn = p.cn
                            WHERE_CLAUSE
                          GROUP BY p.cn, pop_stratum.cn,
                                   pop_estn_unit.cn, pop_eval.cn) plot_summary,
                        (select pop_eval.eval_descr rowstr, pop_STRATUM.CN stratum_cn,
                                pop_estn_unit.CN estn_unit_cn, pop_eval.cn eval_cn,
                                p1pointcnt, p2pointcnt, area_used, p1pntcnt_eu
                           from pop_estn_unit, pop_stratum, pop_eval
                          WHERE pop_eval.cn in ( EVAL_CN )
                            and pop_estn_unit.eval_cn = pop_eval.cn
                            and pop_stratum.estn_unit_cn = pop_estn_unit.cn) stratum_summary
                  where stratum_summary.estn_unit_cn = plot_summary.estn_unit_cn(+)
                    and stratum_summary.stratum_cn = plot_summary.stratum_cn(+)
                    and stratum_summary.eval_cn = plot_summary.eval_cn(+)
                  GROUP BY stratum_summary.rowstr, stratum_summary.stratum_cn,
                           stratum_summary.estn_unit_cn, stratum_summary.p1pointcnt,
                           stratum_summary.p2pointcnt, stratum_summary.area_used,
                           stratum_summary.p1pntcnt_eu)
        group by rowstr, area_used, p1pntcnt_eu, estn_unit_cn)
 group by rowstr
 ) where Var_of_estimate_eq_4_7 > 0
```

--Example 4.8 Estimates, sampling errors and variances by STDSZCD for user specified attributes and evaluations.

```
select rowstr,colstr,estimated_value,
round(sqrt(Var_of_estimate_eq_4_6)/estimated_value*100,2) se_stratified_sampling,
```

```
round(sqrt(Var_of_estimate_eq_4_7)/estimated_value*100,2) se_double_sampling,
total_plots, non_zero_plots ,Var_of_estimate_eq_4_6, Var_of_estimate_eq_4_7
from (
select rowstr,       colstr,       sum(estimated_value) estimated_value,
       sum(Var_of_estimate_eq_4_6) Var_of_estimate_eq_4_6,
       sum(Var_of_estimate_eq_4_7) Var_of_estimate_eq_4_7,
       sum(Non_zero_plots) Non_zero_plots,       sum(total_plots) Total_plots
  from (select rowstr,              colstr,
               round(sum(area_used * (nvl(Y_sum, 0) / p2pointcnt) *(p1pointcnt / p1pntcnt_eu)),
0) Estimated_value,
               SUM(p2pointcnt) Total_plots,
               sum(plots_in_cell) Non_zero_plots,
               area_used * area_used / sum(p2pointcnt) *
               (sum((p1pointcnt / p1pntcnt_eu) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                    ((nvl(Y_sum, 0) / p2pointcnt) *
                    (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) +
               area_used * area_used / (sum(p2pointcnt) * sum(p2pointcnt)) *
               (sum((1 - (p1pointcnt / p1pntcnt_eu)) * p2pointcnt *
                    (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                    ((nvl(Y_sum, 0) / p2pointcnt) *
                    (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1)))) Var_of_estimate_eq_4_6,
               area_used * area_used *
               sum(((p1pointcnt - 1) / (p1pntcnt_eu - 1)) *
                   (p1pointcnt / p1pntcnt_eu) *
                   (((nvl(Y_sqr_sum, 0) / p2pointcnt) -
                   ((nvl(Y_sum, 0) / p2pointcnt) *
                   (nvl(Y_sum, 0) / p2pointcnt))) / (p2pointcnt - 1))) +
               area_used * area_used * (1 / (p1pntcnt_eu - 1)) *
               variance((p1pointcnt / p1pntcnt_eu) * nvl(Y_sum, 0) /
                        p2pointcnt) * count(*) Var_of_estimate_eq_4_7
          from (SELECT stratum_summary.rowstr,
                       stratum_summary.colstr,
                       stratum_summary.estn_unit_cn,
                       sum(y_adj) Y_sum,
                       sum(y_adj * y_adj) Y_sqr_sum,
                       sum(plots_in_cell) plots_in_cell,
                       stratum_summary.p1pointcnt,
                       stratum_summary.p2pointcnt,
                       stratum_summary.area_used,
                       stratum_summary.p1pntcnt_eu
                  FROM (SELECT p.cn,
                               1 plots_in_cell,
                               pop_stratum.cn stratum_cn,
                               pop_estn_unit.cn estn_unit_cn,
                               pop_eval.cn eval_cn,
                               decode(c.stdszcd,
                                      1,'Large',
                                      2,'Medium',
                                      3,'Seedling/sapling',
                                      4,'Chaparral',
                                      5,'Nonstocked') colstr,
                               SUM(nvl(EXPRESSION, 0) *
                                   decode(c.prop_basis,
                                          'MACR',
                                          pop_stratum.adj_factor_macr,
                                          pop_stratum.adj_factor_subp)) y_adj
                          FROM pop_plot_stratum_assgn ppsa,
                               pop_stratum,
                               pop_estn_unit,
                               pop_eval,
                               plot p,
                               cond c
                               ADDITIONAL_FROM

                         WHERE pop_eval.cn  in ( EVAL_CN )
                           and pop_eval.cn = pop_estn_unit.eval_cn
                           AND pop_estn_unit.cn = pop_stratum.estn_unit_cn
                           AND ppsa.stratum_cn = pop_stratum.cn
                           AND ppsa.plt_cn = p.cn
                           AND c.plt_cn = p.cn
```

```
                    WHERE_CLAUSE
                 GROUP BY p.cn,
                          pop_stratum.cn,
                          pop_estn_unit.cn,
                          pop_eval.cn,
                          decode(c.stdszcd,
                                 1,'Large',
                                 2,'Medium',
                                 3,'Seedling/sapling',
                                 4,'Chaparral',
                                 5,'Nonstocked')) plot_summary,
               (select cl.colstr,
                       pop_eval.eval_descr rowstr,
                       pop_STRATUM.CN stratum_cn,
                       pop_estn_unit.CN estn_unit_cn,
                       pop_eval.cn eval_cn,
                       p1pointcnt,
                       p2pointcnt,
                       area_used,
                       p1pntcnt_eu
                  from (select 'Large' colstr from dual union all
                        select 'Medium' colstr from dual union all
                        select 'Seedling/sapling' colstr from dual union all
                        select 'Chaparral' colstr from dual union all
                        select 'Nonstocked' colstr from dual) cl,
                       pop_estn_unit,
                       pop_stratum,
                       pop_eval
                 WHERE pop_eval.cn in ( EVAL_CN )
                   and pop_estn_unit.eval_cn = pop_eval.cn
                   and pop_stratum.estn_unit_cn = pop_estn_unit.cn) stratum_summary
         where stratum_summary.colstr = plot_summary.colstr(+)
           and stratum_summary.estn_unit_cn = plot_summary.estn_unit_cn(+)
           and stratum_summary.stratum_cn = plot_summary.stratum_cn(+)
           and stratum_summary.eval_cn = plot_summary.eval_cn(+)
         GROUP BY stratum_summary.rowstr,
                  stratum_summary.colstr,
                  stratum_summary.stratum_cn,
                  stratum_summary.estn_unit_cn,
                  stratum_summary.p1pointcnt,
                  stratum_summary.p2pointcnt,
                  stratum_summary.area_used,
                  stratum_summary.p1pntcnt_eu)
      group by rowstr, colstr, area_used, p1pntcnt_eu, estn_unit_cn)
group by rowstr, colstr
) where Var_of_estimate_eq_4_7 > 0
```

Population estimates and their associated sampling errors along with the scripts used to derive them can be generated by the EVALIDator program located on the web at: http://www.fia.fs.fed.us/tools-data/tools/ .

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# Appendix A -- Index of Column Names

The following table lists column names used in the database tables, their location within the table, and a short description of the variable.

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| ACTUALHT (5.15) | TREE | 23 | Actual height of tree |
| ADFORCD | COND | 15 | Administrative forest code |
| ADJ_FACTOR_MACR | POP_STRATUM | 12 | |
| ADJ_FACTOR_MICR | POP_STRATUM | 14 | |
| ADJ_FACTOR_SUBP | POP_STRATUM | 13 | |
| AGEDIA (7.2.5) | SITETREE | 14 | Age at diameter height |
| AGENTCD (5.21) | TREE | 28 | Damaging agent code |
| ALSTK | COND | 55 | All live stocking percent |
| ALSTKCD | COND | 37 | All live stocking code |
| AREA_SOURCE | POP_ESTN_UNIT | 11 | Source of area figures usually Census Bureau or from pixel counts |
| AREA_USED | POP_ESTN_UNIT | 10 | Area used to calculate expansion factors |
| AREALAND_EU | POP_ESTN_UNIT | 8 | Land area within the estimation unit |
| AREATOT_EU | POP_ESTN_UNIT | 9 | Total area within the estimation unit |
| ASPECT | COND | 34 | Aspect |
| ASPECT (3.7) | SUBPLOT | 17 | Subplot aspect |
| ATTRIBUTE_DESCR | POP_ATTRIBUTE | 2 | Estimation attribute e.g., Area of timberland |
| ATTRIBUTE_NBR | POP_ATTRIBUTE | 1 | Arbitrary unique number |
| ATTRIBUTE_NBR | POP_EVAL_ATTRIBUTE | 2 | |
| AZIMUTH (7.2.8) | SITETREE | 25 | Azimuth |
| AZIMUTH (5.4) | TREE | 12 | Azimuth |
| AZMCORN (4.2.6) | BOUNDARY | 13 | Corner azimuth |
| AZMLEFT (4.2.5) | BOUNDARY | 12 | Left azimuth |
| AZMRIGHT (4.2.8) | BOUNDARY | 15 | Right azimuth |
| BALIVE | COND | 53 | Basal area of all live trees |
| BFSND | TREE | 76 | Board-foot-cull soundness |
| BHAGE | TREE | 69 | Breast height age |
| BNDCHG (4.2.3) | BOUNDARY | 10 | Boundary change code |
| BOLEHT | TREE | 79 | Bole height |
| BORED_CD_PNWRS | TREE | 120 | |
| CCLCD (5.17) | TREE | 26 | Crown class code |
| CDENCD (12.9) | TREE | 64 | Crown density code |
| CDIEBKCD (12.10) | TREE | 65 | Crown dieback code |
| CFSND | TREE | 77 | Cubic-foot-cull soundness |
| CLIGHTCD (12.6) | TREE | 62 | Crown light exposure code |
| CN | BOUNDARY | 1 | Unique index |
| CN | COND | 1 | Unique index |
| CN | COUNTY | 5 | Unique index |
| CN | PLOT | 1 | Unique index |
| CN | POP_ESTN_UNIT | 1 | |
| CN | POP_EVAL | 1 | |
| CN | POP_EVAL_GRP | 1 | |
| CN | POP_PLOT_STRATUM_ASSGN | 1 | |
| CN | POP_STRATUM | 1 | |
| CN | SEEDLING | 1 | Unique index |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| CN | SITETREE | 1 | Unique index |
| CN | SUBPLOT | 1 | Unique index |
| CN | SUBP_COND | 1 | Unique index |
| CN | SURVEY | 1 | Unique index |
| CN | TREE | 1 | Unique index |
| COND_CLASS_LIST (7.2.1) | SITETREE | 30 | |
| COND_NONSAMPLE_REASN_CD (2.4.3) | COND | 10 | |
| COND_STATUS_CD (2.4.2) | COND | 9 | CONDITION STATUS CODE |
| CONDID (2.4.1) | COND | 8 | Condition number |
| CONDID (6.3) | SEEDLING | 9 | Condition number |
| CONDID | SITETREE | 9 | Condition number |
| CONDID | SUBP_COND | 9 | Condition number |
| CONDID (5.3) | TREE | 11 | Condition number |
| CONDLIST | SUBPLOT | 15 | SUBPLOT/ANNULAR PLOT CONDITION LIST (CORE OPTIONAL) |
| CONDPROP_UNADJ | COND | 29 | |
| CONGCD | PLOT | 28 | Congressional district code |
| CONTRAST (4.2.4) | BOUNDARY | 11 | Contrasting condition |
| COUNTYCD | BOUNDARY | 6 | County code |
| COUNTYCD | COND | 6 | County code |
| COUNTYCD | COUNTY | 3 | County code |
| COUNTYCD (1.2) | PLOT | 8 | County code |
| COUNTYCD | POP_PLOT_STRATUM_ASSGN | 7 | County code |
| COUNTYCD | SEEDLING | 6 | County code |
| COUNTYCD | SITETREE | 7 | County code |
| COUNTYCD | SUBPLOT | 7 | County code |
| COUNTYCD | SUBP_COND | 6 | County code |
| COUNTYCD | TREE | 7 | County code |
| COUNTYNM | COUNTY | 4 | County name |
| CPOSCD (12.7) | TREE | 61 | Crown position code |
| CR (5.19) | TREE | 25 | Compacted crown ratio |
| CREATED_BY | BOUNDARY | 18 | Created by |
| CREATED_BY | COND | 69 | Created by |
| CREATED_BY | COUNTY | 6 | Created by |
| CREATED_BY | PLOT | 35 | Created by |
| CREATED_BY | POP_ATTRIBUTE | 5 | |
| CREATED_BY | POP_ESTN_UNIT | 13 | Created by |
| CREATED_BY | POP_EVAL | 9 | Created by |
| CREATED_BY | POP_EVAL_ATTRIBUTE | 3 | |
| CREATED_BY | POP_EVAL_GRP | 13 | |
| CREATED_BY | POP_PLOT_STRATUM_ASSGN | 13 | Created by |
| CREATED_BY | POP_STRATUM | 15 | |
| CREATED_BY | SEEDLING | 15 | Created by |
| CREATED_BY | SITETREE | 18 | Created by |
| CREATED_BY | SUBPLOT | 20 | Created by |
| CREATED_BY | SUBP_COND | 10 | Created by |
| CREATED_BY | SURVEY | 8 | Created by |
| CREATED_BY | TREE | 84 | Created by |
| CREATED_DATE | BOUNDARY | 19 | Created date |
| CREATED_DATE | COND | 70 | Created date |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| CREATED_DATE | COUNTY | 7 | Created date |
| CREATED_DATE | PLOT | 36 | Created date |
| CREATED_DATE | POP_ATTRIBUTE | 6 | |
| CREATED_DATE | POP_ESTN_UNIT | 14 | Created date |
| CREATED_DATE | POP_EVAL | 10 | Created date |
| CREATED_DATE | POP_EVAL_ATTRIBUTE | 4 | |
| CREATED_DATE | POP_EVAL_GRP | 14 | |
| CREATED_DATE | POP_PLOT_STRATUM_ASSGN | 14 | Created date |
| CREATED_DATE | POP_STRATUM | 16 | |
| CREATED_DATE | SEEDLING | 16 | Created date |
| CREATED_DATE | SITETREE | 19 | Created date |
| CREATED_DATE | SUBPLOT | 21 | Created date |
| CREATED_DATE | SUBP_COND | 11 | Created date |
| CREATED_DATE | SURVEY | 9 | Created date |
| CREATED_DATE | TREE | 85 | Created date |
| CREATED_IN_INSTANCE | BOUNDARY | 20 | Created in instance |
| CREATED_IN_INSTANCE | COND | 71 | Created in instance |
| CREATED_IN_INSTANCE | COUNTY | 8 | Created in instance |
| CREATED_IN_INSTANCE | PLOT | 37 | Created in instance |
| CREATED_IN_INSTANCE | POP_ATTRIBUTE | 7 | |
| CREATED_IN_INSTANCE | POP_ESTN_UNIT | 15 | Created in instance |
| CREATED_IN_INSTANCE | POP_EVAL | 11 | Created in instance |
| CREATED_IN_INSTANCE | POP_EVAL_ATTRIBUTE | 5 | |
| CREATED_IN_INSTANCE | POP_EVAL_GRP | 15 | |
| CREATED_IN_INSTANCE | POP_PLOT_STRATUM_ASSGN | 15 | Created in instance |
| CREATED_IN_INSTANCE | POP_STRATUM | 17 | |
| CREATED_IN_INSTANCE | SEEDLING | 17 | Created in instance |
| CREATED_IN_INSTANCE | SITETREE | 20 | Created in instance |
| CREATED_IN_INSTANCE | SUBPLOT | 22 | Created in instance |
| CREATED_IN_INSTANCE | SUBP_COND | 12 | Created in instance |
| CREATED_IN_INSTANCE | SURVEY | 10 | Created in instance |
| CREATED_IN_INSTANCE | TREE | 86 | Created in instance |
| CREW_TYPE (1.15) | PLOT | 33 | Crew type |
| CTY_CN | PLOT | 3 | Unique index |
| CULL | TREE | 29 | Rotten and missing cull percent |
| CULL_FLD (5.13) | TREE | 94 | Rotten and missing cull |
| CULLBF | TREE | 74 | Board-foot cull |
| CULLCF | TREE | 75 | Cubic-foot cull |
| CULLDEAD | TREE | 71 | Dead cull |
| CULLFORM | TREE | 72 | Form cull |
| CULLMSTOP | TREE | 73 | Missing top cull |
| CVIGORCD (12.8) | TREE | 63 | Sapling vigor class code |
| CYCLE | BOUNDARY | 16 | Inventory cycle number |
| CYCLE | COND | 75 | Inventory cycle number |
| CYCLE | PLOT | 49 | Inventory cycle number |
| CYCLE | SEEDLING | 23 | Inventory cycle number |
| CYCLE | SITETREE | 32 | Inventory cycle number |
| CYCLE | SUBPLOT | 26 | Inventory cycle number |
| CYCLE | SUBP_COND | 21 | Inventory cycle number |
| CYCLE | SURVEY | 14 | Inventory cycle number |
| CYCLE | TREE | 118 | Inventory cycle number |
| DAMLOC1 (5.20.1) | TREE | 30 | Damage location 1 code |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| DAMLOC1_PNWRS | TREE | 121 | |
| DAMLOC2 (5.20.4) | TREE | 33 | Damage location 2 code |
| DAMLOC2_PNWRS | TREE | 122 | |
| DAMSEV1 (5.20.3) | TREE | 32 | Damage severity 1 code |
| DAMSEV2 (5.20.6) | TREE | 35 | Damage severity 2 code |
| DAMTYP1 (5.20.2) | TREE | 31 | Damage type 1 code |
| DAMTYP2 (5.20.5) | TREE | 34 | Damage type 2 code |
| DECAYCD (5.23) | TREE | 36 | Dead tree decay code |
| DECLINATION (1.11) | PLOT | 42 | Declination |
| DESIGNCD | PLOT | 17 | Plot design code |
| DIA (7.2.3) | SITETREE | 12 | Current diameter |
| DIA (5.9.2) | TREE | 19 | Current diameter |
| DIACALC | TREE | 68 | Calculated diameter |
| DIACHECK (5.12) | TREE | 57 | Diameter check code |
| DIACHECK_PNWRS | TREE | 123 | |
| DIAHTCD | TREE | 20 | Height of diameter measurement code |
| DIST (7.2.9) | SITETREE | 26 | Horizontal distance |
| DIST (5.5) | TREE | 13 | Horizontal distance |
| DISTANCE_WATER_SRS | COND | 83 | |
| DISTCORN (4.2.7) | BOUNDARY | 14 | Corner distance |
| DMG_AGENT1_CD_PNWRS | TREE | 124 | |
| DMG_AGENT2_CD_PNWRS | TREE | 125 | |
| DMG_AGENT3_CD_PNWRS | TREE | 126 | |
| DRYBIOM | TREE | 56 | Merchantable stem biomass ovendry weight for live trees |
| DRYBIOT | TREE | 55 | Total gross biomass ovendry weight for live trees |
| DSTRBCD1 (2.5.11) | COND | 39 | Disturbance 1 code |
| DSTRBCD2 (2.5.13) | COND | 41 | Disturbance 2 code |
| DSTRBCD3 (2.5.15) | COND | 43 | Disturbance 3 code |
| DSTRBYR1 (2.5.12) | COND | 40 | Year of Disturbance 1 |
| DSTRBYR2 (2.5.14) | COND | 42 | Year of Disturbance 2 |
| DSTRBYR3 (2.5.16) | COND | 44 | Year of Disturbance 3 |
| ECO_UNIT_PNW | PLOT | 51 | Ecological unit used to identify PNW stockability algorithms |
| ECOSUBCD | PLOT | 27 | Ecological subsection code |
| ELEV | PLOT | 22 | Elevation WGS84 datum |
| EMAP_HEX | PLOT | 43 | |
| ESTN_UNIT | POP_ESTN_UNIT | 5 | Estimation unit |
| ESTN_UNIT | POP_PLOT_STRATUM_ASSGN | 11 | Estimation unit |
| ESTN_UNIT | POP_STRATUM | 5 | |
| ESTN_UNIT_CN | POP_STRATUM | 2 | |
| ESTN_UNIT_DESCR | POP_ESTN_UNIT | 6 | Estimation unit description |
| EVAL_CN | POP_ESTN_UNIT | 2 | |
| EVAL_CN | POP_EVAL_ATTRIBUTE | 1 | |
| EVAL_CN_FOR_EXPALL | POP_EVAL_GRP | 2 | |
| EVAL_CN_FOR_EXPCURR | POP_EVAL_GRP | 3 | |
| EVAL_CN_FOR_EXPGROW | POP_EVAL_GRP | 5 | |
| EVAL_CN_FOR_EXPMORT | POP_EVAL_GRP | 6 | |
| EVAL_CN_FOR_EXPREMV | POP_EVAL_GRP | 7 | |
| EVAL_CN_FOR_EXPVOL | POP_EVAL_GRP | 4 | |
| EVAL_DESCR | POP_EVAL | 4 | Evaluation description |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| EVAL_GRP | POP_EVAL_GRP | 9 | Reporting year followed by 4 more digits to make the statecd/eval_grp combo unique |
| EVAL_GRP_DESCR | POP_EVAL_GRP | 10 | If the evaluation is used in a statistical or analytical report use report title |
| EVALID | POP_ESTN_UNIT | 4 | Evaluation ID |
| EVALID | POP_EVAL | 3 | Evaluation ID |
| EVALID | POP_PLOT_STRATUM_ASSGN | 10 | Evaluation ID |
| EXPNS | POP_STRATUM | 11 | |
| EXPRESSION | POP_ATTRIBUTE | 3 | Part of the expression used to produce the estimate |
| FGROWBFSL | TREE | 98 | Net annual merchantable board-foot growth of sawtimber tree on all forestland |
| FGROWCFAL | TREE | 99 | Net annual sound cubic-foot growth of live tree on all forestland |
| FGROWCFGS | TREE | 97 | Net annual merchantable cubic-foot growth of growing-stock tree on all forestland |
| FIRE_SRS | COND | 84 | |
| FLDAGE | COND | 54 | Field stand age |
| FLDSZCD (2.5.4) | COND | 21 | Field stand-size class code |
| FLDTYPCD (2.5.3) | COND | 17 | Field forest type code |
| FMORTBFSL | TREE | 101 | Board-foot volume of a sawtimber tree for mortality purposes on all forestland |
| FMORTCFAL | TREE | 102 | Sound cubic-foot volume of a tree for mortality purposes on all forestland |
| FMORTCFGS | TREE | 100 | Cubic-foot volume of a growing-stock tree for mortality purposes on all forestland.. |
| FORINDCD (2.5.8) | COND | 14 | Private owner industrial status code |
| FORMCL | TREE | 80 | Form class |
| FORTYPCD | COND | 16 | Forest type code (computed) |
| FORTYPCDCALC | COND | 57 | Calculated forest type code with a national algorithm |
| FREMVBFSL | TREE | 104 | Board-foot volume of a sawtimber tree for removal purposes on all forestland |
| FREMVCFAL | TREE | 105 | Sound cubic-foot volume of the tree for removal purposes on all forestland |
| FREMVCFGS | TREE | 103 | Cubic-foot volume of a growing-stock tree for removal purposes on all forestland |
| GRAZING_SRS | COND | 85 | |
| GROWBFSL | TREE | 47 | Net annual merchantable board-foot growth of sawtimber tree |
| GROWCD | PLOT | 23 | Type of annual volume growth code |
| GROWCFAL | TREE | 48 | Net annual sound cubic-foot growth of live tree |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| GROWCFGS | TREE | 46 | Net annual merchantable cubic-foot growth of growing-stock tree |
| GSSTK | COND | 56 | Growing-stock stocking percent |
| GSSTKCD | COND | 36 | Growing-stock stocking code |
| HABTYPCD1 | COND | 58 | Primary condition habitat type |
| HABTYPCD1_DESCR_PUB_CD | COND | 60 | |
| HABTYPCD1_PUB_CD | COND | 59 | |
| HABTYPCD2 | COND | 61 | Secondary condition habitat type |
| HABTYPCD2_DESCR_PUB_CD | COND | 63 | |
| HABTYPCD2_PUB_CD | COND | 62 | |
| HRDWD_CLUMP_CD | TREE | 82 | Hardwood clump code |
| HT | SITETREE | 13 | Height |
| HT | TREE | 21 | Height |
| HTCALC | TREE | 81 | Calculated total height |
| HTCD | TREE | 22 | Height type code |
| HTDMP | TREE | 91 | Length (height) to diameter measurement point. |
| INVYR | BOUNDARY | 3 | Inventory year |
| INVYR | COND | 3 | |
| INVYR | PLOT | 5 | |
| INVYR | POP_PLOT_STRATUM_A SSGN | 5 | Inventory year |
| INVYR | SEEDLING | 3 | |
| INVYR | SITETREE | 4 | |
| INVYR | SUBPLOT | 4 | |
| INVYR | SUBP_COND | 3 | |
| INVYR | SURVEY | 2 | Inventory year |
| INVYR | TREE | 4 | |
| KINDCD (1.7) | PLOT | 16 | Plot kind code |
| KINDCD_NC | PLOT | 31 | Plot kind code for North Central |
| LAND_ONLY | POP_EVAL_GRP | 12 | Y if the evaluations use only census land (AREALAND), N if they use census land and water (AREATOT) |
| LAND_USE_SRS | COND | 86 | |
| LAST_INVYR_MEASURED | PLOT | 48 | |
| LAT (1.6.7) | PLOT | 20 | |
| LOCATION_NM | POP_EVAL | 6 | Usually state name or super state |
| LON (1.16.8) | PLOT | 21 | |
| MACRCOND | SUBPLOT | 14 | Macroplot center condition |
| MACRCOND_PROP | SUBP_COND | 18 | Proportion of this macroplot in this condition |
| MACRO_BREAKPOINT_DIA | PLOT | 47 | |
| MACRPROP_UNADJ | COND | 32 | |
| MANUAL (1.9) | PLOT | 29 | Field manual version |
| MANUAL_DB | PLOT | 34 | The data in the database have been standardized to this version of the National Field Manual |
| MAPDEN | COND | 18 | Change in tree density |
| MEASDAY (1.10.3) | PLOT | 14 | Measurement day |
| MEASMON (1.10.2) | PLOT | 13 | measurement month |
| MEASYEAR (1.10.1) | PLOT | 12 | Measurement year |
| METHOD | SITETREE | 27 | |
| MICRCOND (3.5) | SUBPLOT | 12 | Microplot center condition |
| MICRCOND_PROP | SUBP_COND | 16 | Proportion of this microplot in this |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| | | | condition |
| MICROPLOT_LOC | PLOT | 41 | Microplot location |
| MICRPROP_UNADJ | COND | 30 | |
| MIST_CL_CD (5.26) | TREE | 93 | Mistletoe class code |
| MIST_CL_CD_PNWRS | TREE | 127 | |
| MIXEDCONFCD | COND | 64 | Calculated forest type for mixed conifer site |
| MODIFIED_BY | BOUNDARY | 21 | Modified by |
| MODIFIED_BY | COND | 72 | Modified by |
| MODIFIED_BY | COUNTY | 9 | Modified by |
| MODIFIED_BY | PLOT | 38 | Modified by |
| MODIFIED_BY | POP_ATTRIBUTE | 8 | |
| MODIFIED_BY | POP_ESTN_UNIT | 16 | Modified by |
| MODIFIED_BY | POP_EVAL | 12 | Modified by |
| MODIFIED_BY | POP_EVAL_ATTRIBUTE | 6 | |
| MODIFIED_BY | POP_EVAL_GRP | 16 | |
| MODIFIED_BY | POP_PLOT_STRATUM_ASSGN | 16 | Modified by |
| MODIFIED_BY | POP_STRATUM | 18 | |
| MODIFIED_BY | SEEDLING | 18 | Modified by |
| MODIFIED_BY | SITETREE | 21 | Modified by |
| MODIFIED_BY | SUBPLOT | 23 | Modified by |
| MODIFIED_BY | SUBP_COND | 13 | Modified by |
| MODIFIED_BY | SURVEY | 11 | Modified by |
| MODIFIED_BY | TREE | 87 | Modified by |
| MODIFIED_DATE | BOUNDARY | 22 | Modified date |
| MODIFIED_DATE | COND | 73 | Modified date |
| MODIFIED_DATE | COUNTY | 10 | Modified date |
| MODIFIED_DATE | PLOT | 39 | Modified date |
| MODIFIED_DATE | POP_ATTRIBUTE | 9 | |
| MODIFIED_DATE | POP_ESTN_UNIT | 17 | Modified date |
| MODIFIED_DATE | POP_EVAL | 13 | Modified date |
| MODIFIED_DATE | POP_EVAL_ATTRIBUTE | 7 | |
| MODIFIED_DATE | POP_EVAL_GRP | 17 | |
| MODIFIED_DATE | POP_PLOT_STRATUM_ASSGN | 17 | Modified date |
| MODIFIED_DATE | POP_STRATUM | 19 | |
| MODIFIED_DATE | SEEDLING | 19 | Modified date |
| MODIFIED_DATE | SITETREE | 22 | Modified date |
| MODIFIED_DATE | SUBPLOT | 24 | Modified date |
| MODIFIED_DATE | SUBP_COND | 14 | Modified date |
| MODIFIED_DATE | SURVEY | 12 | Modified date |
| MODIFIED_DATE | TREE | 88 | Modified date |
| MODIFIED_IN_INSTANCE | BOUNDARY | 23 | Modified in instance |
| MODIFIED_IN_INSTANCE | COND | 74 | Modified in instance |
| MODIFIED_IN_INSTANCE | COUNTY | 11 | Modified in instance |
| MODIFIED_IN_INSTANCE | PLOT | 40 | Modified in instance |
| MODIFIED_IN_INSTANCE | POP_ATTRIBUTE | 10 | |
| MODIFIED_IN_INSTANCE | POP_ESTN_UNIT | 18 | Modified in instance |
| MODIFIED_IN_INSTANCE | POP_EVAL | 14 | Modified in instance |
| MODIFIED_IN_INSTANCE | POP_EVAL_ATTRIBUTE | 8 | |
| MODIFIED_IN_INSTANCE | POP_EVAL_GRP | 18 | |
| MODIFIED_IN_INSTANCE | POP_PLOT_STRATUM_ASSGN | 18 | Modified in instance |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| MODIFIED_IN_INSTANCE | POP_STRATUM | 20 | |
| MODIFIED_IN_INSTANCE | SEEDLING | 20 | Modified in instance |
| MODIFIED_IN_INSTANCE | SITETREE | 23 | Modified in instance |
| MODIFIED_IN_INSTANCE | SUBPLOT | 25 | Modified in instance |
| MODIFIED_IN_INSTANCE | SUBP_COND | 15 | Modified in instance |
| MODIFIED_IN_INSTANCE | SURVEY | 13 | Modified in instance |
| MODIFIED_IN_INSTANCE | TREE | 89 | Modified in instance |
| MORTBFSL | TREE | 50 | Board-foot volume of a sawtimber tree for mortality purposes |
| MORTCD | PLOT | 24 | Type of annual mortality volume code |
| MORTCD | TREE | 90 | Mortality Code: tree was live within past five years, but has died. |
| MORTCFAL | TREE | 51 | Sound cubic-foot volume of a tree for mortality purposes |
| MORTCFGS | TREE | 49 | Cubic-foot volume of a growing-stock tree for mortality purposes |
| MORTYR (5.22) | TREE | 58 | Mortality year |
| NONFR_INCL_PCT_MACRO | SUBP_COND | 20 | |
| NONFR_INCL_PCT_SUBP | SUBP_COND | 19 | |
| NOTES | POP_EVAL | 8 | Evaluation notes |
| NOTES | SURVEY | 7 | Notes (about the inventory) |
| OPERABILITY_SRS | COND | 87 | |
| OWNCD (2.5.7) | COND | 12 | Owner class code |
| OWNGRPCD (2.5.2) | COND | 13 | Ownership group class code |
| P1PNTCNT_EU | POP_ESTN_UNIT | 12 | total number of pixels in the estimation unit |
| P1POINTCNT | POP_STRATUM | 9 | |
| P2A_GRM_FLG | SUBPLOT | 19 | |
| P2A_GRM_FLG | TREE | 106 | |
| P2PANEL | PLOT | 25 | Phase 2 panel number |
| P2POINTCNT | POP_STRATUM | 10 | |
| P3_OZONE_IND | SURVEY | 3 | P3 ozone indicator - values are y and n. If y, then survey is for a p3 ozone plot. If n, then survey is for a p2/p3 plot. |
| P3PANEL | PLOT | 26 | Phase 3 panel number |
| PASTNFCD | COND | 51 | |
| PHYSCLCD (2.5.23) | COND | 35 | Physiographic class code |
| PLANT_STOCKABILITY_FACTOR_PNW | COND | 79 | |
| PLOT | BOUNDARY | 7 | Plot number |
| PLOT | COND | 7 | Plot number |
| PLOT (1.3) | PLOT | 9 | Plot number |
| PLOT | POP_PLOT_STRATUM_ASSGN | 8 | Plot number |
| PLOT | SEEDLING | 7 | Plot number |
| PLOT | SITETREE | 8 | Plot number |
| PLOT | SUBPLOT | 8 | Plot number |
| PLOT | SUBP_COND | 7 | Plot number |
| PLOT | TREE | 8 | Plot number |
| PLOT_NONSAMPLE_REASN_CD (1.5) | PLOT | 11 | |
| PLOT_STATUS_CD (1.4) | PLOT | 10 | |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| PLT_CN | BOUNDARY | 2 | Unique index |
| PLT_CN | COND | 2 | Unique index |
| | POP_PLOT_STRATUM_A | | |
| PLT_CN | SSGN | 3 | PLOT CN |
| PLT_CN | SEEDLING | 2 | Unique index |
| PLT_CN | SITETREE | 2 | Unique index |
| PLT_CN | SUBPLOT | 2 | Unique index |
| PLT_CN | SUBP_COND | 2 | Unique index |
| PLT_CN | TREE | 2 | Unique index |
| POINT_NONSAMPLE_REASN_C | | | |
| D (3.3) | SUBPLOT | 11 | |
| PRESNFCD | COND | 52 | Present nonforest land use code |
| PREV_PLT_CN | PLOT | 4 | Unique index |
| PREV_SBP_CN | SUBPLOT | 3 | Unique index |
| PREV_SIT_CN | SITETREE | 3 | Unique index |
| PREV_STATUS_CD (5.6) | TREE | 112 | |
| PREV_TRE_CN | TREE | 3 | Unique index |
| PREV_WDLDSTEM (5.10) | TREE | 113 | Woodland tree species previous stem count |
| PREVCOND | TREE | 14 | Previous condition number |
| PREVDIA (5.9.1) | TREE | 96 | Previous diameter |
| PREVSUBC | TREE | 15 | Previous subcycle number |
| PROP_BASIS | COND | 28 | PROPORTION BASIS - VALUES ARE SUBP AND MACRO. Default is SUBP. Updated in nims_condprop.pkg, IF MACRO is present. |
| QA_STATUS (1.14) | PLOT | 32 | QA_STATUS |
| RDDISTCD (1.12) | PLOT | 18 | Distance to improved road code |
| RECONCILECD 5.7.1) | TREE | 95 | NEW TREE RECONCILE For remeasurement locations only. |
| REMPER | PLOT | 15 | Remeasurement period |
| REMVBFSL | TREE | 53 | Board-foot volume of a sawtimber tree for removal purposes |
| REMVCFAL | TREE | 54 | Sound cubic-foot volume of the tree for removal purposes |
| REMVCFGS | TREE | 52 | Cubic-foot volume of a growing-stock tree for removal purposes |
| REPLACED_PLOT_NBR | PLOT | 44 | If this is a replacement plot, this is the old plot number |
| REPORT_YEAR_NM | POP_EVAL | 7 | List of years in which panels were collected |
| RESERVCD (2.5.1) | COND | 11 | Reserved status class code |
| ROOT_DIS_SEV_CD_PNWRS | SUBPLOT | 28 | |
| ROUGHCULL | TREE | 92 | Rough cull percentage |
| RSCD | POP_ESTN_UNIT | 3 | Region or Station Code |
| RSCD | POP_EVAL | 2 | Region or Station Code |
| RSCD | POP_EVAL_GRP | 8 | |
| | POP_PLOT_STRATUM_A | | |
| RSCD | SSGN | 9 | Region or Station Code |
| RSCD | POP_STRATUM | 3 | |
| SALVCD | TREE | 59 | Salvable dead code |
| SAMP_METHOD_CD | PLOT | 45 | |
| SAWHT | TREE | 78 | Sawlog height |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| SEVERITY1_CD_PNWRS | TREE | 128 | |
| SEVERITY1A_CD_PNWRS | TREE | 129 | |
| SEVERITY1B_CD_PNWRS | TREE | 130 | |
| SEVERITY2_CD_PNWRS | TREE | 131 | |
| SEVERITY2A_CD_PNWRS | TREE | 132 | |
| SEVERITY2B_CD_PNWRS | TREE | 133 | |
| SEVERITY3_CD_PNWRS | TREE | 134 | |
| SIBASE | COND | 24 | Site index base age |
| SIBASE | SITETREE | 17 | Site index base age |
| SICOND | COND | 23 | Site index |
| SISP | COND | 25 | Site index species code |
| SITECL_METHOD | COND | 68 | Selected SITE CLASS method type |
| SITECLCD | COND | 22 | Site productivity class code |
| SITECLCDEST | COND | 66 | |
| SITETREE_TREE | COND | 67 | Selected SITETREE tree number |
| SITREE | SITETREE | 16 | Site index |
| SITREE | TREE | 83 | Calculated site index |
| SITREE_EQU_NO_PNWRS | SITETREE | 31 | |
| SITREE_EST | SITETREE | 28 | |
| SLOPE | COND | 33 | Slope |
| SLOPE (3.6) | SUBPLOT | 16 | Subplot slope |
| SOIL_ROOTING_DEPTH_PNW | COND | 77 | Soil rooting depth code (1=less than 20 inches, 2=greater than or equal to 20 inches) |
| SPCD (6.2) | SEEDLING | 10 | Species code |
| SPCD (7.2.2) | SITETREE | 11 | Species |
| SPCD (5.8) | TREE | 17 | Species code |
| SPGRPCD | SEEDLING | 11 | Species group code |
| SPGRPCD | SITETREE | 15 | Species group code |
| SPGRPCD | TREE | 18 | Species group code |
| SRV_CN | PLOT | 2 | Unique index |
| STAND_STRUCTURE_SRS | COND | 88 | |
| STANDING_DEAD_CD (5.7.2) | TREE | 111 | |
| STATEAB | SURVEY | 5 | State abbreviation |
| STATECD | BOUNDARY | 4 | State Code |
| STATECD | COND | 4 | State code |
| STATECD | COUNTY | 1 | State code |
| STATECD (1.1) | PLOT | 6 | State code |
| STATECD | POP_ESTN_UNIT | 7 | State Code of primary state being evaluated |
| STATECD | POP_EVAL | 5 | State Code of primary state being evaluated |
| STATECD | POP_EVAL_GRP | 11 | State Code of primary state being evaluated |
| STATECD | POP_PLOT_STRATUM_ASSGN | 4 | State code |
| STATECD | POP_STRATUM | 8 | |
| STATECD | SEEDLING | 4 | State code |
| STATECD | SITETREE | 5 | State code |
| STATECD | SUBPLOT | 5 | State code |
| STATECD | SUBP_COND | 4 | State code |
| STATECD | SURVEY | 4 | State code |
| STATECD | TREE | 5 | State code |
| STATENM | SURVEY | 6 | State name |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| STATUSCD (3.2) | SUBPLOT | 10 | |
| STATUSCD | TREE | 16 | Tree status code |
| STDAGE (2.5.10) | COND | 19 | Stand age |
| STDORGCD | COND | 26 | Stand origin code |
| STDORGSP | COND | 27 | Stand origin species code |
| STDSZCD | COND | 20 | Stand-size class code (computed) |
| STND_COND_CD_PNWRS | COND | 80 | |
| STND_STRUC_CD_PNWRS | COND | 81 | |
| STOCKING | SEEDLING | 12 | Tree stocking |
| STOCKING | TREE | 37 | Tree stocking percent |
| STRATUM_CN | POP_PLOT_STRATUM_ASSGN | 2 | Stratum CN |
| STRATUM_DESCR | POP_STRATUM | 7 | |
| STRATUMCD | POP_PLOT_STRATUM_ASSGN | 12 | Stratum code |
| STRATUMCD | POP_STRATUM | 6 | |
| STUMP_CD_PNWRS | COND | 82 | |
| SUBCYCLE | BOUNDARY | 17 | Inventory subcycle number |
| SUBCYCLE | COND | 76 | Inventory subcycle number |
| SUBCYCLE | PLOT | 50 | Inventory subcycle number |
| SUBCYCLE | SEEDLING | 24 | Inventory subcycle number |
| SUBCYCLE | SITETREE | 33 | Inventory subcycle number |
| SUBCYCLE | SUBPLOT | 27 | Inventory subcycle number |
| SUBCYCLE | SUBP_COND | 22 | Inventory subcycle number |
| SUBCYCLE | SURVEY | 15 | Inventory subcycle number |
| SUBCYCLE | TREE | 119 | Inventory subcycle number |
| SUBP (4.2.1) | BOUNDARY | 8 | Subplot number |
| SUBP (6.1) | SEEDLING | 8 | Subplot number |
| SUBP (7.2.7) | SITETREE | 24 | Subplot number |
| SUBP (3.1) | SUBPLOT | 9 | Subplot number |
| SUBP | SUBP_COND | 8 | Subplot number |
| SUBP (5.1) | TREE | 9 | Subplot number |
| SUBP_EXAMINE_CD (1.6) | PLOT | 46 | |
| SUBPANEL | PLOT | 30 | Subpanel number |
| SUBPCOND (3.4) | SUBPLOT | 13 | Subplot center condition |
| SUBPCOND_PROP | SUBP_COND | 17 | Proportion of this subplot in this condition |
| SUBPPROP_UNADJ | COND | 31 | |
| SUBPTYP | BOUNDARY | 9 | Subplot type code |
| TOPO_POSITION_PNW | PLOT | 52 | Topographic position |
| TOTAGE | SEEDLING | 14 | Total age of seedling |
| TOTAGE | TREE | 70 | Total tree age |
| TPA_UNADJ | SEEDLING | 22 | |
| TPA_UNADJ | TREE | 114 | |
| TPAGROW_UNADJ | TREE | 117 | growth trees per acre unadjusted for denied access, hazardous, out of sample conditions |
| TPAMORT_UNADJ | TREE | 115 | mortality trees per acre per year unadjusted for denied access, hazardous, out of sample conditions |
| TPAREMV_UNADJ | TREE | 116 | removal trees per acre per year unadjusted for denied access, hazardous, out of sample conditions |
| TRANSCD (12.11) | TREE | 66 | Foliage transparency code |

| Column name and field guide section | Table name | Location in table | Description |
|---|---|---|---|
| TREE | SITETREE | 10 | Tree number |
| TREE (5.2) | TREE | 10 | Tree number |
| TREECLCD | TREE | 24 | Tree class code |
| TREECLCD_NCRS | TREE | 109 | Tree class code NCRS |
| TREECLCD_NERS | TREE | 107 | Tree class code NERS |
| TREECLCD_RMRS | TREE | 110 | Tree class code RMRS |
| TREECLCD_SRS | TREE | 108 | Tree class code SRS |
| TREECOUNT (6.4) | SEEDLING | 13 | Tree count |
| TREECOUNT_CALC | SEEDLING | 21 | |
| TREEGRCD | TREE | 27 | Tree grade code |
| TREEHISTCD | TREE | 67 | Tree history code |
| TRTCD1 (2.5.17) | COND | 45 | Stand Treatment 1 code |
| TRTCD1_SRS | COND | 89 | |
| TRTCD2 (2.5.19) | COND | 47 | Stand treatment 2 |
| TRTCD2_SRS | COND | 90 | |
| TRTCD3 (2.5.21) | COND | 49 | Stand Treatment 3 code |
| TRTCD3_SRS | COND | 91 | |
| TRTOPCD | COND | 38 | Treatment opportunity class code |
| TRTYR1 (2.5.18) | COND | 46 | Treatment year 1 |
| TRTYR2 (2.5.20) | COND | 48 | Treatment year 2 |
| TRTYR3 2.5.22) | COND | 50 | Treatment year 3 |
| UNCRCD (5.18, 12.5) | TREE | 60 | Uncompacted live crown ratio |
| UNITCD | BOUNDARY | 5 | Survey unit code |
| UNITCD | COND | 5 | Survey unit code |
| UNITCD | COUNTY | 2 | Survey unit code |
| UNITCD | PLOT | 7 | Survey unit code |
| UNITCD | POP_PLOT_STRATUM_ASSGN | 6 | Survey unit code |
| UNITCD | SEEDLING | 5 | Survey unit code |
| UNITCD | SITETREE | 6 | Survey unit code |
| UNITCD | SUBPLOT | 6 | Survey unit code |
| UNITCD | SUBP_COND | 5 | Survey unit code |
| UNITCD | TREE | 6 | Survey unit code |
| UNKNOWN_DAMTYP1_PNWRS | TREE | 135 | |
| VALIDCD | SITETREE | 29 | |
| VOL_LOC_GRP | COND | 65 | Volume location group |
| VOLBFGRS | TREE | 44 | Gross board-foot volume in the saw-log portion |
| VOLBFNET | TREE | 43 | Net board-foot volume in the saw-log portion |
| VOLCFGRS | TREE | 40 | Gross cubic-foot volume |
| VOLCFNET | TREE | 39 | Net cubic-foot volume |
| VOLCFSND | TREE | 45 | Sound cubic-foot volume |
| VOLCSGRS | TREE | 42 | Gross cubic-foot volume in the saw-log portion |
| VOLCSNET | TREE | 41 | Net cubic-foot volume in the saw-log portion |
| WATERCD (1.13) | PLOT | 19 | Water on plot code |
| WATERDEP (3.8) | SUBPLOT | 18 | Water or snow depth |
| WDLDSTEM (5.11) | TREE | 38 | Woodland tree species current stem count |
| WHERE_CLAUSE | POP_ATTRIBUTE | 4 | Part of the where clause (does not include filter e.g. p.statecd = 27) |

## Appendix B – Forest Inventory and Analysis (FIA) Design Codes and Definitions by Region

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| [a]NRS-NE, [b]NRS-NC, [c]SRS, [d]RMRS, [e]PNWRS | 1 | National plot design consists of four, 24 foot fixed-radius subplots for trees ≥ 5 inches dbh, and four, 6.8 foot fixed-radius microplots for seedlings and trees ≥ 1 and < 5 inches dbh. Subplot 1 is the center plot, and subplots 2, 3, and 4 are located 120.0 feet, horizontal, at azimuths of 360, 120, and 240, respectively. The microplot center is 12 feet east of the subplot center. Four, 58.9 feet fixed-radius macroplots are optional. A plot may sample more than one condition. When multiple conditions are encountered, condition boundaries are delineated (mapped). |
| | 2 | A plot record created to represent reserved or other nonsampled or undersampled areas where there were no ground plots; the plot has no design type; rather, it is a placeholder for area estimates. In all cases where DESIGNCD 2 plots are present, they are only used for estimates of area; they are not used in estimates of numbers of trees, volume or change (i.e., tree level estimates). |
| [a]NRS-NE | 101 | Various plot designs. Converted from East Wide Database format, some fields may be null. |
| | 111 | Four-subplot design similar to DESIGNCD 1, except the 1/300 acre microplot for saplings and the 1/1000 acre (3.7 foot radius) microplot for seedlings are located at each subplot center. If EXPGROW>0, overlaid on a 5 subplot design, where remeasurement of trees (≥ 5 inches) is on subplot 1 only. Poletimber-sized trees remeasured on a 24-foot radius plot, sawtimber-sized trees remeasured on a 49-foot radius plot.<br>If EXPGROW=0, initial establishment of plot. |
| | 112 | DESIGNCD 111, except that if EXPGROW>0, the remeasurement of trees (≥ 5 inches) is on the 24-foot-radius subplot 1 only, regardless of tree size or previous plot size or type (varied). |
| | 113 | DESIGNCD 111, except that if EXPGROW>0, the remeasurement of trees (≥ 5 inches) is on the 24-foot-radius subplot 1 only, regardless of tree size or previous |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | | plot size or type (single subplot 1/5 acre). |
| | 115 | DESIGNCD 1. Overlaid on a FHM 4-subplot plot design. These plots are not used in change estimates. |
| | 116 | DESIGNCD 1. Overlaid on 1/5 acre plot for all trees ≥ 5 inches dbh (1/5 acre plot was an initial measurement). Remeasurement of subplot 1 is only on the 24-foot-radius plot for all trees (≥ 5 inches), regardless of tree size or previous plot size. |
| | 117 | DESIGNCD 1. Overlaid on 1/5 acre plot for all trees ≥ 5 inches dbh (1/5 acre plot was remeasurement). Remeasurement of subplot 1 is only on the 24-foot-radius plot for all trees (≥ 5 inches), regardless of tree size or previous plot size. |
| | 118 | DESIGNCD 1. Overlaid on 10-subplot, variable-radius design. Remeasurement of trees (≥ 5 inches) on 5 of the 10 subplots; ingrowth based on trees (≥ 5 inches) that grew onto five 6.8 foot radius subplots. |
| | 199 | A plot record created to represent reserved or other nonsampled areas where there were no ground plots; the plot has no design type; rather, it is a placeholder for area estimates. In all cases where DESIGNCD 199 plots are present, they are only used for estimates of area; they are not used in estimates of numbers of trees, volume or change (i.e., tree level estimates). |
| [b]NRS-NC | 301 | Various plot designs. Converted from East Wide Database format, some fields may be null. |
| | 311 | Four-subplot design similar to DESIGNCD 1, except the 1/24 acre and 1/300 acre plots have common centers. Conditions are mapped and boundaries may be within the plots. Initial plot establishment. |
| | 312 | DESIGNCD 1. Initial plot establishment. |
| | 313 | DESIGNCD 311. Overlaid on previous plots, no remeasurements. |
| | 314 | DESIGNCD 1. Overlaid on previous plots, no remeasurements. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | | |
| | 315 | DESIGNCD 311. Overlaid on same design. Only trees ≥ 5 inches dbh are remeasured. |
| | 316 | DESIGNCD 1. Overlaid on DESIGNCD 311 Only trees ≥ 5 inches dbh are remeasured. |
| | 317 | DESIGNCD 1. Overlaid on DESIGNCD 326. Only the first 5 points (trees ≥ 5 inches dbh) and first 3, 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured, but conditions were not re-mapped. |
| | 318 | DESIGNCD 311. Overlaid on DESIGNCD 325. Only the first 5 points (trees ≥ 5 inches dbh) and first 3, 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 319 | DESIGNCD 1. Overlaid on DESIGNCD 325. Only the first 5 points (trees ≥ 5 inches dbh) and first 3, 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 320 | DESIGNCD 311. Overlaid on modified DESIGNCD 325. Only the first 5 points (trees ≥ 5 inches dbh) and first 3 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 321 | DESIGNCD 1. Overlaid on modified DESIGNCD 325. Only the first 5 points (trees ≥ 5 inches dbh) and first 3 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 322 | DESIGNCD 311. Overlaid on DESIGNCD 327. Only the first 5 points (trees ≥ 5 inches dbh) and first 3, 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 323 | DESIGNCD 1. Overlaid on DESIGNCD 327. Only the first 5 points (trees ≥ 5 inches dbh) and first 3 1/300 acre plots (trees ≥ 1 and < 5 inches dbh) are remeasured. |
| | 325 | Ten variable-radius, 37.5 BAF points, 70 feet apart, for trees ≥ 5 inches dbh and 10, 1/300 acre plots for seedlings and trees ≥ 1 and < 5 inches dbh. Point and plot center were coincident. Conditions were not mapped. Instead, points were rotated into forest or nonforest based on the condition at point center. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | 326 | Ten variable-radius, 37.5 BAF points, 70 feet apart, for trees ≥ 5 and < 17.0 inches dbh, 10 1/24 acre plots for trees ≥ 17.0 inches dbh, and 10, 1/300 acre plots for seedlings and trees ≥ 1 and < 5 inches dbh. Point and plot center were coincident. Conditions were mapped. |
| | 327 | Ten variable-radius, 37.5 BAF points, 70 feet apart, for trees ≥ 5 inches dbh and 10, 1/300 acre plots for seedlings and trees ≥ 1 and < 5 inches dbh. Point and plot center were coincident. Conditions were not mapped. Instead, points were rotated into forest or nonforest based on the condition at point center. Diameters were estimated with a model, but all dead and cut trees were recorded. |
| | 328 | DESIGNCD 1. Overlaid on DESIGNCD 311. All trees and saplings are remeasured. |
| [c]SRS | 210 | Other plot design installed by previous research stations within the 13-state Southern area not described by DESIGNCD 211-219. |
| | 211 | Ten variable-radius, 37.5 BAF points, 70 ft apart. Remeasurement of same design or new/replacement plot. |
| | 212 | Five variable-radius, 37.5 BAF points, 70 feet apart. Remeasure first 5 points of DESIGNCD 211 or new/replacement plot. |
| | 213 | Five variable-radius, 37.5 BAF points, 70 feet apart. Remeasure DESIGNCD 212. |
| | 214 | Ten variable-radius, 37.5 BAF points, 66 ft apart. Remeasure same design or new/replacement plot. |
| | 215 | Five variable-radius, 37.5 BAF points, 66 feet apart. Remeasure first 5 points of DESIGNCD 214 or new/replacement plot. |
| | 216 | Ten variable-radius, 37.5 BAF points, 66 ft apart. Remeasure DESIGNCD 215. |
| | 217 | Five point cluster plot, point 1 is 1/5th acre sawtimber plot and 1/10th acre poletimber plot, points 2-5 are 37.5 BAF prism points. No remeasurement. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | 218 | Remeasurement of DESIGNCD 217, point 1 only. Used only for change estimates. |
| | 219 | Three point, 2.5 BAF metric prism plot, points 25 meters apart. Remeasure same design or new/replacement plot. |
| | 220 | Four 1/24 acre plots for trees ≥ 5 inches dbh and 4, 1/300 acre plots for seedlings and trees ≥ 1 and < 5 inches dbh. The 1/24 acre and 1/300 acre plots have common centers. Conditions are mapped and boundaries may be within the plots. Remeasurement plot not described by 221-229. |
| | 221 | DESIGNCD 220. Remeasure same design or new/replacement plot. |
| | 222 | DESIGNCD 220. Overlaid on and remeasurement of DESIGNCD 212 or 213. |
| | 223 | DESIGNCD 220. Overlaid on and remeasurement of first 5 points of DESIGNCD 214 or 216. |
| | 230 | DESIGNCD 1. Remeasurement plot not described by DESIGNCD 231-239. |
| | 231 | DESIGNCD 1. Overlaid on and remeasurement of DESIGNCD 212 or DESIGNCD 213. |
| | 232 | DESIGNCD 1. Overlaid on and remeasurement of first 5 points of DESIGNCD 214 or 216. |
| | 233 | DESIGNCD 1. Overlaid on and remeasurement of DESIGNCD 220, 221, 222, or 223 |
| | 240 | DESIGNCD 1. Collected in metric and converted to English in the database. Remeasurement not described by 241-249. |
| | 241 | DESIGNCD 1. Collected in metric and converted to English in the database. Remeasure same design or new/replacement plot. |
| | 242 | DESIGNCD 1. Overlaid on and remeasurement of DESIGNCD 219. Collected in metric and converted to English in the database. |
| | 299 | Other plot design not described in DESIGNCD 200-298. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | | |
| [d]RMRS | 403 | One 1/10th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber and woodland tree species < 5.0 inches drc tallied on microplot. |
| | 404 | One 1/20th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber and woodland tree species < 5.0 inches drc tallied on microplot |
| | 405 | One 1/5th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber and woodland tree species < 5.0 inches drc tallied on microplot |
| | 410 | 40 BAF variable-radius plots and 1/300th acre fixed-radius microplots; number of microplots = number of points installed. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot |
| | 411 | 40 BAF variable-radius plots and 1/300th acre fixed-radius microplots; 3 microplots installed on points 1, 2, and 3. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot |
| | 412 | 40 BAF variable-radius plots and 1/300th acre fixed-radius microplots; 3 microplots installed on points 1, 2, and 5. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot |
| | 413 | 20 BAF variable-radius plots and 1/300th acre fixed-radius microplots; number of microplots = number of points installed. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 414 | 20 BAF variable-radius plots and 1/300th acre fixed-radius microplots; 3 microplots installed on points 1, 2, and 3. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 415 | 20 BAF variable-radius plots and 1/300th acre fixed-radius microplots; 3 microplots installed on points 1, 2, and 5. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | | |
| | 420 | One 1/10th acre fixed-radius plot and one centered 1/100th acre microplot. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 421 | One 1/20th acre fixed-radius plot and one centered 1/100th acre microplot. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 422 | One 1/5th acre fixed-radius plot and one centered 1/100th acre microplot. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 423 | One 1/10th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 424 | One 1/20th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| | 425 | One 1/5th acre fixed-radius plot divided into 4 quadrants and four 1/300th acre fixed-radius microplots. Timber tree species < 5.0 inches dbh; woodland tree species < 3.0 inches drc measured on microplot. |
| [d]PNWRS | 501 | DESIGNCD 1 with optional macroplot. Trees ≥24 inches dbh are tallied on macroplot. |
| | 502 | DESIGNCD 1 with optional macroplot. Trees ≥30 inches dbh are tallied on macroplot. |
| | 503 | DESIGNCD 1 with optional macroplot. Trees ≥24 inches dbh are tallied on macroplot. Trees ≥32 inches dbh are tallied on one 1-hectare plot. |
| | 504 | DESIGNCD 1 with optional macroplot. Trees ≥24 inches dbh are tallied on macroplot. Trees ≥48 inches dbh are tallied on one 1-hectare plot. |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | 505 | DESIGNCD 1 with optional macroplot. Trees ≥30 inches dbh are tallied on macroplot. Trees ≥48 inches dbh are tallied on one 1-hectare plot. |
| | 550 | Five 30.5 BAF points for trees ≥ 5 inches and < 35.4 inches dbh; five 55.8 foot fixed-radius plots for trees ≥35.4 inches dbh; and five 7.7 foot fixed-radius plots for seedlings and saplings < 5 inches dbh. Point and plot centers are coincident. Conditions are mapped. |
| | 551 | Five 20 BAF points for trees ≥ 5 inches and < 35.4 inches dbh ; five 55.6 foot fixed-radius plots for trees ≥35.4 inches dbh; and five 9.7 foot fixed-radius plots for seedlings and saplings < 5 inches dbh. Point and plot centers are coincident. Conditions are mapped. |
| | 552 | Five 30 BAF points for trees ≥ 5 inches and < 35.4 inches dbh; five 55.6 foot fixed-radius plots for trees ≥35.4 inches dbh; and five 7.9 foot fixed-radius plots for seedlings and saplings < 5 inches dbh. Point and plot centers are coincident. Conditions are mapped. |
| | 553 | Four 1/24 acre plots for live trees and four 58.9 foot fixed-radius plots for trees ≥11.8 inches dbh. Plot centers are coincident. Conditions are mapped. |
| | 554 | Four 1/24 acre plots for live trees and four 58.9 foot fixed-radius plots for trees ≥19.7 inches dbh. Plot centers are coincident. Conditions are mapped. |
| | 555 | Five 30.5 BAF points for trees ≥ 6.9 inches and < 35.4 inches dbh; five 55.8 foot fixed-radius plots for trees ≥35.4 inches dbh; and five 10.8 foot fixed-radius plots for seedlings and saplings < 6.9 inches dbh. Point and plot centers are coincident. Conditions are mapped. |
| | 556 | Five 30.5 BAF points for trees ≥ 6.9 inches and < 35.4 inches dbh; five 55.8 foot fixed-radius plots for trees ≥35.4 inches dbh; five 10.8 foot fixed-radius plots for saplings ≥5 inches and < 6.9 inches dbh.; and the northeast quadrant of each of the five 10.8 foot fixed-radius plots for trees <5 inches dbh. Point and plot centers are coincident. Conditions are not mapped. |
| | 557 | Five 40 BAF points for trees ≥ 5 inches dbh; and five 6.9 |

| Region | Design Code (DESIGNCD) | Definition |
|---|---|---|
| | | foot fixed-radius plots for saplings ≥1 and < 5 inches dbh. Point and plot centers are coincident. Conditions are not mapped. |
| | 558 | Three 30.5 BAF points for trees ≥ 6.9 inches and < 35.4 inches dbh; three 55.8 foot fixed-radius plots for trees ≥35.4 inches dbh; three 10.8 foot fixed-radius plots for saplings ≥5 inches and < 6.9 inches dbh; and the northeast quadrant of each of the three 10.8 foot fixed-radius plots for trees <5 inches dbh. Point and plot centers are coincident. Conditions are mapped, only condition class 1 measured. Overlaid on and remeasurement of same design. |
| | 559 | Four 40 BAF points for trees ≥ 5 inches dbh; and four 6.9 foot fixed-radius plots for saplings ≥ 1 and < 5 inches dbh. Point and plot centers are coincident. Conditions are mapped, only condition class 1 measured. Overlaid on and remeasurement of same design. |

[a]North Research Station – previously Northeast
[b]North Research Station – previously North Central
[c]Southern Research Station
[d]Rocky Mountain Research Station
[e]Pacific Northwest Research Station

Other Acronyms and definitions:
BAF – basal area factor
drc – Diameter at root collar
Sawtimber-sized trees – softwoods ≥ 9 inches. dbh, hardwoods ≥11 inches dbh.
Poletimber-sized trees – softwoods ≥ 5 inches and < 9 inches dbh, hardwoods ≥ 5 inches and <11 inches dbh

# Appendix C – State, Survey Unit, and County Codes

| **01** | **Alabama** |
|---|---|
| **01** | **Southwest-South** |
| 003 | Baldwin |
| 039 | Covington |
| 053 | Escambia |
| 097 | Mobile |
| 129 | Washington |
| | |
| **02** | **Southwest-North** |
| 023 | Choctaw |
| 025 | Clarke |
| 035 | Conecuh |
| 091 | Marengo |
| 099 | Monroe |
| 119 | Sumter |
| 131 | Wilcox |
| | |
| **03** | **Southeast** |
| 001 | Autauga |
| 005 | Barbour |
| 011 | Bullock |
| 013 | Butler |
| 017 | Chambers |
| 021 | Chilton |
| 031 | Coffee |
| 041 | Crenshaw |
| 045 | Dale |
| 047 | Dallas |
| 051 | Elmore |
| 061 | Geneva |
| 067 | Henry |
| 069 | Houston |
| 081 | Lee |
| 085 | Lowndes |
| 087 | Macon |
| 101 | Montgomery |
| 109 | Pike |
| 113 | Russell |
| 123 | Tallapoosa |
| | |
| **04** | **West Central** |
| 007 | Bibb |
| 057 | Fayette |
| 063 | Greene |
| 065 | Hale |
| 075 | Lamar |
| 093 | Marion |
| 105 | Perry |
| 107 | Pickens |
| 125 | Tuscaloosa |
| | |
| **05** | **North Central** |
| 009 | Blount |
| 015 | Calhoun |
| 019 | Cherokee |
| 027 | Clay |
| 029 | Cleburne |
| 037 | Coosa |
| 043 | Cullman |
| 055 | Etowah |
| 073 | Jefferson |
| 111 | Randolph |
| 115 | St. Clair |
| 117 | Shelby |
| 121 | Talladega |
| 127 | Walker |
| 133 | Winston |
| | |
| **06** | **North** |
| 033 | Colbert |
| 049 | DeKalb |
| 059 | Franklin |
| 071 | Jackson |
| 077 | Lauderdale |
| 079 | Lawrence |
| 083 | Limestone |
| 089 | Madison |
| 095 | Marshall |
| 103 | Morgan |

| **02** | **Alaska** |
|---|---|
| **01** | **Alaska** |
| 013 | Aleutians East Borough |
| 016 | Aleutians West Census Area |
| 020 | Anchorage Borough |
| 050 | Bethel Census Area |
| 060 | Bristol Bay Borough |
| 068 | Denali Borough |
| 070 | Dillingham Census Area |
| 090 | Fairbanks North Star Borough |
| 100 | Haines Borough |
| 110 | Juneau Borough |
| 122 | Kenai Peninsula Borough |
| 130 | Ketchikan Gateway Borough |
| 150 | Kodiak Island Borough |
| 164 | Lake and Peninsula Borough |
| 170 | Matanuska-Susitna Borough |
| 180 | Nome Census Area |
| 185 | North Slope Borough |
| 188 | Northwest Arctic Borough |
| 201 | Prince of Wales-Outer Ketchikan Census Area |
| 220 | Sitka Borough |
| 232 | Skagway-Hoonah-Angoon |

| | |
|---|---|
| | Census Area |
| 240 | Southeast Fairbanks Census Area |
| 261 | Valdez-Cordova Census Area |
| 270 | Wade Hampton Census Area |
| 280 | Wrangell-Petersburg Census Area |
| 282 | Yakutat Borough |
| 290 | Yukon-Koyukuk Census Area |

| **04** | **Arizona** |
|---|---|
| **01** | **Southern** |
| 003 | Cochise |
| 009 | Graham |
| 011 | Greenlee |
| 012 | La Paz |
| 013 | Maricopa |
| 019 | Pima |
| 021 | Pinal |
| 023 | Santa Cruz |
| 027 | Yuma |
| **02** | **Northern** |
| 001 | Apache |
| 005 | Coconino |
| 007 | Gila |
| 015 | Mohave |
| 017 | Navajo |
| 025 | Yavapai |

| **05** | **Arkansas** |
|---|---|
| **01** | **South Delta** |
| 001 | Arkansas |
| 017 | Chicot |
| 041 | Desha |
| 069 | Jefferson |
| 077 | Lee |
| 079 | Lincoln |
| 085 | Lonoke |
| 095 | Monroe |
| 107 | Phillips |
| 117 | Prairie |
| **02** | **North Delta** |
| 021 | Clay |
| 031 | Craighead |
| 035 | Crittenden |
| 037 | Cross |
| 055 | Greene |
| 067 | Jackson |
| 075 | Lawrence |
| 093 | Mississippi |
| 111 | Poinsett |
| 123 | St. Francis |
| 147 | Woodruff |
| **03** | **Southwest** |
| 003 | Ashley |
| 011 | Bradley |
| 013 | Calhoun |
| 019 | Clark |
| 025 | Cleveland |
| 027 | Columbia |
| 039 | Dallas |
| 043 | Drew |
| 053 | Grant |
| 057 | Hempstead |
| 059 | Hot Spring |
| 061 | Howard |
| 073 | Lafayette |
| 081 | Little River |
| 091 | Miller |
| 099 | Nevada |
| 103 | Ouachita |
| 109 | Pike |
| 133 | Sevier |
| 139 | Union |
| **04** | **Ouachita** |
| 051 | Garland |
| 083 | Logan |
| 097 | Montgomery |
| 105 | Perry |
| 113 | Polk |
| 119 | Pulaski |
| 125 | Saline |
| 127 | Scott |
| 131 | Sebastian |
| 149 | Yell |
| **05** | **Ozark** |
| 005 | Baxter |
| 007 | Benton |
| 009 | Boone |
| 015 | Carroll |
| 023 | Cleburne |
| 029 | Conway |
| 033 | Crawford |
| 045 | Faulkner |
| 047 | Franklin |
| 049 | Fulton |
| 063 | Independence |
| 065 | Izard |
| 071 | Johnson |
| 087 | Madison |
| 089 | Marion |
| 101 | Newton |
| 115 | Pope |
| 121 | Randolph |
| 129 | Searcy |
| 135 | Sharp |
| 137 | Stone |
| 141 | Van Buren |
| 143 | Washington |

| | |
|---|---|
| 145 | White |

| **06** | **California** |
|---|---|
| **01** | **North Coast** |
| 015 | Del Norte |
| 023 | Humboldt |
| 045 | Mendocino |
| 097 | Sonoma |
| **02** | **North Interior** |
| 035 | Lassen |
| 049 | Modoc |
| 089 | Shasta |
| 093 | Siskiyou |
| 105 | Trinity |
| **03** | **Sacramento** |
| 007 | Butte |
| 011 | Colusa |
| 017 | El Dorado |
| 021 | Glenn |
| 033 | Lake |
| 055 | Napa |
| 057 | Nevada |
| 061 | Placer |
| 063 | Plumas |
| 067 | Sacramento |
| 091 | Sierra |
| 101 | Sutter |
| 103 | Tehama |
| 113 | Yolo |
| 115 | Yuba |
| **04** | **Central Coast** |
| 001 | Alameda |
| 013 | Contra Costa |
| 041 | Marin |
| 053 | Monterey |
| 069 | San Benito |
| 075 | San Francisco |
| 079 | San Luis Obispo |
| 081 | San Mateo |
| 083 | Santa Barbara |
| 085 | Santa Clara |
| 087 | Santa Cruz |
| 095 | Solano |
| 111 | Ventura |
| **05** | **San Joaquin** |
| 003 | Alpine |
| 005 | Amador |
| 009 | Calaveras |
| 019 | Fresno |
| 029 | Kern |
| 031 | Kings |
| 039 | Madera |
| 043 | Mariposa |
| 047 | Merced |
| 051 | Mono |
| 077 | San Joaquin |
| 099 | Stanislaus |
| 107 | Tulare |
| 109 | Tuolumne |
| **06** | **Southern** |
| 025 | Imperial |
| 027 | Inyo |
| 037 | Los Angeles |
| 059 | Orange |
| 065 | Riverside |
| 071 | San Bernardino |
| 073 | San Diego |

| **08** | **Colorado** |
|---|---|
| **01** | **Northern Front Range** |
| 013 | Boulder |
| 019 | Clear Creek |
| 035 | Douglas |
| 039 | Elbert |
| 041 | El Paso |
| 047 | Gilpin |
| 059 | Jefferson |
| 065 | Lake |
| 069 | Larimer |
| 093 | Park |
| 119 | Teller |
| **02** | **Southern Front Range** |
| 015 | Chaffee |
| 023 | Costilla |
| 027 | Custer |
| 043 | Fremont |
| 055 | Huerfano |
| 071 | Las Animas |
| 101 | Pueblo |
| **03** | **West Central** |
| 003 | Alamosa |
| 021 | Conejos |
| 037 | Eagle |
| 049 | Grand |
| 051 | Gunnison |
| 053 | Hinsdale |
| 057 | Jackson |
| 079 | Mineral |
| 097 | Pitkin |
| 105 | Rio Grande |
| 107 | Routt |
| 109 | Saguache |
| 111 | San Juan |
| 117 | Summit |
| **04** | **Western** |
| 007 | Archuleta |

| | |
|---|---|
| 029 | Delta |
| 033 | Dolores |
| 045 | Garfield |
| 067 | La Plata |
| 077 | Mesa |
| 081 | Moffat |
| 083 | Montezuma |
| 085 | Montrose |
| 091 | Ouray |
| 103 | Rio Blanco |
| 113 | San Miguel |
| | |
| **05** | **Eastern** |
| 001 | Adams |
| 005 | Arapahoe |
| 009 | Baca |
| 011 | Bent |
| 017 | Cheyenne |
| 025 | Crowley |
| 031 | Denver |
| 061 | Kiowa |
| 063 | Kit Carson |
| 073 | Lincoln |
| 075 | Logan |
| 087 | Morgan |
| 089 | Otero |
| 095 | Phillips |
| 099 | Prowers |
| 115 | Sedgwick |
| 121 | Washington |
| 123 | Weld |
| 125 | Yuma |

| | |
|---|---|
| **09** | **Connecticut** |
| **01** | **State** |
| 001 | Fairfield |
| 003 | Hartford |
| 005 | Litchfield |
| 007 | Middlesex |
| 009 | New Haven |
| 011 | New London |
| 013 | Tolland |
| 015 | Windham |

| | |
|---|---|
| **10** | **Delaware** |
| **01** | **State** |
| 001 | Kent |
| 003 | New Castle |
| 005 | Sussex |

| | |
|---|---|
| **11** | **District of Columbia** |

| | |
|---|---|
| **12** | **Florida** |
| **01** | **Northeastern** |
| 001 | Alachua |
| 003 | Baker |
| 007 | Bradford |
| 019 | Clay |
| 023 | Columbia |
| 029 | Dixie |
| 031 | Duval |
| 035 | Flagler |
| 041 | Gilchrist |
| 047 | Hamilton |
| 067 | Lafayette |
| 075 | Levy |
| 079 | Madison |
| 083 | Marion |
| 089 | Nassau |
| 107 | Putnam |
| 109 | St. Johns |
| 121 | Suwannee |
| 123 | Taylor |
| 125 | Union |
| 127 | Volusia |
| | |
| **02** | **Northwestern** |
| 005 | Bay |
| 013 | Calhoun |
| 033 | Escambia |
| 037 | Franklin |
| 039 | Gadsden |
| 045 | Gulf |
| 059 | Holmes |
| 063 | Jackson |
| 065 | Jefferson |
| 073 | Leon |
| 077 | Liberty |
| 091 | Okaloosa |
| 113 | Santa Rosa |
| 129 | Wakulla |
| 131 | Walton |
| 133 | Washington |
| | |
| **03** | **Central** |
| 009 | Brevard |
| 017 | Citrus |
| 027 | DeSoto |
| 049 | Hardee |
| 053 | Hernando |
| 055 | Highlands |
| 057 | Hillsborough |
| 061 | Indian River |
| 069 | Lake |
| 081 | Manatee |
| 093 | Okeechobee |
| 095 | Orange |
| 097 | Osceola |
| 101 | Pasco |
| 103 | Pinellas |
| 105 | Polk |
| 111 | St. Lucie |
| 115 | Sarasota |
| 117 | Seminole |

| | |
|---|---|
| 119 | Sumter |

| | |
|---|---|
| **04** | **Southern** |
| 011 | Broward |
| 015 | Charlotte |
| 021 | Collier |
| 025 | Dade |
| 043 | Glades |
| 051 | Hendry |
| 071 | Lee |
| 085 | Martin |
| 087 | Monroe |
| 099 | Palm Beach |

| | |
|---|---|
| **13** | **Georgia** |
| **01** | **Southeastern** |
| 001 | Appling |
| 003 | Atkinson |
| 005 | Bacon |
| 025 | Brantley |
| 029 | Bryan |
| 031 | Bulloch |
| 039 | Camden |
| 043 | Candler |
| 049 | Charlton |
| 051 | Chatham |
| 065 | Clinch |
| 069 | Coffee |
| 091 | Dodge |
| 101 | Echols |
| 103 | Effingham |
| 107 | Emanuel |
| 109 | Evans |
| 127 | Glynn |
| 161 | Jeff Davis |
| 165 | Jenkins |
| 167 | Johnson |
| 175 | Laurens |
| 179 | Liberty |
| 183 | Long |
| 191 | McIntosh |
| 209 | Montgomery |
| 229 | Pierce |
| 251 | Screven |
| 267 | Tattnall |
| 271 | Telfair |
| 279 | Toombs |
| 283 | Treutlen |
| 299 | Ware |
| 305 | Wayne |
| 309 | Wheeler |

| | |
|---|---|
| **02** | **Southwestern** |
| 007 | Baker |
| 017 | Ben Hill |
| 019 | Berrien |
| 027 | Brooks |
| 071 | Colquitt |
| 075 | Cook |
| 081 | Crisp |
| 087 | Decatur |
| 093 | Dooly |
| 099 | Early |
| 131 | Grady |
| 155 | Irwin |
| 173 | Lanier |
| 185 | Lowndes |
| 201 | Miller |
| 205 | Mitchell |
| 253 | Seminole |
| 275 | Thomas |
| 277 | Tift |
| 287 | Turner |
| 315 | Wilcox |
| 321 | Worth |

| | |
|---|---|
| **03** | **Central** |
| 009 | Baldwin |
| 021 | Bibb |
| 023 | Bleckley |
| 033 | Burke |
| 035 | Butts |
| 037 | Calhoun |
| 053 | Chattahoochee |
| 061 | Clay |
| 073 | Columbia |
| 079 | Crawford |
| 095 | Dougherty |
| 125 | Glascock |
| 133 | Greene |
| 141 | Hancock |
| 145 | Harris |
| 153 | Houston |
| 159 | Jasper |
| 163 | Jefferson |
| 169 | Jones |
| 171 | Lamar |
| 177 | Lee |
| 181 | Lincoln |
| 189 | McDuffie |
| 193 | Macon |
| 197 | Marion |
| 207 | Monroe |
| 211 | Morgan |
| 215 | Muscogee |
| 225 | Peach |
| 231 | Pike |
| 235 | Pulaski |
| 237 | Putnam |
| 239 | Quitman |
| 243 | Randolph |
| 245 | Richmond |
| 249 | Schley |
| 259 | Stewart |

| | |
|---|---|
| 261 | Sumter |
| 263 | Talbot |
| 265 | Taliaferro |
| 269 | Taylor |
| 273 | Terrell |
| 289 | Twiggs |
| 293 | Upson |
| 301 | Warren |
| 303 | Washington |
| 307 | Webster |
| 317 | Wilkes |
| 319 | Wilkinson |

| **04** | **North Central** |
|---|---|
| 011 | Banks |
| 013 | Barrow |
| 045 | Carroll |
| 059 | Clarke |
| 063 | Clayton |
| 067 | Cobb |
| 077 | Coweta |
| 089 | DeKalb |
| 097 | Douglas |
| 105 | Elbert |
| 113 | Fayette |
| 117 | Forsyth |
| 119 | Franklin |
| 121 | Fulton |
| 135 | Gwinnett |
| 139 | Hall |
| 143 | Haralson |
| 147 | Hart |
| 149 | Heard |
| 151 | Henry |
| 157 | Jackson |
| 195 | Madison |
| 199 | Meriwether |
| 217 | Newton |
| 219 | Oconee |
| 221 | Oglethorpe |
| 223 | Paulding |
| 233 | Polk |
| 247 | Rockdale |
| 255 | Spalding |
| 285 | Troup |
| 297 | Walton |

| **05** | **Northern** |
|---|---|
| 015 | Bartow |
| 047 | Catoosa |
| 055 | Chattooga |
| 057 | Cherokee |
| 083 | Dade |
| 085 | Dawson |
| 111 | Fannin |
| 115 | Floyd |
| 123 | Gilmer |
| 129 | Gordon |
| 137 | Habersham |
| 187 | Lumpkin |
| 213 | Murray |
| 227 | Pickens |
| 241 | Rabun |
| 257 | Stephens |
| 281 | Towns |
| 291 | Union |
| 295 | Walker |
| 311 | White |
| 313 | Whitfield |

| **15** | **Hawaii** |
|---|---|
| 001 | Hawaii |
| 003 | Honolulu |
| 005 | Kalawao |
| 007 | Kauai |
| 009 | Maui |

| **16** | **Idaho** |
|---|---|
| **01** | **Northern** |
| 009 | Benewah |
| 017 | Bonner |
| 021 | Boundary |
| 035 | Clearwater |
| 049 | Idaho |
| 055 | Kootenai |
| 057 | Latah |
| 061 | Lewis |
| 069 | Nez Perce |
| 079 | Shoshone |
| **02** | **Southeastern** |
| 001 | Ada |
| 003 | Adams |
| 015 | Boise |
| 027 | Canyon |
| 039 | Elmore |
| 045 | Gem |
| 073 | Owyhee |
| 075 | Payette |
| 085 | Valley |
| 087 | Washington |
| **03** | **Southwestern** |
| 005 | Bannock |
| 007 | Bear Lake |
| 011 | Bingham |
| 013 | Blaine |
| 019 | Bonneville |
| 023 | Butte |
| 025 | Camas |
| 029 | Caribou |
| 031 | Cassia |
| 033 | Clark |
| 037 | Custer |

| | |
|---|---|
| 041 | Franklin |
| 043 | Fremont |
| 047 | Gooding |
| 051 | Jefferson |
| 053 | Jerome |
| 059 | Lemhi |
| 063 | Lincoln |
| 065 | Madison |
| 067 | Minidoka |
| 071 | Oneida |
| 077 | Power |
| 081 | Teton |
| 083 | Twin Falls |
| 089 | Yellowstone National Park |

| | |
|---|---|
| **17** | **Ilinois** |
| **01** | **Southern** |
| 003 | Alexander |
| 055 | Franklin |
| 059 | Gallatin |
| 065 | Hamilton |
| 069 | Hardin |
| 077 | Jackson |
| 087 | Johnson |
| 127 | Massac |
| 145 | Perry |
| 151 | Pope |
| 153 | Pulaski |
| 157 | Randolph |
| 165 | Saline |
| 181 | Union |
| 193 | White |
| 199 | Williamson |
| **02** | **Claypan** |
| 005 | Bond |
| 013 | Calhoun |
| 023 | Clark |
| 025 | Clay |
| 027 | Clinton |
| 033 | Crawford |
| 035 | Cumberland |
| 047 | Edwards |
| 049 | Effingham |
| 051 | Fayette |
| 061 | Greene |
| 079 | Jasper |
| 081 | Jefferson |
| 083 | Jersey |
| 101 | Lawrence |
| 117 | Macoupin |
| 119 | Madison |
| 121 | Marion |
| 133 | Monroe |
| 135 | Montgomery |
| 159 | Richland |
| 163 | St. Clair |
| 173 | Shelby |
| 185 | Wabash |
| 189 | Washington |
| 191 | Wayne |
| **03** | **Prairie** |
| 001 | Adams |
| 007 | Boone |
| 009 | Brown |
| 011 | Bureau |
| 015 | Carroll |
| 017 | Cass |
| 019 | Champaign |
| 021 | Christian |
| 029 | Coles |
| 031 | Cook |
| 037 | DeKalb |
| 039 | De Witt |
| 041 | Douglas |
| 043 | DuPage |
| 045 | Edgar |
| 053 | Ford |
| 057 | Fulton |
| 063 | Grundy |
| 067 | Hancock |
| 071 | Henderson |
| 073 | Henry |
| 075 | Iroquois |
| 085 | Jo Daviess |
| 089 | Kane |
| 091 | Kankakee |
| 093 | Kendall |
| 095 | Knox |
| 097 | Lake |
| 099 | La Salle |
| 103 | Lee |
| 105 | Livingston |
| 107 | Logan |
| 109 | McDonough |
| 111 | McHenry |
| 113 | McLean |
| 115 | Macon |
| 123 | Marshall |
| 125 | Mason |
| 129 | Menard |
| 131 | Mercer |
| 137 | Morgan |
| 139 | Moultrie |
| 141 | Ogle |
| 143 | Peoria |
| 147 | Piatt |
| 149 | Pike |
| 155 | Putnam |
| 161 | Rock Island |
| 167 | Sangamon |
| 169 | Schuyler |
| 171 | Scott |

| | |
|---|---|
| 175 | Stark |
| 177 | Stephenson |
| 179 | Tazewell |
| 183 | Vermilion |
| 187 | Warren |
| 195 | Whiteside |
| 197 | Will |
| 201 | Winnebago |
| 203 | Woodford |

| **18** | **Indiana** |
|---|---|
| **01** | **Lower Wabash** |
| 021 | Clay |
| 027 | Daviess |
| 051 | Gibson |
| 055 | Greene |
| 083 | Knox |
| 101 | Martin |
| 121 | Parke |
| 125 | Pike |
| 129 | Posey |
| 133 | Putnam |
| 153 | Sullivan |
| 163 | Vanderburgh |
| 165 | Vermillion |
| 167 | Vigo |
| **02** | **Knobs** |
| 013 | Brown |
| 019 | Clark |
| 025 | Crawford |
| 037 | Dubois |
| 043 | Floyd |
| 061 | Harrison |
| 071 | Jackson |
| 093 | Lawrence |
| 105 | Monroe |
| 109 | Morgan |
| 117 | Orange |
| 119 | Owen |
| 123 | Perry |
| 143 | Scott |
| 147 | Spencer |
| 173 | Warrick |
| 175 | Washington |
| **03** | **Upland Flats** |
| 029 | Dearborn |
| 041 | Fayette |
| 047 | Franklin |
| 077 | Jefferson |
| 079 | Jennings |
| 115 | Ohio |
| 137 | Ripley |
| 155 | Switzerland |
| 161 | Union |
| **04** | **Northern** |
| 001 | Adams |
| 003 | Allen |
| 005 | Bartholomew |
| 007 | Benton |
| 009 | Blackford |
| 011 | Boone |
| 015 | Carroll |
| 017 | Cass |
| 023 | Clinton |
| 031 | Decatur |
| 033 | De Kalb |
| 035 | Delaware |
| 039 | Elkhart |
| 045 | Fountain |
| 049 | Fulton |
| 053 | Grant |
| 057 | Hamilton |
| 059 | Hancock |
| 063 | Hendricks |
| 065 | Henry |
| 067 | Howard |
| 069 | Huntington |
| 073 | Jasper |
| 075 | Jay |
| 081 | Johnson |
| 085 | Kosciusko |
| 087 | Lagrange |
| 089 | Lake |
| 091 | La Porte |
| 095 | Madison |
| 097 | Marion |
| 099 | Marshall |
| 103 | Miami |
| 107 | Montgomery |
| 111 | Newton |
| 113 | Noble |
| 127 | Porter |
| 131 | Pulaski |
| 135 | Randolph |
| 139 | Rush |
| 141 | St. Joseph |
| 145 | Shelby |
| 149 | Starke |
| 151 | Steuben |
| 157 | Tippecanoe |
| 159 | Tipton |
| 169 | Wabash |
| 171 | Warren |
| 177 | Wayne |
| 179 | Wells |
| 181 | White |
| 183 | Whitley |

| **19** | **Iowa** |
|---|---|
| **01** | **Northeastern** |
| 005 | Allamakee |

| | |
|---|---|
| 011 | Benton |
| 013 | Black Hawk |
| 017 | Bremer |
| 019 | Buchanan |
| 023 | Butler |
| 031 | Cedar |
| 037 | Chickasaw |
| 043 | Clayton |
| 045 | Clinton |
| 055 | Delaware |
| 061 | Dubuque |
| 065 | Fayette |
| 067 | Floyd |
| 075 | Grundy |
| 089 | Howard |
| 097 | Jackson |
| 103 | Johnson |
| 105 | Jones |
| 113 | Linn |
| 131 | Mitchell |
| 163 | Scott |
| 171 | Tama |
| 191 | Winneshiek |

| | |
|---|---|
| **02** | **Southeastern** |
| 007 | Appanoose |
| 015 | Boone |
| 039 | Clarke |
| 049 | Dallas |
| 051 | Davis |
| 053 | Decatur |
| 057 | Des Moines |
| 077 | Guthrie |
| 079 | Hamilton |
| 083 | Hardin |
| 087 | Henry |
| 095 | Iowa |
| 099 | Jasper |
| 101 | Jefferson |
| 107 | Keokuk |
| 111 | Lee |
| 115 | Louisa |
| 117 | Lucas |
| 121 | Madison |
| 123 | Mahaska |
| 125 | Marion |
| 127 | Marshall |
| 135 | Monroe |
| 139 | Muscatine |
| 153 | Polk |
| 157 | Poweshiek |
| 169 | Story |
| 177 | Van Buren |
| 179 | Wapello |
| 181 | Warren |
| 183 | Washington |
| 185 | Wayne |
| 187 | Webster |

| | |
|---|---|
| **03** | **Southwestern** |
| 001 | Adair |
| 003 | Adams |
| 009 | Audubon |
| 027 | Carroll |
| 029 | Cass |
| 047 | Crawford |
| 071 | Fremont |
| 073 | Greene |
| 085 | Harrison |
| 129 | Mills |
| 133 | Monona |
| 137 | Montgomery |
| 145 | Page |
| 155 | Pottawattamie |
| 159 | Ringgold |
| 165 | Shelby |
| 173 | Taylor |
| 175 | Union |
| 193 | Woodbury |

| | |
|---|---|
| **04** | **Northwestern** |
| 021 | Buena Vista |
| 025 | Calhoun |
| 033 | Cerro Gordo |
| 035 | Cherokee |
| 041 | Clay |
| 059 | Dickinson |
| 063 | Emmet |
| 069 | Franklin |
| 081 | Hancock |
| 091 | Humboldt |
| 093 | Ida |
| 109 | Kossuth |
| 119 | Lyon |
| 141 | O'Brien |
| 143 | Osceola |
| 147 | Palo Alto |
| 149 | Plymouth |
| 151 | Pocahontas |
| 161 | Sac |
| 167 | Sioux |
| 189 | Winnebago |
| 195 | Worth |
| 197 | Wright |

| | |
|---|---|
| **20** | **Kansas** |
| **01** | **Northeastern** |
| 005 | Atchison |
| 013 | Brown |
| 027 | Clay |
| 041 | Dickinson |
| 043 | Doniphan |
| 045 | Douglas |
| 059 | Franklin |

| | |
|---|---|
| 061 | Geary |
| 085 | Jackson |
| 087 | Jefferson |
| 091 | Johnson |
| 103 | Leavenworth |
| 117 | Marshall |
| 121 | Miami |
| 131 | Nemaha |
| 139 | Osage |
| 149 | Pottawatomie |
| 161 | Riley |
| 177 | Shawnee |
| 197 | Wabaunsee |
| 201 | Washington |
| 209 | Wyandotte |

| | |
|---|---|
| **02** | **Southeastern** |
| 001 | Allen |
| 003 | Anderson |
| 011 | Bourbon |
| 015 | Butler |
| 017 | Chase |
| 019 | Chautauqua |
| 021 | Cherokee |
| 031 | Coffey |
| 035 | Cowley |
| 037 | Crawford |
| 049 | Elk |
| 073 | Greenwood |
| 099 | Labette |
| 107 | Linn |
| 111 | Lyon |
| 115 | Marion |
| 125 | Montgomery |
| 127 | Morris |
| 133 | Neosho |
| 205 | Wilson |
| 207 | Woodson |

| | |
|---|---|
| **03** | **Western** |
| 007 | Barber |
| 009 | Barton |
| 023 | Cheyenne |
| 025 | Clark |
| 029 | Cloud |
| 033 | Comanche |
| 039 | Decatur |
| 047 | Edwards |
| 051 | Ellis |
| 053 | Ellsworth |
| 055 | Finney |
| 057 | Ford |
| 063 | Gove |
| 065 | Graham |
| 067 | Grant |
| 069 | Gray |
| 071 | Greeley |
| 075 | Hamilton |
| 077 | Harper |
| 079 | Harvey |
| 081 | Haskell |
| 083 | Hodgeman |
| 089 | Jewell |
| 093 | Kearny |
| 095 | Kingman |
| 097 | Kiowa |
| 101 | Lane |
| 105 | Lincoln |
| 109 | Logan |
| 113 | McPherson |
| 119 | Meade |
| 123 | Mitchell |
| 129 | Morton |
| 135 | Ness |
| 137 | Norton |
| 141 | Osborne |
| 143 | Ottawa |
| 145 | Pawnee |
| 147 | Phillips |
| 151 | Pratt |
| 153 | Rawlins |
| 155 | Reno |
| 157 | Republic |
| 159 | Rice |
| 163 | Rooks |
| 165 | Rush |
| 167 | Russell |
| 169 | Saline |
| 171 | Scott |
| 173 | Sedgwick |
| 175 | Seward |
| 179 | Sheridan |
| 181 | Sherman |
| 183 | Smith |
| 185 | Stafford |
| 187 | Stanton |
| 189 | Stevens |
| 191 | Sumner |
| 193 | Thomas |
| 195 | Trego |
| 199 | Wallace |
| 203 | Wichita |

| | |
|---|---|
| **21** | **Kentucky** |
| **01** | **Eastern** |
| 071 | Floyd |
| 095 | Harlan |
| 119 | Knott |
| 131 | Leslie |
| 133 | Letcher |
| 159 | Martin |
| 193 | Perry |
| 195 | Pike |

| | |
|---|---|
| **02** | **Northern Cumberland** |
| 019 | Boyd |
| 043 | Carter |
| 063 | Elliott |
| 089 | Greenup |
| 115 | Johnson |
| 127 | Lawrence |
| 135 | Lewis |
| 153 | Magoffin |
| 165 | Menifee |
| 175 | Morgan |
| 197 | Powell |
| 205 | Rowan |
| 237 | Wolfe |
| | |
| **03** | **Southern Cumberland** |
| 013 | Bell |
| 025 | Breathitt |
| 051 | Clay |
| 065 | Estill |
| 109 | Jackson |
| 121 | Knox |
| 125 | Laurel |
| 129 | Lee |
| 147 | McCreary |
| 189 | Owsley |
| 203 | Rockcastle |
| 235 | Whitley |
| | |
| **04** | **Bluegrass** |
| 005 | Anderson |
| 011 | Bath |
| 015 | Boone |
| 017 | Bourbon |
| 021 | Boyle |
| 023 | Bracken |
| 037 | Campbell |
| 041 | Carroll |
| 049 | Clark |
| 067 | Fayette |
| 069 | Fleming |
| 073 | Franklin |
| 077 | Gallatin |
| 079 | Garrard |
| 081 | Grant |
| 097 | Harrison |
| 103 | Henry |
| 111 | Jefferson |
| 113 | Jessamine |
| 117 | Kenton |
| 137 | Lincoln |
| 151 | Madison |
| 161 | Mason |
| 167 | Mercer |
| 173 | Montgomery |
| 181 | Nicholas |
| 185 | Oldham |
| 187 | Owen |
| 191 | Pendleton |
| 201 | Robertson |
| 209 | Scott |
| 211 | Shelby |
| 215 | Spencer |
| 223 | Trimble |
| 229 | Washington |
| 239 | Woodford |
| | |
| **05** | **Pennyroyal** |
| 001 | Adair |
| 027 | Breckinridge |
| 029 | Bullitt |
| 045 | Casey |
| 053 | Clinton |
| 057 | Cumberland |
| 085 | Grayson |
| 087 | Green |
| 091 | Hancock |
| 093 | Hardin |
| 099 | Hart |
| 123 | Larue |
| 155 | Marion |
| 163 | Meade |
| 169 | Metcalfe |
| 179 | Nelson |
| 199 | Pulaski |
| 207 | Russell |
| 217 | Taylor |
| 231 | Wayne |
| | |
| **06** | **Western Coalfield** |
| 003 | Allen |
| 009 | Barren |
| 031 | Butler |
| 033 | Caldwell |
| 047 | Christian |
| 055 | Crittenden |
| 059 | Daviess |
| 061 | Edmonson |
| 101 | Henderson |
| 107 | Hopkins |
| 141 | Logan |
| 149 | McLean |
| 171 | Monroe |
| 177 | Muhlenberg |
| 183 | Ohio |
| 213 | Simpson |
| 219 | Todd |
| 225 | Union |
| 227 | Warren |
| 233 | Webster |
| | |
| **07** | **Western** |
| 007 | Ballard |
| 035 | Calloway |

| | |
|---|---|
| 039 | Carlisle |
| 075 | Fulton |
| 083 | Graves |
| 105 | Hickman |
| 139 | Livingston |
| 143 | Lyon |
| 145 | McCracken |
| 157 | Marshall |
| 221 | Trigg |

**22 Louisiana**

| | |
|---|---|
| **01** | **North Delta** |
| 025 | Catahoula |
| 029 | Concordia |
| 035 | East Carroll |
| 041 | Franklin |
| 065 | Madison |
| 067 | Morehouse |
| 083 | Richland |
| 107 | Tensas |
| 123 | West Carroll |
| **02** | **South Delta** |
| 001 | Acadia |
| 005 | Ascension |
| 007 | Assumption |
| 009 | Avoyelles |
| 023 | Cameron |
| 045 | Iberia |
| 047 | Iberville |
| 051 | Jefferson |
| 055 | Lafayette |
| 057 | Lafourche |
| 071 | Orleans |
| 075 | Plaquemines |
| 077 | Pointe Coupee |
| 087 | St. Bernard |
| 089 | St. Charles |
| 093 | St. James |
| 095 | St. John the Baptist |
| 097 | St. Landry |
| 099 | St. Martin |
| 101 | St. Mary |
| 109 | Terrebonne |
| 113 | Vermilion |
| 121 | West Baton Rouge |
| 125 | West Feliciana |
| **03** | **Southwest** |
| 003 | Allen |
| 011 | Beauregard |
| 019 | Calcasieu |
| 039 | Evangeline |
| 043 | Grant |
| 053 | Jefferson Davis |
| 059 | La Salle |
| 069 | Natchitoches |
| 079 | Rapides |
| 085 | Sabine |
| 115 | Vernon |
| **04** | **Southeast** |
| 033 | East Baton Rouge |
| 037 | East Feliciana |
| 063 | Livingston |
| 091 | St. Helena |
| 103 | St. Tammany |
| 105 | Tangipahoa |
| 117 | Washington |
| **05** | **Northwest** |
| 013 | Bienville |
| 015 | Bossier |
| 017 | Caddo |
| 021 | Caldwell |
| 027 | Claiborne |
| 031 | De Soto |
| 049 | Jackson |
| 061 | Lincoln |
| 073 | Ouachita |
| 081 | Red River |
| 111 | Union |
| 119 | Webster |
| 127 | Winn |

**23 Maine**

| | |
|---|---|
| **01** | **Washington** |
| 029 | Washington |
| **02** | **Aroostook** |
| 003 | Aroostook |
| **03** | **Penobscot** |
| 019 | Penobscot |
| **04** | **Hancock** |
| 009 | Hancock |
| **05** | **Piscataquis** |
| 021 | Piscataquis |
| **06** | **Capitol Region** |
| 011 | Kennebec |
| 013 | Knox |
| 015 | Lincoln |
| 027 | Waldo |
| **07** | **Somerset** |
| 025 | Somerset |
| **08** | **Casco Bay** |
| 001 | Androscoggin |
| 005 | Cumberland |
| 023 | Sagadahoc |

| | |
|---|---|
| 031 | York |
| | |
| **09** | **Western Maine** |
| 007 | Franklin |
| 017 | Oxford |
| | |
| **24** | **Maryland** |
| **02** | **Central** |
| 003 | Anne Arundel |
| 005 | Baltimore |
| 011 | Caroline |
| 013 | Carroll |
| 015 | Cecil |
| 021 | Frederick |
| 025 | Harford |
| 027 | Howard |
| 029 | Kent |
| 031 | Montgomery |
| 033 | Prince George's |
| 035 | Queen Anne's |
| 041 | Talbot |
| 043 | Washington |
| 510 | Baltimore city |
| | |
| **03** | **Southern** |
| 009 | Calvert |
| 017 | Charles |
| 037 | St. Mary's |
| | |
| **04** | **Lower Eastern Shore** |
| 019 | Dorchester |
| 039 | Somerset |
| 045 | Wicomico |
| 047 | Worcester |
| | |
| **05** | **Western** |
| 001 | Allegany |
| 023 | Garrett |
| | |
| **25** | **Massachusetts** |
| **01** | **State** |
| 001 | Barnstable |
| 003 | Berkshire |
| 005 | Bristol |
| 007 | Dukes |
| 009 | Essex |
| 011 | Franklin |
| 013 | Hampden |
| 015 | Hampshire |
| 017 | Middlesex |
| 019 | Nantucket |
| 021 | Norfolk |
| 023 | Plymouth |
| 025 | Suffolk |
| 027 | Worcester |
| | |
| **26** | **Michigan** |
| **01** | **Eastern Upper Peninsula** |
| 003 | Alger |
| 033 | Chippewa |
| 041 | Delta |
| 095 | Luce |
| 097 | Mackinac |
| 109 | Menominee |
| 153 | Schoolcraft |
| | |
| **02** | **Western Upper Peninsula** |
| 013 | Baraga |
| 043 | Dickinson |
| 053 | Gogebic |
| 061 | Houghton |
| 071 | Iron |
| 083 | Keweenaw |
| 103 | Marquette |
| 131 | Ontonagon |
| | |
| **03** | **Northern Lower Peninsula** |
| 001 | Alcona |
| 007 | Alpena |
| 009 | Antrim |
| 011 | Arenac |
| 017 | Bay |
| 019 | Benzie |
| 029 | Charlevoix |
| 031 | Cheboygan |
| 035 | Clare |
| 039 | Crawford |
| 047 | Emmet |
| 051 | Gladwin |
| 055 | Grand Traverse |
| 069 | Iosco |
| 073 | Isabella |
| 079 | Kalkaska |
| 085 | Lake |
| 089 | Leelanau |
| 101 | Manistee |
| 105 | Mason |
| 107 | Mecosta |
| 111 | Midland |
| 113 | Missaukee |
| 119 | Montmorency |
| 123 | Newaygo |
| 127 | Oceana |
| 129 | Ogemaw |
| 133 | Osceola |
| 135 | Oscoda |
| 137 | Otsego |
| 141 | Presque Isle |
| 143 | Roscommon |
| 165 | Wexford |
| | |
| **04** | **Southern Lower Peninsula** |
| 005 | Allegan |
| 015 | Barry |

| | |
|---|---|
| 021 | Berrien |
| 023 | Branch |
| 025 | Calhoun |
| 027 | Cass |
| 037 | Clinton |
| 045 | Eaton |
| 049 | Genesee |
| 057 | Gratiot |
| 059 | Hillsdale |
| 063 | Huron |
| 065 | Ingham |
| 067 | Ionia |
| 075 | Jackson |
| 077 | Kalamazoo |
| 081 | Kent |
| 087 | Lapeer |
| 091 | Lenawee |
| 093 | Livingston |
| 099 | Macomb |
| 115 | Monroe |
| 117 | Montcalm |
| 121 | Muskegon |
| 125 | Oakland |
| 139 | Ottawa |
| 145 | Saginaw |
| 147 | St. Clair |
| 149 | St. Joseph |
| 151 | Sanilac |
| 155 | Shiawassee |
| 157 | Tuscola |
| 159 | Van Buren |
| 161 | Washtenaw |
| 163 | Wayne |

| | |
|---|---|
| **27** | **Minnesota** |
| **01** | **Aspen-Birch** |
| 017 | Carlton |
| 031 | Cook |
| 071 | Koochiching |
| 075 | Lake |
| 137 | St. Louis |
| | |
| **02** | **Northern Pine** |
| 001 | Aitkin |
| 005 | Becker |
| 007 | Beltrami |
| 021 | Cass |
| 029 | Clearwater |
| 035 | Crow Wing |
| 057 | Hubbard |
| 061 | Itasca |
| 077 | Lake of the Woods |
| 087 | Mahnomen |
| 135 | Roseau |
| 159 | Wadena |
| | |
| **03** | **Central Hardwood** |
| 003 | Anoka |
| 009 | Benton |
| 019 | Carver |
| 025 | Chisago |
| 037 | Dakota |
| 041 | Douglas |
| 045 | Fillmore |
| 049 | Goodhue |
| 053 | Hennepin |
| 055 | Houston |
| 059 | Isanti |
| 065 | Kanabec |
| 079 | Le Sueur |
| 095 | Mille Lacs |
| 097 | Morrison |
| 109 | Olmsted |
| 111 | Otter Tail |
| 115 | Pine |
| 123 | Ramsey |
| 131 | Rice |
| 139 | Scott |
| 141 | Sherburne |
| 145 | Stearns |
| 153 | Todd |
| 157 | Wabasha |
| 163 | Washington |
| 169 | Winona |
| 171 | Wright |
| | |
| **04** | **Prairie** |
| 011 | Big Stone |
| 013 | Blue Earth |
| 015 | Brown |
| 023 | Chippewa |
| 027 | Clay |
| 033 | Cottonwood |
| 039 | Dodge |
| 043 | Faribault |
| 047 | Freeborn |
| 051 | Grant |
| 063 | Jackson |
| 067 | Kandiyohi |
| 069 | Kittson |
| 073 | Lac qui Parle |
| 081 | Lincoln |
| 083 | Lyon |
| 085 | McLeod |
| 089 | Marshall |
| 091 | Martin |
| 093 | Meeker |
| 099 | Mower |
| 101 | Murray |
| 103 | Nicollet |
| 105 | Nobles |
| 107 | Norman |
| 113 | Pennington |
| 117 | Pipestone |

| | |
|---|---|
| 119 | Polk |
| 121 | Pope |
| 125 | Red Lake |
| 127 | Redwood |
| 129 | Renville |
| 133 | Rock |
| 143 | Sibley |
| 147 | Steele |
| 149 | Stevens |
| 151 | Swift |
| 155 | Traverse |
| 161 | Waseca |
| 165 | Watonwan |
| 167 | Wilkin |
| 173 | Yellow Medicine |

| **28** | **Mississippi** |
|---|---|
| **01** | **Delta** |
| 011 | Bolivar |
| 027 | Coahoma |
| 051 | Holmes |
| 053 | Humphreys |
| 055 | Issaquena |
| 083 | Leflore |
| 119 | Quitman |
| 125 | Sharkey |
| 133 | Sunflower |
| 135 | Tallahatchie |
| 143 | Tunica |
| 149 | Warren |
| 151 | Washington |
| 163 | Yazoo |
| **02** | **North** |
| 003 | Alcorn |
| 009 | Benton |
| 013 | Calhoun |
| 015 | Carroll |
| 017 | Chickasaw |
| 019 | Choctaw |
| 025 | Clay |
| 033 | DeSoto |
| 043 | Grenada |
| 057 | Itawamba |
| 071 | Lafayette |
| 081 | Lee |
| 087 | Lowndes |
| 093 | Marshall |
| 095 | Monroe |
| 097 | Montgomery |
| 105 | Oktibbeha |
| 107 | Panola |
| 115 | Pontotoc |
| 117 | Prentiss |
| 137 | Tate |
| 139 | Tippah |
| 141 | Tishomingo |
| 145 | Union |
| 155 | Webster |
| 161 | Yalobusha |
| **03** | **Central** |
| 007 | Attala |
| 023 | Clarke |
| 061 | Jasper |
| 069 | Kemper |
| 075 | Lauderdale |
| 079 | Leake |
| 099 | Neshoba |
| 101 | Newton |
| 103 | Noxubee |
| 121 | Rankin |
| 123 | Scott |
| 127 | Simpson |
| 129 | Smith |
| 159 | Winston |
| **04** | **South** |
| 031 | Covington |
| 035 | Forrest |
| 039 | George |
| 041 | Greene |
| 045 | Hancock |
| 047 | Harrison |
| 059 | Jackson |
| 065 | Jefferson Davis |
| 067 | Jones |
| 073 | Lamar |
| 077 | Lawrence |
| 091 | Marion |
| 109 | Pearl River |
| 111 | Perry |
| 131 | Stone |
| 147 | Walthall |
| 153 | Wayne |
| **05** | **Southwest** |
| 001 | Adams |
| 005 | Amite |
| 021 | Claiborne |
| 029 | Copiah |
| 037 | Franklin |
| 049 | Hinds |
| 063 | Jefferson |
| 085 | Lincoln |
| 089 | Madison |
| 113 | Pike |
| 157 | Wilkinson |

| **29** | **Missouri** |
|---|---|
| **01** | **Eastern Ozarks** |
| 017 | Bollinger |
| 023 | Butler |
| 035 | Carter |

| | |
|---|---|
| 055 | Crawford |
| 065 | Dent |
| 093 | Iron |
| 123 | Madison |
| 149 | Oregon |
| 179 | Reynolds |
| 181 | Ripley |
| 187 | St. Francois |
| 203 | Shannon |
| 221 | Washington |
| 223 | Wayne |

**02 Southwestern Ozarks**

| | |
|---|---|
| 009 | Barry |
| 043 | Christian |
| 067 | Douglas |
| 091 | Howell |
| 119 | McDonald |
| 145 | Newton |
| 153 | Ozark |
| 209 | Stone |
| 213 | Taney |
| 215 | Texas |
| 225 | Webster |
| 229 | Wright |

**03 Northwestern Ozarks**

| | |
|---|---|
| 015 | Benton |
| 029 | Camden |
| 039 | Cedar |
| 059 | Dallas |
| 085 | Hickory |
| 105 | Laclede |
| 125 | Maries |
| 131 | Miller |
| 141 | Morgan |
| 161 | Phelps |
| 167 | Polk |
| 169 | Pulaski |
| 185 | St. Clair |

**04 Prairie**

| | |
|---|---|
| 001 | Adair |
| 003 | Andrew |
| 005 | Atchison |
| 007 | Audrain |
| 011 | Barton |
| 013 | Bates |
| 021 | Buchanan |
| 025 | Caldwell |
| 033 | Carroll |
| 037 | Cass |
| 041 | Chariton |
| 045 | Clark |
| 047 | Clay |
| 049 | Clinton |
| 053 | Cooper |
| 057 | Dade |
| 061 | Daviess |
| 063 | DeKalb |
| 075 | Gentry |
| 077 | Greene |
| 079 | Grundy |
| 081 | Harrison |
| 083 | Henry |
| 087 | Holt |
| 095 | Jackson |
| 097 | Jasper |
| 101 | Johnson |
| 103 | Knox |
| 107 | Lafayette |
| 109 | Lawrence |
| 111 | Lewis |
| 113 | Lincoln |
| 115 | Linn |
| 117 | Livingston |
| 121 | Macon |
| 127 | Marion |
| 129 | Mercer |
| 137 | Monroe |
| 147 | Nodaway |
| 159 | Pettis |
| 163 | Pike |
| 165 | Platte |
| 171 | Putnam |
| 173 | Ralls |
| 175 | Randolph |
| 177 | Ray |
| 195 | Saline |
| 197 | Schuyler |
| 199 | Scotland |
| 205 | Shelby |
| 211 | Sullivan |
| 217 | Vernon |
| 227 | Worth |

**05 Riverborder**

| | |
|---|---|
| 019 | Boone |
| 027 | Callaway |
| 031 | Cape Girardeau |
| 051 | Cole |
| 069 | Dunklin |
| 071 | Franklin |
| 073 | Gasconade |
| 089 | Howard |
| 099 | Jefferson |
| 133 | Mississippi |
| 135 | Moniteau |
| 139 | Montgomery |
| 143 | New Madrid |
| 151 | Osage |
| 155 | Pemiscot |
| 157 | Perry |
| 183 | St. Charles |

| | |
|---|---|
| 186 | Ste. Genevieve |
| 189 | St. Louis |
| 201 | Scott |
| 207 | Stoddard |
| 219 | Warren |
| 510 | St. Louis city |

| **30** | **Montana** |
|---|---|
| **01** | **Northwestern** |
| 029 | Flathead |
| 047 | Lake |
| 053 | Lincoln |
| 089 | Sanders |
| **02** | **Eastern** |
| 003 | Big Horn |
| 005 | Blaine |
| 009 | Carbon |
| 011 | Carter |
| 015 | Chouteau |
| 017 | Custer |
| 019 | Daniels |
| 021 | Dawson |
| 025 | Fallon |
| 027 | Fergus |
| 033 | Garfield |
| 035 | Glacier |
| 037 | Golden Valley |
| 041 | Hill |
| 051 | Liberty |
| 055 | McCone |
| 065 | Musselshell |
| 069 | Petroleum |
| 071 | Phillips |
| 073 | Pondera |
| 075 | Powder River |
| 079 | Prairie |
| 083 | Richland |
| 085 | Roosevelt |
| 087 | Rosebud |
| 091 | Sheridan |
| 095 | Stillwater |
| 097 | Sweet Grass |
| 099 | Teton |
| 101 | Toole |
| 103 | Treasure |
| 105 | Valley |
| 109 | Wibaux |
| 111 | Yellowstone |
| 113 | Yellowstone National Park |
| **03** | **Western** |
| 039 | Granite |
| 061 | Mineral |
| 063 | Missoula |
| 081 | Ravalli |
| **04** | **West Central** |
| 007 | Broadwater |
| 013 | Cascade |
| 043 | Jefferson |
| 045 | Judith Basin |
| 049 | Lewis and Clark |
| 059 | Meagher |
| 077 | Powell |
| 107 | Wheatland |
| **05** | **Southwestern** |
| 001 | Beaverhead |
| 023 | Deer Lodge |
| 031 | Gallatin |
| 057 | Madison |
| 067 | Park |
| 093 | Silver Bow |

| **31** | **Nebraska** |
|---|---|
| **01** | **Eastern** |
| 001 | Adams |
| 011 | Boone |
| 019 | Buffalo |
| 021 | Burt |
| 023 | Butler |
| 025 | Cass |
| 027 | Cedar |
| 035 | Clay |
| 037 | Colfax |
| 039 | Cuming |
| 041 | Custer |
| 043 | Dakota |
| 047 | Dawson |
| 051 | Dixon |
| 053 | Dodge |
| 055 | Douglas |
| 059 | Fillmore |
| 061 | Franklin |
| 063 | Frontier |
| 065 | Furnas |
| 067 | Gage |
| 073 | Gosper |
| 077 | Greeley |
| 079 | Hall |
| 081 | Hamilton |
| 083 | Harlan |
| 087 | Hitchcock |
| 093 | Howard |
| 095 | Jefferson |
| 097 | Johnson |
| 099 | Kearney |
| 109 | Lancaster |
| 119 | Madison |
| 121 | Merrick |
| 125 | Nance |
| 127 | Nemaha |
| 129 | Nuckolls |

| | |
|---|---|
| 131 | Otoe |
| 133 | Pawnee |
| 137 | Phelps |
| 139 | Pierce |
| 141 | Platte |
| 143 | Polk |
| 145 | Red Willow |
| 147 | Richardson |
| 151 | Saline |
| 153 | Sarpy |
| 155 | Saunders |
| 159 | Seward |
| 163 | Sherman |
| 167 | Stanton |
| 169 | Thayer |
| 173 | Thurston |
| 175 | Valley |
| 177 | Washington |
| 179 | Wayne |
| 181 | Webster |
| 185 | York |

| **02** | **Western** |
|---|---|
| 003 | Antelope |
| 005 | Arthur |
| 007 | Banner |
| 009 | Blaine |
| 013 | Box Butte |
| 015 | Boyd |
| 017 | Brown |
| 029 | Chase |
| 031 | Cherry |
| 033 | Cheyenne |
| 045 | Dawes |
| 049 | Deuel |
| 057 | Dundy |
| 069 | Garden |
| 071 | Garfield |
| 075 | Grant |
| 085 | Hayes |
| 089 | Holt |
| 091 | Hooker |
| 101 | Keith |
| 103 | Keya Paha |
| 105 | Kimball |
| 107 | Knox |
| 111 | Lincoln |
| 113 | Logan |
| 115 | Loup |
| 117 | McPherson |
| 123 | Morrill |
| 135 | Perkins |
| 149 | Rock |
| 157 | Scotts Bluff |
| 161 | Sheridan |
| 165 | Sioux |
| 171 | Thomas |
| 183 | Wheeler |

| **32** | **Nevada** |
|---|---|
| **01** | **Nevada** |
| 001 | Churchill |
| 003 | Clark |
| 005 | Douglas |
| 007 | Elko |
| 009 | Esmeralda |
| 011 | Eureka |
| 013 | Humboldt |
| 015 | Lander |
| 017 | Lincoln |
| 019 | Lyon |
| 021 | Mineral |
| 023 | Nye |
| 027 | Pershing |
| 029 | Storey |
| 031 | Washoe |
| 033 | White Pine |
| 510 | Carson City |

| **33** | **New Hampshire** |
|---|---|
| **02** | **Northern** |
| 003 | Carroll |
| 007 | Coos |
| 009 | Grafton |
| **03** | **Southern** |
| 001 | Belknap |
| 005 | Cheshire |
| 011 | Hillsborough |
| 013 | Merrimack |
| 015 | Rockingham |
| 017 | Strafford |
| 019 | Sullivan |

| **34** | **New Jersey** |
|---|---|
| **01** | **State** |
| 001 | Atlantic |
| 003 | Bergen |
| 005 | Burlington |
| 007 | Camden |
| 009 | Cape May |
| 011 | Cumberland |
| 013 | Essex |
| 015 | Gloucester |
| 017 | Hudson |
| 019 | Hunterdon |
| 021 | Mercer |
| 023 | Middlesex |
| 025 | Monmouth |
| 027 | Morris |
| 029 | Ocean |
| 031 | Passaic |
| 033 | Salem |
| 035 | Somerset |

| | |
|---|---|
| 037 | Sussex |
| 039 | Union |
| 041 | Warren |

| **35** | **New Mexico** |
|---|---|
| **01** | **Northwestern** |
| 001 | Bernalillo |
| 006 | Cibola |
| 028 | Los Alamos |
| 031 | McKinley |
| 039 | Rio Arriba |
| 043 | Sandoval |
| 045 | San Juan |
| 049 | Santa Fe |
| 055 | Taos |
| 061 | Valencia |
| **02** | **Northeastern** |
| 007 | Colfax |
| 019 | Guadalupe |
| 021 | Harding |
| 033 | Mora |
| 037 | Quay |
| 047 | San Miguel |
| 057 | Torrance |
| 059 | Union |
| **03** | **Southwestern** |
| 003 | Catron |
| 013 | Dona Ana |
| 017 | Grant |
| 023 | Hidalgo |
| 029 | Luna |
| 051 | Sierra |
| 053 | Socorro |
| **04** | **Southeastern** |
| 005 | Chaves |
| 009 | Curry |
| 011 | De Baca |
| 015 | Eddy |
| 025 | Lea |
| 027 | Lincoln |
| 035 | Otero |
| 041 | Roosevelt |

| **36** | **New York** |
|---|---|
| **01** | **Adirondack** |
| 019 | Clinton |
| 033 | Franklin |
| 045 | Jefferson |
| 089 | St. Lawrence |
| **02** | **Lake Plain** |
| 011 | Cayuga |
| 029 | Erie |
| 037 | Genesee |
| 051 | Livingston |
| 053 | Madison |
| 055 | Monroe |
| 063 | Niagara |
| 067 | Onondaga |
| 069 | Ontario |
| 073 | Orleans |
| 075 | Oswego |
| 099 | Seneca |
| 117 | Wayne |
| 121 | Wyoming |
| 123 | Yates |
| **03** | **Western Adirondack** |
| 035 | Fulton |
| 043 | Herkimer |
| 049 | Lewis |
| 065 | Oneida |
| **04** | **Eastern Adirondack** |
| 031 | Essex |
| 041 | Hamilton |
| 113 | Warren |
| **05** | **Southwest Highlands** |
| 003 | Allegany |
| 009 | Cattaraugus |
| 013 | Chautauqua |
| 101 | Steuben |
| **06** | **South-Central Highlands** |
| 007 | Broome |
| 015 | Chemung |
| 017 | Chenango |
| 023 | Cortland |
| 025 | Delaware |
| 077 | Otsego |
| 097 | Schuyler |
| 107 | Tioga |
| 109 | Tompkins |
| **07** | **Capitol District** |
| 001 | Albany |
| 021 | Columbia |
| 057 | Montgomery |
| 083 | Rensselaer |
| 091 | Saratoga |
| 093 | Schenectady |
| 115 | Washington |
| **08** | **Catskill-Lower Hudson** |
| 005 | Bronx |
| 027 | Dutchess |
| 039 | Greene |
| 047 | Kings |
| 059 | Nassau |
| 061 | New York |

| | |
|---|---|
| 071 | Orange |
| 079 | Putnam |
| 081 | Queens |
| 085 | Richmond |
| 087 | Rockland |
| 095 | Schoharie |
| 103 | Suffolk |
| 105 | Sullivan |
| 111 | Ulster |
| 119 | Westchester |

| | |
|---|---|
| **37** | **North Carolina** |
| **01** | **Southern Coastal Plain** |
| 017 | Bladen |
| 019 | Brunswick |
| 047 | Columbus |
| 051 | Cumberland |
| 061 | Duplin |
| 079 | Greene |
| 085 | Harnett |
| 093 | Hoke |
| 101 | Johnston |
| 103 | Jones |
| 105 | Lee |
| 107 | Lenoir |
| 125 | Moore |
| 129 | New Hanover |
| 133 | Onslow |
| 141 | Pender |
| 153 | Richmond |
| 155 | Robeson |
| 163 | Sampson |
| 165 | Scotland |
| 191 | Wayne |
| **02** | **Northern Coastal Plain** |
| 013 | Beaufort |
| 015 | Bertie |
| 029 | Camden |
| 031 | Carteret |
| 041 | Chowan |
| 049 | Craven |
| 053 | Currituck |
| 055 | Dare |
| 065 | Edgecombe |
| 073 | Gates |
| 083 | Halifax |
| 091 | Hertford |
| 095 | Hyde |
| 117 | Martin |
| 127 | Nash |
| 131 | Northampton |
| 137 | Pamlico |
| 139 | Pasquotank |
| 143 | Perquimans |
| 147 | Pitt |
| 177 | Tyrrell |
| 187 | Washington |
| 195 | Wilson |
| **03** | **Piedmont** |
| 001 | Alamance |
| 003 | Alexander |
| 007 | Anson |
| 025 | Cabarrus |
| 033 | Caswell |
| 035 | Catawba |
| 037 | Chatham |
| 045 | Cleveland |
| 057 | Davidson |
| 059 | Davie |
| 063 | Durham |
| 067 | Forsyth |
| 069 | Franklin |
| 071 | Gaston |
| 077 | Granville |
| 081 | Guilford |
| 097 | Iredell |
| 109 | Lincoln |
| 119 | Mecklenburg |
| 123 | Montgomery |
| 135 | Orange |
| 145 | Person |
| 149 | Polk |
| 151 | Randolph |
| 157 | Rockingham |
| 159 | Rowan |
| 161 | Rutherford |
| 167 | Stanly |
| 169 | Stokes |
| 171 | Surry |
| 179 | Union |
| 181 | Vance |
| 183 | Wake |
| 185 | Warren |
| 197 | Yadkin |
| **04** | **Mountains** |
| 005 | Alleghany |
| 009 | Ashe |
| 011 | Avery |
| 021 | Buncombe |
| 023 | Burke |
| 027 | Caldwell |
| 039 | Cherokee |
| 043 | Clay |
| 075 | Graham |
| 087 | Haywood |
| 089 | Henderson |
| 099 | Jackson |
| 111 | McDowell |
| 113 | Macon |
| 115 | Madison |
| 121 | Mitchell |

| | |
|---|---|
| 173 | Swain |
| 175 | Transylvania |
| 189 | Watauga |
| 193 | Wilkes |
| 199 | Yancey |

| **38** | **North Dakota** |
|---|---|
| **01** | **Eastern** |
| 001 | Adams |
| 003 | Barnes |
| 005 | Benson |
| 007 | Billings |
| 009 | Bottineau |
| 011 | Bowman |
| 013 | Burke |
| 015 | Burleigh |
| 017 | Cass |
| 019 | Cavalier |
| 021 | Dickey |
| 023 | Divide |
| 025 | Dunn |
| 027 | Eddy |
| 029 | Emmons |
| 031 | Foster |
| 033 | Golden Valley |
| 035 | Grand Forks |
| 037 | Grant |
| 039 | Griggs |
| 041 | Hettinger |
| 043 | Kidder |
| 045 | LaMoure |
| 047 | Logan |
| 049 | McHenry |
| 051 | McIntosh |
| 053 | McKenzie |
| 055 | McLean |
| 057 | Mercer |
| 059 | Morton |
| 061 | Mountrail |
| 063 | Nelson |
| 065 | Oliver |
| 067 | Pembina |
| 069 | Pierce |
| 071 | Ramsey |
| 073 | Ransom |
| 075 | Renville |
| 077 | Richland |
| 079 | Rolette |
| 081 | Sargent |
| 083 | Sheridan |
| 085 | Sioux |
| 087 | Slope |
| 089 | Stark |
| 091 | Steele |
| 093 | Stutsman |
| 095 | Towner |
| 097 | Traill |
| 099 | Walsh |
| 101 | Ward |
| 103 | Wells |
| 105 | Williams |

| **39** | **Ohio** |
|---|---|
| **01** | **South-Central** |
| 001 | Adams |
| 015 | Brown |
| 025 | Clermont |
| 053 | Gallia |
| 071 | Highland |
| 079 | Jackson |
| 087 | Lawrence |
| 131 | Pike |
| 141 | Ross |
| 145 | Scioto |
| **02** | **Southeastern** |
| 009 | Athens |
| 073 | Hocking |
| 105 | Meigs |
| 115 | Morgan |
| 127 | Perry |
| 163 | Vinton |
| 167 | Washington |
| **03** | **East-Central** |
| 013 | Belmont |
| 019 | Carroll |
| 031 | Coshocton |
| 059 | Guernsey |
| 067 | Harrison |
| 075 | Holmes |
| 081 | Jefferson |
| 111 | Monroe |
| 119 | Muskingum |
| 121 | Noble |
| 157 | Tuscarawas |
| **04** | **Northeastern** |
| 005 | Ashland |
| 007 | Ashtabula |
| 029 | Columbiana |
| 035 | Cuyahoga |
| 043 | Erie |
| 055 | Geauga |
| 077 | Huron |
| 085 | Lake |
| 093 | Lorain |
| 099 | Mahoning |
| 103 | Medina |
| 133 | Portage |
| 139 | Richland |
| 151 | Stark |
| 153 | Summit |
| 155 | Trumbull |

| | |
|---|---|
| 169 | Wayne |
| | |
| **05** | **Southwestern** |
| 017 | Butler |
| 023 | Clark |
| 027 | Clinton |
| 037 | Darke |
| 045 | Fairfield |
| 047 | Fayette |
| 049 | Franklin |
| 057 | Greene |
| 061 | Hamilton |
| 089 | Licking |
| 097 | Madison |
| 109 | Miami |
| 113 | Montgomery |
| 129 | Pickaway |
| 135 | Preble |
| 165 | Warren |
| | |
| **06** | **Northwestern** |
| 003 | Allen |
| 011 | Auglaize |
| 021 | Champaign |
| 033 | Crawford |
| 039 | Defiance |
| 041 | Delaware |
| 051 | Fulton |
| 063 | Hancock |
| 065 | Hardin |
| 069 | Henry |
| 083 | Knox |
| 091 | Logan |
| 095 | Lucas |
| 101 | Marion |
| 107 | Mercer |
| 117 | Morrow |
| 123 | Ottawa |
| 125 | Paulding |
| 137 | Putnam |
| 143 | Sandusky |
| 147 | Seneca |
| 149 | Shelby |
| 159 | Union |
| 161 | Van Wert |
| 171 | Williams |
| 173 | Wood |
| 175 | Wyandot |

| | |
|---|---|
| **40** | **Oklahoma** |
| **01** | **Southeast** |
| 005 | Atoka |
| 013 | Bryan |
| 023 | Choctaw |
| 029 | Coal |
| 061 | Haskell |
| 077 | Latimer |
| 079 | Le Flore |
| 089 | McCurtain |
| 121 | Pittsburg |
| 127 | Pushmataha |
| | |
| **02** | **Northeast** |
| 001 | Adair |
| 021 | Cherokee |
| 041 | Delaware |
| 091 | McIntosh |
| 097 | Mayes |
| 101 | Muskogee |
| 115 | Ottawa |
| 135 | Sequoyah |
| | |
| **03** | **Other counties** |
| 003 | Alfalfa |
| 007 | Beaver |
| 009 | Beckham |
| 011 | Blaine |
| 015 | Caddo |
| 017 | Canadian |
| 019 | Carter |
| 025 | Cimarron |
| 027 | Cleveland |
| 031 | Comanche |
| 033 | Cotton |
| 035 | Craig |
| 037 | Creek |
| 039 | Custer |
| 043 | Dewey |
| 045 | Ellis |
| 047 | Garfield |
| 049 | Garvin |
| 051 | Grady |
| 053 | Grant |
| 055 | Greer |
| 057 | Harmon |
| 059 | Harper |
| 063 | Hughes |
| 065 | Jackson |
| 067 | Jefferson |
| 069 | Johnston |
| 071 | Kay |
| 073 | Kingfisher |
| 075 | Kiowa |
| 081 | Lincoln |
| 083 | Logan |
| 085 | Love |
| 087 | McClain |
| 093 | Major |
| 095 | Marshall |
| 099 | Murray |
| 103 | Noble |
| 105 | Nowata |
| 107 | Okfuskee |
| 109 | Oklahoma |

| | |
|---|---|
| 111 | Okmulgee |
| 113 | Osage |
| 117 | Pawnee |
| 119 | Payne |
| 123 | Pontotoc |
| 125 | Pottawatomie |
| 129 | Roger Mills |
| 131 | Rogers |
| 133 | Seminole |
| 137 | Stephens |
| 139 | Texas |
| 141 | Tillman |
| 143 | Tulsa |
| 145 | Wagoner |
| 147 | Washington |
| 149 | Washita |
| 151 | Woods |
| 153 | Woodward |

| **41** | **Oregon** |
|---|---|
| **00** | **Northwest** |
| 005 | Clackamas |
| 007 | Clatsop |
| 009 | Columbia |
| 027 | Hood River |
| 047 | Marion |
| 051 | Multnomah |
| 053 | Polk |
| 057 | Tillamook |
| 067 | Washington |
| 071 | Yamhill |
| **01** | **West Central** |
| 003 | Benton |
| 039 | Lane |
| 041 | Lincoln |
| 043 | Linn |
| **02** | **Southwest** |
| 011 | Coos |
| 015 | Curry |
| 019 | Douglas |
| 029 | Jackson |
| 033 | Josephine |
| **03** | **Central** |
| 013 | Crook |
| 017 | Deschutes |
| 021 | Gilliam |
| 031 | Jefferson |
| 035 | Klamath |
| 037 | Lake |
| 055 | Sherman |
| 065 | Wasco |
| 069 | Wheeler |
| **04** | **Blue Mountains** |
| 001 | Baker |
| 023 | Grant |
| 025 | Harney |
| 045 | Malheur |
| 049 | Morrow |
| 059 | Umatilla |
| 061 | Union |
| 063 | Wallowa |

| **42** | **Pennsylvania** |
|---|---|
| **00** | **South Central** |
| 043 | Dauphin |
| 055 | Franklin |
| 057 | Fulton |
| 061 | Huntingdon |
| 067 | Juniata |
| 087 | Mifflin |
| 099 | Perry |
| 109 | Snyder |
| 119 | Union |
| **05** | **Western** |
| 003 | Allegheny |
| 005 | Armstrong |
| 007 | Beaver |
| 019 | Butler |
| 039 | Crawford |
| 049 | Erie |
| 059 | Greene |
| 063 | Indiana |
| 073 | Lawrence |
| 085 | Mercer |
| 125 | Washington |
| 129 | Westmoreland |
| **06** | **North Central/Allegheny** |
| 023 | Cameron |
| 027 | Centre |
| 031 | Clarion |
| 033 | Clearfield |
| 035 | Clinton |
| 047 | Elk |
| 053 | Forest |
| 065 | Jefferson |
| 081 | Lycoming |
| 083 | McKean |
| 105 | Potter |
| 113 | Sullivan |
| 117 | Tioga |
| 121 | Venango |
| 123 | Warren |
| **07** | **Southwestern** |
| 009 | Bedford |
| 013 | Blair |
| 021 | Cambria |
| 051 | Fayette |

| | |
|---|---|
| 111 | Somerset |

| | |
|---|---|
| **08** | **Northeastern/Pocono** |
| 015 | Bradford |
| 025 | Carbon |
| 037 | Columbia |
| 069 | Lackawanna |
| 079 | Luzerne |
| 089 | Monroe |
| 093 | Montour |
| 097 | Northumberland |
| 103 | Pike |
| 107 | Schuylkill |
| 115 | Susquehanna |
| 127 | Wayne |
| 131 | Wyoming |

| | |
|---|---|
| **09** | **Southeastern** |
| 001 | Adams |
| 011 | Berks |
| 017 | Bucks |
| 029 | Chester |
| 041 | Cumberland |
| 045 | Delaware |
| 071 | Lancaster |
| 075 | Lebanon |
| 077 | Lehigh |
| 091 | Montgomery |
| 095 | Northampton |
| 101 | Philadelphia |
| 133 | York |

| | |
|---|---|
| **44** | **Rhode Island** |
| **01** | **State** |
| 001 | Bristol |
| 003 | Kent |
| 005 | Newport |
| 007 | Providence |
| 009 | Washington |

| | |
|---|---|
| **45** | **South Carolina** |
| **01** | **Southern Coastal Plain** |
| 003 | Aiken |
| 005 | Allendale |
| 009 | Bamberg |
| 011 | Barnwell |
| 013 | Beaufort |
| 017 | Calhoun |
| 029 | Colleton |
| 035 | Dorchester |
| 049 | Hampton |
| 053 | Jasper |
| 063 | Lexington |
| 075 | Orangeburg |

| | |
|---|---|
| **02** | **Northern Coastal Plain** |
| 015 | Berkeley |
| 019 | Charleston |
| 025 | Chesterfield |
| 027 | Clarendon |
| 031 | Darlington |
| 033 | Dillon |
| 041 | Florence |
| 043 | Georgetown |
| 051 | Horry |
| 055 | Kershaw |
| 061 | Lee |
| 067 | Marion |
| 069 | Marlboro |
| 079 | Richland |
| 085 | Sumter |
| 089 | Williamsburg |

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|---|---|
| **03** | **Piedmont** |
| 001 | Abbeville |
| 007 | Anderson |
| 021 | Cherokee |
| 023 | Chester |
| 037 | Edgefield |
| 039 | Fairfield |
| 045 | Greenville |
| 047 | Greenwood |
| 057 | Lancaster |
| 059 | Laurens |
| 065 | McCormick |
| 071 | Newberry |
| 073 | Oconee |
| 077 | Pickens |
| 081 | Saluda |
| 083 | Spartanburg |
| 087 | Union |
| 091 | York |

| | |
|---|---|
| **46** | **South Dakota** |
| **01** | **Eastern** |
| 003 | Aurora |
| 005 | Beadle |
| 007 | Bennett |
| 009 | Bon Homme |
| 011 | Brookings |
| 013 | Brown |
| 015 | Brule |
| 017 | Buffalo |
| 021 | Campbell |
| 023 | Charles Mix |
| 025 | Clark |
| 027 | Clay |
| 029 | Codington |
| 031 | Corson |
| 035 | Davison |
| 037 | Day |
| 039 | Deuel |
| 041 | Dewey |
| 043 | Douglas |

| | |
|---|---|
| 045 | Edmunds |
| 049 | Faulk |
| 051 | Grant |
| 053 | Gregory |
| 055 | Haakon |
| 057 | Hamlin |
| 059 | Hand |
| 061 | Hanson |
| 065 | Hughes |
| 067 | Hutchinson |
| 069 | Hyde |
| 071 | Jackson |
| 073 | Jerauld |
| 075 | Jones |
| 077 | Kingsbury |
| 079 | Lake |
| 083 | Lincoln |
| 085 | Lyman |
| 087 | McCook |
| 089 | McPherson |
| 091 | Marshall |
| 095 | Mellette |
| 097 | Miner |
| 099 | Minnehaha |
| 101 | Moody |
| 105 | Perkins |
| 107 | Potter |
| 109 | Roberts |
| 111 | Sanborn |
| 115 | Spink |
| 117 | Stanley |
| 119 | Sully |
| 121 | Todd |
| 123 | Tripp |
| 125 | Turner |
| 127 | Union |
| 129 | Walworth |
| 135 | Yankton |
| 137 | Ziebach |

| | |
|---|---|
| **02** | **Western** |
| 019 | Butte |
| 033 | Custer |
| 047 | Fall River |
| 063 | Harding |
| 081 | Lawrence |
| 093 | Meade |
| 103 | Pennington |
| 113 | Shannon |

| | |
|---|---|
| **47** | **Tennessee** |
| **01** | **West** |
| 017 | Carroll |
| 023 | Chester |
| 033 | Crockett |
| 045 | Dyer |
| 047 | Fayette |
| 053 | Gibson |
| 069 | Hardeman |
| 075 | Haywood |
| 077 | Henderson |
| 079 | Henry |
| 095 | Lake |
| 097 | Lauderdale |
| 109 | McNairy |
| 113 | Madison |
| 131 | Obion |
| 157 | Shelby |
| 167 | Tipton |
| 183 | Weakley |

| | |
|---|---|
| **02** | **West Central** |
| 005 | Benton |
| 039 | Decatur |
| 071 | Hardin |
| 081 | Hickman |
| 083 | Houston |
| 085 | Humphreys |
| 099 | Lawrence |
| 101 | Lewis |
| 135 | Perry |
| 161 | Stewart |
| 181 | Wayne |

| | |
|---|---|
| **03** | **Central** |
| 003 | Bedford |
| 015 | Cannon |
| 021 | Cheatham |
| 027 | Clay |
| 031 | Coffee |
| 037 | Davidson |
| 041 | DeKalb |
| 043 | Dickson |
| 055 | Giles |
| 087 | Jackson |
| 103 | Lincoln |
| 111 | Macon |
| 117 | Marshall |
| 119 | Maury |
| 125 | Montgomery |
| 127 | Moore |
| 147 | Robertson |
| 149 | Rutherford |
| 159 | Smith |
| 165 | Sumner |
| 169 | Trousdale |
| 187 | Williamson |
| 189 | Wilson |

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|---|---|
| **04** | **Plateau** |
| 007 | Bledsoe |
| 013 | Campbell |
| 035 | Cumberland |
| 049 | Fentress |

| | |
|---|---|
| 051 | Franklin |
| 061 | Grundy |
| 115 | Marion |
| 129 | Morgan |
| 133 | Overton |
| 137 | Pickett |
| 141 | Putnam |
| 151 | Scott |
| 153 | Sequatchie |
| 175 | Van Buren |
| 177 | Warren |
| 185 | White |

| | |
|---|---|
| **05** | **East** |
| 001 | Anderson |
| 009 | Blount |
| 011 | Bradley |
| 019 | Carter |
| 025 | Claiborne |
| 029 | Cocke |
| 057 | Grainger |
| 059 | Greene |
| 063 | Hamblen |
| 065 | Hamilton |
| 067 | Hancock |
| 073 | Hawkins |
| 089 | Jefferson |
| 091 | Johnson |
| 093 | Knox |
| 105 | Loudon |
| 107 | McMinn |
| 121 | Meigs |
| 123 | Monroe |
| 139 | Polk |
| 143 | Rhea |
| 145 | Roane |
| 155 | Sevier |
| 163 | Sullivan |
| 171 | Unicoi |
| 173 | Union |
| 179 | Washington |

| | |
|---|---|
| **48** | **Texas** |
| **01** | **Southeast** |
| 005 | Angelina |
| 071 | Chambers |
| 185 | Grimes |
| 199 | Hardin |
| 201 | Harris |
| 225 | Houston |
| 241 | Jasper |
| 245 | Jefferson |
| 289 | Leon |
| 291 | Liberty |
| 313 | Madison |
| 339 | Montgomery |
| 351 | Newton |
| 361 | Orange |
| 373 | Polk |
| 403 | Sabine |
| 405 | San Augustine |
| 407 | San Jacinto |
| 455 | Trinity |
| 457 | Tyler |
| 471 | Walker |
| 473 | Waller |

| | |
|---|---|
| **02** | **Northeast** |
| 001 | Anderson |
| 037 | Bowie |
| 063 | Camp |
| 067 | Cass |
| 073 | Cherokee |
| 159 | Franklin |
| 183 | Gregg |
| 203 | Harrison |
| 213 | Henderson |
| 315 | Marion |
| 343 | Morris |
| 347 | Nacogdoches |
| 365 | Panola |
| 387 | Red River |
| 401 | Rusk |
| 419 | Shelby |
| 423 | Smith |
| 449 | Titus |
| 459 | Upshur |
| 467 | Van Zandt |
| 499 | Wood |

| | |
|---|---|
| | **Unsampled counties** |
| 003 | Andrews |
| 007 | Aransas |
| 009 | Archer |
| 011 | Armstrong |
| 013 | Atascosa |
| 015 | Austin |
| 017 | Bailey |
| 019 | Bandera |
| 021 | Bastrop |
| 023 | Baylor |
| 025 | Bee |
| 027 | Bell |
| 029 | Bexar |
| 031 | Blanco |
| 033 | Borden |
| 035 | Bosque |
| 039 | Brazoria |
| 041 | Brazos |
| 043 | Brewster |
| 045 | Briscoe |
| 047 | Brooks |
| 049 | Brown |
| 051 | Burleson |

| | |
|---|---|
| 053 | Burnet |
| 055 | Caldwell |
| 057 | Calhoun |
| 059 | Callahan |
| 061 | Cameron |
| 065 | Carson |
| 069 | Castro |
| 075 | Childress |
| 077 | Clay |
| 079 | Cochran |
| 081 | Coke |
| 083 | Coleman |
| 085 | Collin |
| 087 | Collingsworth |
| 089 | Colorado |
| 091 | Comal |
| 093 | Comanche |
| 095 | Concho |
| 097 | Cooke |
| 099 | Coryell |
| 101 | Cottle |
| 103 | Crane |
| 105 | Crockett |
| 107 | Crosby |
| 109 | Culberson |
| 111 | Dallam |
| 113 | Dallas |
| 115 | Dawson |
| 117 | Deaf Smith |
| 119 | Delta |
| 121 | Denton |
| 123 | DeWitt |
| 125 | Dickens |
| 127 | Dimmit |
| 129 | Donley |
| 131 | Duval |
| 133 | Eastland |
| 135 | Ector |
| 137 | Edwards |
| 139 | Ellis |
| 141 | El Paso |
| 143 | Erath |
| 145 | Falls |
| 147 | Fannin |
| 149 | Fayette |
| 151 | Fisher |
| 153 | Floyd |
| 155 | Foard |
| 157 | Fort Bend |
| 161 | Freestone |
| 163 | Frio |
| 165 | Gaines |
| 167 | Galveston |
| 169 | Garza |
| 171 | Gillespie |
| 173 | Glasscock |
| 175 | Goliad |
| 177 | Gonzales |
| 179 | Gray |
| 181 | Grayson |
| 187 | Guadalupe |
| 189 | Hale |
| 191 | Hall |
| 193 | Hamilton |
| 195 | Hansford |
| 197 | Hardeman |
| 205 | Hartley |
| 207 | Haskell |
| 209 | Hays |
| 211 | Hemphill |
| 215 | Hidalgo |
| 217 | Hill |
| 219 | Hockley |
| 221 | Hood |
| 223 | Hopkins |
| 227 | Howard |
| 229 | Hudspeth |
| 231 | Hunt |
| 233 | Hutchinson |
| 235 | Irion |
| 237 | Jack |
| 239 | Jackson |
| 243 | Jeff Davis |
| 247 | Jim Hogg |
| 249 | Jim Wells |
| 251 | Johnson |
| 253 | Jones |
| 255 | Karnes |
| 257 | Kaufman |
| 259 | Kendall |
| 261 | Kenedy |
| 263 | Kent |
| 265 | Kerr |
| 267 | Kimble |
| 269 | King |
| 271 | Kinney |
| 273 | Kleberg |
| 275 | Knox |
| 277 | Lamar |
| 279 | Lamb |
| 281 | Lampasas |
| 283 | La Salle |
| 285 | Lavaca |
| 287 | Lee |
| 293 | Limestone |
| 295 | Lipscomb |
| 297 | Live Oak |
| 299 | Llano |
| 301 | Loving |
| 303 | Lubbock |
| 305 | Lynn |
| 307 | McCulloch |
| 309 | McLennan |
| 311 | McMullen |

| | |
|---|---|
| 317 | Martin |
| 319 | Mason |
| 321 | Matagorda |
| 323 | Maverick |
| 325 | Medina |
| 327 | Menard |
| 329 | Midland |
| 331 | Milam |
| 333 | Mills |
| 335 | Mitchell |
| 337 | Montague |
| 341 | Moore |
| 345 | Motley |
| 349 | Navarro |
| 353 | Nolan |
| 355 | Nueces |
| 357 | Ochiltree |
| 359 | Oldham |
| 363 | Palo Pinto |
| 367 | Parker |
| 369 | Parmer |
| 371 | Pecos |
| 375 | Potter |
| 377 | Presidio |
| 379 | Rains |
| 381 | Randall |
| 383 | Reagan |
| 385 | Real |
| 389 | Reeves |
| 391 | Refugio |
| 393 | Roberts |
| 395 | Robertson |
| 397 | Rockwall |
| 399 | Runnels |
| 409 | San Patricio |
| 411 | San Saba |
| 413 | Schleicher |
| 415 | Scurry |
| 417 | Shackelford |
| 421 | Sherman |
| 425 | Somervell |
| 427 | Starr |
| 429 | Stephens |
| 431 | Sterling |
| 433 | Stonewall |
| 435 | Sutton |
| 437 | Swisher |
| 439 | Tarrant |
| 441 | Taylor |
| 443 | Terrell |
| 445 | Terry |
| 447 | Throckmorton |
| 451 | Tom Green |
| 453 | Travis |
| 461 | Upton |
| 463 | Uvalde |
| 465 | Val Verde |
| 469 | Victoria |
| 475 | Ward |
| 477 | Washington |
| 479 | Webb |
| 481 | Wharton |
| 483 | Wheeler |
| 485 | Wichita |
| 487 | Wilbarger |
| 489 | Willacy |
| 491 | Williamson |
| 493 | Wilson |
| 495 | Winkler |
| 497 | Wise |
| 501 | Yoakum |
| 503 | Young |
| 505 | Zapata |
| 507 | Zavala |

| | |
|---|---|
| **49** | **Utah** |
| **01** | **Northern** |
| 003 | Box Elder |
| 005 | Cache |
| 011 | Davis |
| 029 | Morgan |
| 033 | Rich |
| 035 | Salt Lake |
| 043 | Summit |
| 045 | Tooele |
| 049 | Utah |
| 051 | Wasatch |
| 057 | Weber |
| **02** | **Uinta** |
| 009 | Daggett |
| 013 | Duchesne |
| 047 | Uintah |
| **03** | **Central** |
| 023 | Juab |
| 027 | Millard |
| 031 | Piute |
| 039 | Sanpete |
| 041 | Sevier |
| 055 | Wayne |
| **04** | **Eastern** |
| 007 | Carbon |
| 015 | Emery |
| 019 | Grand |
| 037 | San Juan |
| **05** | **Southwestern** |
| 001 | Beaver |
| 017 | Garfield |
| 021 | Iron |
| 025 | Kane |
| 053 | Washington |

| 50 | Vermont |
|---|---|
| **02** | **Northern** |
| 005 | Caledonia |
| 009 | Essex |
| 011 | Franklin |
| 013 | Grand Isle |
| 015 | Lamoille |
| 017 | Orange |
| 019 | Orleans |
| 023 | Washington |
| **03** | **Southern** |
| 001 | Addison |
| 003 | Bennington |
| 007 | Chittenden |
| 021 | Rutland |
| 025 | Windham |
| 027 | Windsor |

| 51 | Virginia |
|---|---|
| **01** | **Coastal Plain** |
| 001 | Accomack |
| 025 | Brunswick |
| 033 | Caroline |
| 036 | Charles City |
| 041 | Chesterfield |
| 053 | Dinwiddie |
| 057 | Essex |
| 073 | Gloucester |
| 081 | Greensville |
| 085 | Hanover |
| 087 | Henrico |
| 093 | Isle Of Wight |
| 095 | James City |
| 097 | King And Queen |
| 099 | King George |
| 101 | King William |
| 103 | Lancaster |
| 115 | Mathews |
| 119 | Middlesex |
| 127 | New Kent |
| 131 | Northampton |
| 133 | Northumberland |
| 149 | Prince George |
| 159 | Richmond |
| 175 | Southampton |
| 181 | Surry |
| 183 | Sussex |
| 193 | Westmoreland |
| 199 | York |
| 550 | Chesapeake city |
| 650 | Hampton city |
| 700 | Newport News city |
| 800 | Suffolk city |
| 810 | Virginia Beach city |
| **02** | **Southern Piedmont** |
| 007 | Amelia |
| 011 | Appomattox |
| 019 | Bedford |
| 029 | Buckingham |
| 031 | Campbell |
| 037 | Charlotte |
| 049 | Cumberland |
| 067 | Franklin |
| 083 | Halifax |
| 089 | Henry |
| 111 | Lunenburg |
| 117 | Mecklenburg |
| 135 | Nottoway |
| 141 | Patrick |
| 143 | Pittsylvania |
| 145 | Powhatan |
| 147 | Prince Edward |
| **03** | **Northern Piedmont** |
| 003 | Albemarle |
| 009 | Amherst |
| 013 | Arlington |
| 047 | Culpeper |
| 059 | Fairfax |
| 061 | Fauquier |
| 065 | Fluvanna |
| 075 | Goochland |
| 079 | Greene |
| 107 | Loudoun |
| 109 | Louisa |
| 113 | Madison |
| 125 | Nelson |
| 137 | Orange |
| 153 | Prince William |
| 157 | Rappahannock |
| 177 | Spotsylvania |
| 179 | Stafford |
| **04** | **Northern Mountains** |
| 005 | Alleghany |
| 015 | Augusta |
| 017 | Bath |
| 023 | Botetourt |
| 043 | Clarke |
| 045 | Craig |
| 069 | Frederick |
| 091 | Highland |
| 139 | Page |
| 161 | Roanoke |
| 163 | Rockbridge |
| 165 | Rockingham |
| 171 | Shenandoah |
| 187 | Warren |
| **05** | **Southern Mountains** |
| 021 | Bland |

| | |
|---|---|
| 027 | Buchanan |
| 035 | Carroll |
| 051 | Dickenson |
| 063 | Floyd |
| 071 | Giles |
| 077 | Grayson |
| 105 | Lee |
| 121 | Montgomery |
| 155 | Pulaski |
| 167 | Russell |
| 169 | Scott |
| 173 | Smyth |
| 185 | Tazewell |
| 191 | Washington |
| 195 | Wise |
| 197 | Wythe |
| | **Unsampled cities** |
| 510 | Alexandria city |
| 515 | Bedford city |
| 520 | Bristol city |
| 530 | Buena Vista city |
| 540 | Charlottesville city |
| 560 | Clifton Forge city |
| 570 | Colonial Heights city |
| 580 | Covington city |
| 590 | Danville city |
| 595 | Emporia city |
| 600 | Fairfax city |
| 610 | Falls Church city |
| 620 | Franklin city |
| 630 | Fredericksburg city |
| 640 | Galax city |
| 660 | Harrisonburg city |
| 670 | Hopewell city |
| 678 | Lexington city |
| 680 | Lynchburg city |
| 683 | Manassas city |
| 685 | Manassas Park city |
| 690 | Martinsville city |
| 710 | Norfolk city |
| 720 | Norton city |
| 730 | Petersburg city |
| 735 | Poquoson city |
| 740 | Portsmouth city |
| 750 | Radford city |
| 760 | Richmond city |
| 770 | Roanoke city |
| 775 | Salem city |
| 780 | South Boston city |
| 790 | Staunton city |
| 820 | Waynesboro city |
| 830 | Williamsburg city |
| 840 | Winchester city |

| | |
|---|---|
| **53** | **Washington** |
| **05** | **Puget Sound** |
| 029 | Island |
| 033 | King |
| 035 | Kitsap |
| 053 | Pierce |
| 055 | San Juan |
| 057 | Skagit |
| 061 | Snohomish |
| 073 | Whatcom |
| **06** | **Olympic Peninsula** |
| 009 | Clallam |
| 027 | Grays Harbor |
| 031 | Jefferson |
| 045 | Mason |
| 067 | Thurston |
| **07** | **Southwest** |
| 011 | Clark |
| 015 | Cowlitz |
| 041 | Lewis |
| 049 | Pacific |
| 059 | Skamania |
| 069 | Wahkiakum |
| **08** | **Central** |
| 007 | Chelan |
| 017 | Douglas |
| 037 | Kittitas |
| 039 | Klickitat |
| 047 | Okanogan |
| 077 | Yakima |
| **09** | **Inland Empire** |
| 001 | Adams |
| 003 | Asotin |
| 005 | Benton |
| 013 | Columbia |
| 019 | Ferry |
| 021 | Franklin |
| 023 | Garfield |
| 025 | Grant |
| 043 | Lincoln |
| 051 | Pend Oreille |
| 063 | Spokane |
| 065 | Stevens |
| 071 | Walla Walla |
| 075 | Whitman |

| | |
|---|---|
| **54** | **West Virginia** |
| **02** | **Northeastern** |
| 001 | Barbour |
| 003 | Berkeley |
| 007 | Braxton |
| 023 | Grant |
| 027 | Hampshire |
| 031 | Hardy |
| 033 | Harrison |

| | |
|---|---|
| 037 | Jefferson |
| 041 | Lewis |
| 057 | Mineral |
| 065 | Morgan |
| 071 | Pendleton |
| 075 | Pocahontas |
| 077 | Preston |
| 083 | Randolph |
| 091 | Taylor |
| 093 | Tucker |
| 097 | Upshur |
| 101 | Webster |
| | |
| **03** | **Southern** |
| 005 | Boone |
| 015 | Clay |
| 019 | Fayette |
| 025 | Greenbrier |
| 039 | Kanawha |
| 045 | Logan |
| 047 | McDowell |
| 055 | Mercer |
| 059 | Mingo |
| 063 | Monroe |
| 067 | Nicholas |
| 081 | Raleigh |
| 089 | Summers |
| 109 | Wyoming |
| | |
| **04** | **Northwestern** |
| 009 | Brooke |
| 011 | Cabell |
| 013 | Calhoun |
| 017 | Doddridge |
| 021 | Gilmer |
| 029 | Hancock |
| 035 | Jackson |
| 043 | Lincoln |
| 049 | Marion |
| 051 | Marshall |
| 053 | Mason |
| 061 | Monongalia |
| 069 | Ohio |
| 073 | Pleasant |
| 079 | Putnam |
| 085 | Ritchie |
| 087 | Roane |
| 095 | Tyler |
| 099 | Wayne |
| 103 | Wetzel |
| 105 | Wirt |
| 107 | Wood |

| | |
|---|---|
| **55** | **Wisconsin** |
| **01** | **Northeastern** |
| 037 | Florence |
| 041 | Forest |
| 067 | Langlade |
| 069 | Lincoln |
| 075 | Marinette |
| 078 | Menominee |
| 083 | Oconto |
| 085 | Oneida |
| 115 | Shawano |
| 125 | Vilas |
| | |
| **02** | **Northwestern** |
| 003 | Ashland |
| 005 | Barron |
| 007 | Bayfield |
| 013 | Burnett |
| 031 | Douglas |
| 051 | Iron |
| 095 | Polk |
| 099 | Price |
| 107 | Rusk |
| 113 | Sawyer |
| 119 | Taylor |
| 129 | Washburn |
| | |
| **03** | **Central** |
| 001 | Adams |
| 017 | Chippewa |
| 019 | Clark |
| 035 | Eau Claire |
| 053 | Jackson |
| 057 | Juneau |
| 073 | Marathon |
| 077 | Marquette |
| 081 | Monroe |
| 097 | Portage |
| 135 | Waupaca |
| 137 | Waushara |
| 141 | Wood |
| | |
| **04** | **Southwestern** |
| 011 | Buffalo |
| 023 | Crawford |
| 033 | Dunn |
| 043 | Grant |
| 049 | Iowa |
| 063 | La Crosse |
| 065 | Lafayette |
| 091 | Pepin |
| 093 | Pierce |
| 103 | Richland |
| 109 | St. Croix |
| 111 | Sauk |
| 121 | Trempealeau |
| 123 | Vernon |
| | |
| **05** | **Southeastern** |
| 009 | Brown |
| 015 | Calumet |

| | |
|---|---|
| 021 | Columbia |
| 025 | Dane |
| 027 | Dodge |
| 029 | Door |
| 039 | Fond du Lac |
| 045 | Green |
| 047 | Green Lake |
| 055 | Jefferson |
| 059 | Kenosha |
| 061 | Kewaunee |
| 071 | Manitowoc |
| 079 | Milwaukee |
| 087 | Outagamie |
| 089 | Ozaukee |
| 101 | Racine |
| 105 | Rock |
| 117 | Sheboygan |
| 127 | Walworth |
| 131 | Washington |
| 133 | Waukesha |
| 139 | Winnebago |

| **56** | **Wyoming** |
|---|---|
| **01** | **Western** |
| 013 | Fremont |
| 017 | Hot Springs |
| 023 | Lincoln |
| 029 | Park |
| 035 | Sublette |
| 037 | Sweetwater |
| 039 | Teton |
| 041 | Uinta |
| **02** | **Central and Southeastern** |
| 001 | Albany |
| 003 | Big Horn |
| 007 | Carbon |
| 009 | Converse |
| 015 | Goshen |
| 019 | Johnson |
| 021 | Laramie |
| 025 | Natrona |
| 027 | Niobrara |
| 031 | Platte |
| 033 | Sheridan |
| 043 | Washakie |
| **03** | **Northeastern** |
| 005 | Campbell |
| 011 | Crook |
| 045 | Weston |

| **72** | **Puerto Rico** |
|---|---|
| 001 | Adjuntas |
| 003 | Aguada |
| 005 | Aguadilla |
| 007 | Aguas Buenas |
| 009 | Aibonito |
| 011 | Anasco |
| 013 | Arecibo |
| 015 | Arroyo |
| 017 | Barceloneta |
| 019 | Barranquitas |
| 021 | Bayamon |
| 023 | Cabo Rojo |
| 025 | Caguas |
| 027 | Camuy |
| 029 | Canovanas |
| 031 | Carolina |
| 033 | Catano |
| 035 | Cayey |
| 037 | Ceiba |
| 039 | Ciales |
| 041 | Cidra |
| 043 | Coamo |
| 045 | Comerio |
| 047 | Corozal |
| 049 | Culebra |
| 051 | Dorado |
| 053 | Florida |
| 054 | Fajardo |
| 055 | Guanica |
| 057 | Guayama |
| 059 | Guayanilla |
| 061 | Guaynabo |
| 063 | Gurabo |
| 065 | Hatillo |
| 067 | Hormigueros |
| 069 | Humacao |
| 071 | Isabela Municipio |
| 073 | Jayuya |
| 075 | Juana Diaz |
| 077 | Juncos |
| 079 | Lajas |
| 081 | Lares |
| 083 | Las Marias |
| 085 | Las Piedras |
| 087 | Loiza |
| 089 | Luquillo |
| 091 | Manati |
| 093 | Maricao |
| 095 | Maunabo |
| 097 | Mayaguez |
| 099 | Moca |
| 101 | Morovis |
| 103 | Naguabo |
| 105 | Naranjito |
| 107 | Orocovis |
| 109 | Patillas |
| 111 | Penuelas |
| 113 | Ponce |
| 115 | Quebradillas |

| | |
|---|---|
| 117 | Rincon |
| 119 | Rio Grande |
| 121 | Sabana Grande |
| 123 | Salinas |
| 125 | San German |
| 127 | San Juan |
| 129 | San Lorenzo |
| 131 | San Sebastian |
| 133 | Santa Isabel |
| 135 | Toa Alta |
| 137 | Toa Baja |
| 139 | Trujillo Alto |
| 141 | Utuado |
| 143 | Vega Alta |
| 145 | Vega Baja |
| 147 | Vieques |
| 149 | Villalba |
| 151 | Yabucoa |
| 153 | Yauco |

| **78** | **U.S. Virgin Islands** |
|---|---|
| 010 | St. Croix Island |
| 020 | St. John Island |
| 030 | St. Thomas Island |

# Appendix D – Forest Type Codes And Names

| Code | Forest type / type group |
|---|---|
| | **White / red / jack pine group** |
| 101 | Jack pine |
| 102 | Red pine |
| 103 | Eastern white pine |
| 104 | Eastern white pine / eastern hemlock |
| 105 | Eastern hemlock |
| | **Spruce / fir group** |
| 121 | Balsam fir |
| 122 | White spruce |
| 123 | Red spruce |
| 124 | Red spruce / balsam fir |
| 125 | Black spruce |
| 126 | Tamarack |
| 127 | Northern white-cedar |
| | **Longleaf / slash pine group** |
| 141 | Longleaf pine |
| 142 | Slash pine |
| | **Loblolly / shortleaf pine group** |
| 161 | Loblolly pine |
| 162 | Shortleaf pine |
| 163 | Virginia pine |
| 164 | Sand pine |
| 165 | Table Mountain pine |
| 166 | Pond pine |
| 167 | Pitch pine |
| 168 | Spruce pine |
| | **Pinyon / juniper group** |
| 181 | Eastern redcedar |
| 182 | Rocky Mountain juniper |
| 183 | Western juniper |
| 184 | Juniper woodland |
| 185 | Pinyon / juniper woodland |
| | **Douglas-fir group** |
| 201 | Douglas-fir |
| 202 | Port-Orford-cedar |
| | **Ponderosa pine group** |
| 221 | Ponderosa pine |
| 222 | Incense-cedar |
| 223 | Jeffrey pine / Coulter pine / bigcone Douglas-fir |
| 224 | Sugar pine |
| | **Western white pine group** |
| 241 | Western white pine |
| | **Fir / spruce / mountain hemlock group** |
| 261 | White fir |
| 262 | Red fir |
| 263 | Noble fir |
| 264 | Pacific silver fir |
| 265 | Engelmann spruce |
| 266 | Engelman spruce / subalpine fir |
| 267 | Grand fir |
| 268 | Subalpine fir |
| 269 | Blue spruce |
| 270 | Mountain hemlock |
| 271 | Alaska yellow-cedar |
| | **Lodgepole pine group** |
| 281 | Lodgepole pine |
| | **Hemlock / Sitka spruce group** |
| 301 | Western hemlock |
| 304 | Western redcedar |
| 305 | Sitka spruce |
| | **Western larch group** |
| 321 | Western larch |
| | **Redwood group** |
| 341 | Redwood |
| 342 | Giant sequoia |
| | **Other western softwoods group** |
| 361 | Knobcone pine |
| 362 | Southwest white pine |
| 363 | Bishop pine |
| 364 | Monterey pine |
| 365 | Foxtail pine / bristlecone pine |
| 366 | Limber pine |
| 367 | Whitebark pine |
| 368 | Misc. western softwoods |
| | **California mixed conifer group** |
| 371 | California mixed conifer |
| | **Exotic softwoods group** |
| 381 | Scotch pine |
| 382 | Australian pine |
| 383 | Other exotic softwoods |
| 384 | Norway spruce |
| 385 | Introduced larch |
| | **Oak / pine group** |
| 401 | Eastern white pine / northern red oak / white ash |
| 402 | Eastern redcedar / hardwood |
| 403 | Longleaf pine / oak |
| 404 | Shortleaf pine / oak |
| 405 | Virginia pine / southern red oak |

406 Loblolly pine / hardwood
407 Slash pine / hardwood
409 Other pine / hardwood

**Oak / hickory group**
501 Post oak / blackjack oak
502 Chestnut oak
503 White oak / red oak / hickory
504 White oak
505 Northern red oak
506 Yellow-poplar / white oak / northern red oak
507 Sassafras / persimmon
508 Sweetgum / yellow-poplar
509 Bur oak
510 Scarlet oak
511 Yellow-poplar
512 Black walnut
513 Black locust
514 Southern scrub oak
515 Chestnut oak / black oak / scarlet oak
519 Red maple / oak
520 Mixed upland hardwoods

**Oak / gum / cypress group**
601 Swamp chestnut oak / cherrybark oak
602 Sweetgum / Nuttall oak / willow oak
605 Overcup oak / water hickory
606 Atlantic white-cedar
607 Baldcypress / water tupelo
608 Sweetbay / swamp tupelo / red maple

**Elm / ash / cottonwood group**
701 Black ash / American elm / red maple
702 River birch / sycamore
703 Cottonwood
704 Willow
705 Sycamore / pecan / American elm
706 Sugarberry / hackberry / elm / green ash
707 Silver maple / American elm
708 Red maple / lowland
709 Cottonwood / willow
722 Oregon ash

**Maple / beech / birch group**
801 Sugar maple / beech / yellow birch
802 Black cherry
803 Cherry / ash / yellow-poplar
805 Hard maple / basswood
807 Elm / ash / locust
809 Red maple / upland

**Aspen / birch group**
901 Aspen
902 Paper birch
904 Balsam poplar

**Alder / maple group**
911 Red alder
912 Bigleaf maple

**Western oak group**
921 Gray pine
922 California black oak
923 Oregon white oak
924 Blue oak
925 Deciduous oak woodland
931 Coast live oak
932 Canyon live oak / interior live oak

**Tanoak / laurel group**
941 Tanoak
942 California laurel
943 Giant chinkapin

**Other western hardwoods group**
951 Pacific madrone
952 Mesquite woodland
953 Cercocarpus woodland
954 Intermountain maple woodland
955 Misc. western hardwoods woodland

**Tropical hardwoods group**
981 Sable palm
982 Mangrove
989 Other tropical

**Exotic hardwoods group**
991 Paulownia
992 Melaluca
993 Eucalyptus
995 Other exotic hardwoods

999 Nonstocked

# Appendix E—National Forest Codes And Names

| Region | Code | National Forest/Grassland/Area |
|---|---|---|
| **Region 1** | 102 | Beaverhead |
| | 103 | Beaverhead-Deerlodge [now combined] |
| | 103 | Bitterroot |
| | 104 | Idaho Panhandle |
| | 105 | Clearwater |
| | 108 | Custer |
| | 109 | Deerlodge |
| | 110 | Flathead |
| | 111 | Gallatin |
| | 112 | Helena |
| | 114 | Kootenai |
| | 115 | Lewis and Clark |
| | 116 | Lolo |
| | 117 | Nez Perce |
| | 120 | Cedar River NGL (National Grassland) |
| | 121 | Little Missouri NGL |
| | 122 | Sheyenne NGL |
| | 124 | Grand River NGL |
| | 199 | Other NFS Areas |
| **Region 2** | 202 | Bighorn |
| | 203 | Black Hills |
| | 204 | Grand Mesa-Uncompahgre-Gunnison |
| | 206 | Medicine Bow |
| | 206 | Medicine Bow-Routt [now combined] |
| | 207 | Nebraska |
| | 209 | Rio Grande |
| | 210 | Arapaho-Roosevelt |
| | 211 | Routt |
| | 212 | Pike and San Isabel |
| | 213 | San Juan |
| | 214 | Shoshone |
| | 215 | White River |
| | 217 | Cimarron NGL |
| | 218 | Commanche NGL |
| | 219 | Pawnee NGL |
| | 220 | Oglala NGL |
| | 221 | Buffalo Gap NGL |
| | 222 | Fort Pierre NGL |
| | 223 | Thunder Basin NGL |
| | 299 | Other NFS Areas |
| **Region 3** | 301 | Apache-Sitgreaves |
| | 302 | Carson |
| | 303 | Cibola |
| | 304 | Coconino |
| | 305 | Coronado |
| | 306 | Gila |
| | 307 | Kaibab |
| | 308 | Lincoln |
| | 309 | Prescott |
| | 310 | Santa Fe |
| | 312 | Tonto |
| | 399 | Other NFS Areas |

| Region | Code | National Forest/Grassland/Area |
|---|---|---|
| **Region 4** | 401 | Ashley |
| | 402 | Boise |
| | 403 | Bridger-Teton |
| | 405 | Caribou |
| | 406 | Challis |
| | 407 | Dixie |
| | 408 | Fishlake |
| | 409 | Humboldt |
| | 410 | Manti-La Sal |
| | 412 | Payette |
| | 413 | Salmon |
| | 413 | Salmon-Challis [now combined] |
| | 414 | Sawtooth |
| | 415 | Targhee |
| | 415 | Caribou-Targhee [now combined] |
| | 417 | Toiyabe |
| | 417 | Humboldt-Toiyabe [now combined] |
| | 418 | Uinta |
| | 419 | Wasatch-Cache |
| | 420 | Desert Range Experiment Station |
| | 499 | Other NFS Areas |
| **Region 5** | 501 | Angeles |
| | 502 | Cleveland |
| | 503 | Eldorado |
| | 504 | Inyo |
| | 505 | Klamath |
| | 506 | Lassen |
| | 507 | Los Padres |
| | 508 | Mendocino |
| | 509 | Modoc |
| | 510 | Six Rivers |
| | 511 | Plumas |
| | 512 | San Bernadino |
| | 513 | Sequoia |
| | 514 | Shasta-Trinity |
| | 515 | Sierra |
| | 516 | Stanislaus |
| | 517 | Tahoe |
| | 519 | Lake Tahoe Basin |
| | 599 | Other NFS Areas |
| **Region 6** | 601 | Deschutes |
| | 602 | Fremont |
| | 603 | Gifford Pinchot |
| | 604 | Malheur |
| | 605 | Mt. Baker-Snoqualmie |
| | 606 | Mt. Hood |
| | 607 | Ochoco |
| | 608 | Okanogan |
| | 609 | Olympic |
| | 610 | Rogue River |
| | 611 | Siskiyou |
| | 612 | Siuslaw |
| | 614 | Umatilla |
| | 615 | Umpqua |
| | 616 | Wallowa-Whitman |
| | 617 | Wenatchee |
| | 618 | Willamette |
| | 620 | Winema |

621 Colville
699 Other NFS Areas

| Region | Code | National Forest/Grassland/Area |
|---|---|---|
| **Region 8** | 801 | NFS in Alabama |
| | 802 | Daniel Boone |
| | 803 | Chattahoochee-Oconee |
| | 804 | Cherokee |
| | 805 | NFS in Florida |
| | 806 | Kisatchie |
| | 807 | NFS in Mississippi |
| | 808 | George Washington |
| | 809 | Ouachita |
| | 810 | Ozark and St. Francis |
| | 811 | NFS in North Carolina |
| | 812 | Francis Marion-Sumter |
| | 813 | NFS in Texas |
| | 814 | Jefferson |
| | 816 | Caribbean |
| | 899 | Other NFS areas |
| **Region 9** | 902 | Chequamagon |
| | 903 | Chippewa |
| | 904 | Huron-Manistee |
| | 905 | Mark Twain |
| | 906 | Nicolet |
| | 907 | Ottawa |
| | 908 | Shawnee |
| | 909 | Superior |
| | 910 | Hiawatha |
| | 911 | Hoosier |
| | 918 | Wayne |
| | 919 | Allegheny |
| | 920 | Green Mountain |
| | 921 | Monongahela |
| | 922 | White Mountain |
| | 999 | Other NFS areas |
| **Region 10** | 1004 | Chugach |
| | 1005 | Tongass |
| | 1099 | Other NFS Areas |

## Appendix F – Tree Species Codes, Names, And Occurrences

Major groups (MAJGRP) are (1) pines, (2) other softwoods, (3) soft hardwoods, and (4) hard hardwoods. The 48 species groups (SPGRPCD) may be found in Appendix G.

| | | | | | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | NCRS | NERS | PNWRS | RMRS | SRS |
| 0010 | fir spp. | *Abies spp.* | 6 | 2 | X | X | | | X |
| 0011 | Pacific silver fir | *Abies amabilis* | 12 | 2 | | | X | | |
| 0012 | Balsam fir | *Abies balsamea* | 6 | 2 | X | X | | | X |
| 0014 | Santa Lucia fir or bristlecone fir | *Abies bracteata* | 12 | 2 | | | X | | |
| 0015 | white fir | *Abies concolor* | 12 | 2 | X | | X | X | |
| 0016 | Fraser fir | *Abies fraseri* | 9 | 2 | X | X | | | X |
| 0017 | grand fir | *Abies grandis* | 12 | 2 | | | X | X | |
| 0018 | corkbark fir | *Abies lasiocarpa* | 12 | 2 | | | | X | |
| 0019 | subalpine fir | *Abies lasiocarpa* | 12 | 2 | | | X | X | |
| 0020 | California red fir | *Abies magnifica* | 12 | 2 | | | X | X | |
| 0021 | Shasta red fir | *Abies shastensis* | 12 | 2 | | | X | X | |
| 0022 | noble fir | *Abies procera* | 12 | 2 | | | X | X | |
| 0040 | white-cedar spp. | *Chamaecyparis spp.* | 9 E, 24 W | 2 | | X | X | | |
| 0041 | Port-Orford-cedar | *Chamaecyparis lawsoniana* | 24 | 2 | | | X | | |
| 0042 | Alaska yellow-cedar | *Chamaecyparis nootkatensis* | 24 | 2 | | | X | | |
| 0043 | Atlantic white-cedar | *Chamaecyparis thyoides* | 9 | 2 | | X | | | X |
| 0050 | cypress | *Cupressus spp.* | 24 | 2 | | | X | | |
| 0051 | Arizona cypress | *Cupressus arizonica* | 24 | 2 | | | X | X | X |
| 0052 | Baker or Modoc cypress | *Cupressus bakeri* | 24 | 2 | | | X | | |
| 0053 | Tecate cypress | *Cupressus forbesii* | 24 | 2 | | | X | | |
| 0054 | Monterey cypress | *Cupressus macrocarpa* | 24 | 2 | | | X | | |
| 0055 | Sargent cypress | *Cupressus sargentii* | 24 | 2 | | | X | | |
| 0056 | MacNab's cypress | *Cupressus macnabiana* | 9 E, 24 W | 2 | | | X | | |
| 0057 | redcedar / juniper spp. | *Juniperus spp.* | 9 E, 23 W | 2 | X | X | | | X |
| 0058 | Pinchot juniper | *Juniperus pinchotii* | 23 | 2 | | | | X | |
| 0059 | redberry juniper | *Juniperus coahuilensis* | 23 | 2 | | | | X | X |
| 0061 | Ashe juniper | *Juniperus ashei* | 9 | 2 | X | | | | X |
| 0062 | California juniper | *Juniperus californica* | 23 | 2 | | | X | X | |
| 0063 | alligator juniper | *Juniperus deppeana* | 23 | 2 | | | | X | X |
| 0064 | western juniper | *Juniperus occidentalis* | 24 | 2 | | | X | X | |
| 0065 | Utah juniper | *Juniperus osteosperma* | 23 | 2 | | | X | X | |
| 0066 | Rocky Mountain juniper | *Juniperus scopulorum* | 9 E, 23 W | 2 | X | | X | X | X |
| 0067 | southern redcedar | *Juniperus virginiana* | 9 | 2 | | | | | X |
| 0068 | eastern redcedar | *Juniperus virginiana* | 9 | 2 | X | X | | X | X |
| 0069 | oneseed juniper | *Juniperus monosperma* | 23 | 2 | | | | X | X |
| 0070 | larch spp. | *Larix spp.* | 9 | 2 | X | X | | | |
| 0071 | tamarack (native) | *Larix laricina* | 9 E, 24 W | 2 | X | X | X | | |
| 0072 | subalpine larch | *Larix lyallii* | 24 | 2 | | | X | X | |
| 0073 | western larch | *Larix occidentalis* | 19 | 2 | | | X | X | |
| 0081 | incense-cedar | *Calocedrus decurrens* | 20 | 2 | | | X | X | |
| 0090 | spruce spp. | *Picea spp.* | 6 | 2 | X | X | | | X |
| 0091 | Norway spruce | *Picea abies* | 9 | 2 | X | X | | | X |
| 0092 | Brewer spruce | *Picea breweriana* | 18 | 2 | | | X | | |
| 0093 | Engelmann spruce | *Picea engelmannii* | 9 E, 18 W | 2 | X | | X | X | |
| 0094 | white spruce | *Picea glauca* | 6 E, 18 W | 2 | X | X | X | X | X |
| 0095 | black spruce | *Picea mariana* | 6 E, 18 W | 2 | X | X | X | | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0096 | blue spruce | *Picea pungens* | 9 E, 18 W | 2 | X | X | | X | X |
| 0097 | red spruce | *Picea rubens* | 6 | 2 | | X | | | X |
| 0098 | Sitka spruce | *Picea sitchensis* | 17 | 2 | | | X | | |
| 0100 | pine spp. | *Pinus spp.* | 9 E, 24 W | 1 | X | X | X | | |
| 0101 | whitebark pine | *Pinus albicaulis* | 24 | 1 | | | X | X | |
| 0102 | Rocky Mountain bristlecone pine | *Pinus aristata* | 24 | 1 | | | | X | |
| 0103 | knobcone pine | *Pinus attenuata* | 24 | 1 | | | X | | |
| 0104 | foxtail pine | *Pinus balfouriana* | 24 | 1 | | | X | X | |
| 0105 | jack pine | *Pinus banksiana* | 5 | 1 | X | X | | | |
| 0106 | common or two-needle pinyon | *Pinus edulis* | 23 | 1 | | | X | X | X |
| 0107 | sand pine | *Pinus clausa* | 3 | 1 | | | | | X |
| 0108 | lodgepole pine | *Pinus contorta* | 21 | 1 | X | | X | X | |
| 0109 | Coulter pine | *Pinus coulteri* | 24 | 1 | | | X | | |
| 0110 | shortleaf pine | *Pinus echinata* | 2 | 1 | X | X | | | X |
| 0111 | slash pine | *Pinus elliottii* | 1 | 1 | | | | | X |
| 0112 | Apache pine | *Pinus engelmannii* | 24 | 1 | | | | X | |
| 0113 | limber pine | *Pinus flexilis* | 24 | 1 | X | | X | X | X |
| 0114 | southwestern white pine | *Pinus strobiformis* | 24 | 1 | | | | X | |
| 0115 | spruce pine | *Pinus glabra* | 3 | 1 | | | | | X |
| 0116 | Jeffrey pine | *Pinus jeffreyi* | 11 | 1 | | | X | X | |
| 0117 | sugar pine | *Pinus lambertiana* | 14 | 1 | | | X | X | |
| 0118 | Chihuahua pine | *Pinus leiophylla* | 24 | 1 | | | | X | |
| 0119 | western white pine | *Pinus monticola* | 15 | 1 | | | X | X | |
| 0120 | bishop pine | *Pinus muricata* | 24 | 1 | | | X | | |
| 0121 | longleaf pine | *Pinus palustris* | 1 | 1 | | | | | X |
| 0122 | ponderosa pine | *Pinus ponderosa* | 9 E, 11 W | 1 | X | | X | X | X |
| 0123 | Table Mountain pine | *Pinus pungens* | 3 | 1 | | X | | | X |
| 0124 | Monterey pine | *Pinus radiata* | 24 | 1 | | | X | | |
| 0125 | red pine | *Pinus resinosa* | 4 | 1 | X | X | | | X |
| 0126 | pitch pine | *Pinus rigida* | 3 | 1 | | X | | | X |
| 0127 | gray pine or California foothill pine | *Pinus sabiniana* | 24 | 1 | | | X | | |
| 0128 | pond pine | *Pinus serotina* | 3 | 1 | | X | | | X |
| 0129 | eastern white pine | *Pinus strobus* | 4 | 1 | X | X | | | X |
| 0130 | Scotch pine | *Pinus sylvestris* | 3 E, 24 W | 1 | X | X | X | X | X |
| 0131 | loblolly pine | *Pinus taeda* | 2 | 1 | X | X | | | X |
| 0132 | Virginia pine | *Pinus virginiana* | 3 | 1 | X | X | | | X |
| 0133 | singleleaf pinyon | *Pinus monophylla* | 23 | 1 | | | X | X | |
| 0134 | border pinyon | *Pinus discolor* | 23 | 1 | | | | X | |
| 0135 | Arizona pine | *Pinus arizonica* | 11 | 1 | | | | X | |
| 0136 | Austrian pine | *Pinus nigra* | 9 | 1 | X | X | | X | X |
| 0137 | Washoe pine | *Pinus washoensis* | 24 | 1 | | | X | X | |
| 0138 | four-leaf pine or Parry pinyon pine | *Pinus quadrifolia* | 24 | 1 | | | X | | |
| 0139 | Torrey pine | *Pinus torreyana* | 24 | 1 | | | X | | |
| 0140 | Mexican pinyon pine | *Pinus cembroides* | 23 | 1 | | | | X | X |
| 0142 | Great Basin bristlecone pine | *Pinus longaeva* | 24 | 1 | | | X | X | |
| 0143 | Arizona pinyon pine | *Pinus monophylla* | 23 | 1 | | | | X | |
| 0144 | Honduras pine | *Pinus elliottii* | 9 E, 24 W | 1 | | | | | X |
| 0200 | Douglas-fir spp. | *Pseudotsuga spp.* | 9 E, 10 W | 2 | X | | X | | |
| 0201 | bigcone Douglas-fir | *Pseudotsuga macrocarpa* | 10 | 2 | | | X | | |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0202 | Douglas-fir | *Pseudotsuga menziesii* | 9 E, 10 W | 2 | X | X | X | X | |
| 0211 | redwood | *Sequoia sempervirens* | 16 | 2 | | | X | | |
| 0212 | giant sequoia | *Sequoiadendron giganteum* | 24 | 2 | | | X | | |
| 0220 | baldcypress spp. | *Taxodium spp.* | 9 E, 24 W | 2 | X | X | | | X |
| 0221 | baldcypress | *Taxodium distichum* | 8 | 2 | X | X | | | X |
| 0222 | pondcypress | *Taxodium ascendens* | 8 | 2 | | | | | X |
| 0230 | yew spp. | *Taxus spp.* | 9 E, 24 W | 2 | X | | X | | |
| 0231 | Pacific yew | *Taxus brevifolia* | 24 | 2 | | | X | X | |
| 0232 | Florida yew | *Taxus floridana* | 9 E, 24 W | 2 | | | | | X |
| 0240 | Thuja spp. | *Thuja spp.* | 9 E, 24 W | 2 | X | | X | | |
| 0241 | northern white-cedar | *Thuja occidentalis* | 9 | 2 | X | X | | | X |
| 0242 | western redcedar | *Thuja plicata* | 22 | 2 | | | X | X | |
| 0250 | Torreya (nutmeg) spp. | *Torreya spp.* | 9 E, 24 W | 2 | | | X | | |
| 0251 | California torreya (nutmeg) | *Torreya californica* | 24 | 2 | | | X | | |
| 0252 | Florida torreya (nutmeg) | *Torreya taxifolia* | 9 | 2 | | | | | X |
| 0260 | hemlock spp. | *Tsuga spp.* | 7 | 2 | X | | | | X |
| 0261 | eastern hemlock | *Tsuga canadensis* | 7 | 2 | X | X | | | X |
| 0262 | Carolina hemlock | *Tsuga caroliniana* | 7 | 2 | | | | | X |
| 0263 | western hemlock | *Tsuga heterophylla* | 13 | 2 | | | X | X | |
| 0264 | mountain hemlock | *Tsuga mertensiana* | 24 | 2 | | | X | X | |
| 0299 | Unknown dead conifer | *Tree evergreen* | 9 E, 24 W | 2 | X | X | X | X | X |
| 0300 | acacia spp. | *Acacia spp.* | 41 E, 48 W | 3 | | | X | | |
| 0303 | sweet acacia | *Acacia farnesiana* | 43 E, 48 W | 3 | | | | X | X |
| 0304 | catclaw acacia | *Acacia greggii* | 43 E, 48 W | 3 | | | X | X | X |
| 0310 | maple spp. | *Acer spp.* | 31 | 4 | X | X | | | X |
| 0311 | Florida maple | *Acer barbatum* | 31 | 4 | | | | | X |
| 0312 | bigleaf maple | *Acer macrophyllum* | 47 | 3 | | | X | | X |
| 0313 | boxelder | *Acer negundo* | 41 E, 47 W | 3 | X | X | X | X | X |
| 0314 | black maple | *Acer nigrum* | 31 | 4 | X | X | | | X |
| 0315 | striped maple | *Acer pensylvanicum* | 43 | 3 | X | X | | | X |
| 0316 | red maple | *Acer rubrum* | 32 | 3 | X | X | | | X |
| 0317 | silver maple | *Acer saccharinum* | 32 | 3 | X | X | | | X |
| 0318 | sugar maple | *Acer saccharum* | 31 | 4 | X | X | | | X |
| 0319 | mountain maple | *Acer spicatum* | 43 | 4 | X | X | | | X |
| 0320 | Norway maple | *Acer platanoides* | 31 | 4 | X | X | | | X |
| 0321 | Rocky Mountain maple | *Acer glabrum* | 43 E, 48 W | 4 | X | | X | | |
| 0322 | bigtooth maple | *Acer grandidentatum* | 48 | 4 | | | X | X | |
| 0323 | chalk maple | *Acer leucoderme* | 31 | 4 | | | | | X |
| 0330 | buckeye, horsechestnut spp. | *Aesculus spp.* | 41 E, 47 W | 3 | X | X | | | X |
| 0331 | Ohio buckeye | *Aesculus glabra* | 41 E, 47 W | 3 | X | X | | | X |
| 0332 | yellow buckeye | *Aesculus flava* | 43 | 3 | X | X | | | X |
| 0333 | California buckeye | *Aesculus californica* | 41 E, 47 W | 3 | | | X | | |
| 0334 | Texas buckeye | *Aesculus glabra* | 41 | 3 | X | | | | X |
| 0336 | red buckeye | *Aesculus pavia* | 43 E, 47 W | 3 | X | X | | | X |
| 0337 | painted buckeye | *Aesculus sylvatica* | 41 E, 47 W | 3 | | X | | | X |
| 0341 | ailanthus | *Ailanthus altissima* | 43 E, 47 W | 4 | X | X | X | | X |
| 0345 | mimosa, silktree | *Albizia julibrissin* | 43 | 3 | X | | | | X |
| 0350 | alder spp. | *Alnus spp.* | 41 E, 47 W | 3 | X | | X | | |
| 0351 | red alder | *Alnus rubra* | 45 | 3 | | | X | X | X |
| 0352 | white alder | *Alnus rhombifolia* | 47 | 3 | | | X | X | |
| 0353 | Arizona alder | *Alnus oblongifolia* | 43 E, 47 W | 3 | | X | | | |
| 0355 | European alder | *Alnus glutinosa* | 41 E, 47 W | 3 | X | | | | X |
| 0356 | serviceberry spp. | *Amelanchier spp.* | 43 E, 48 W | 4 | X | X | | | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0357 | common serviceberry | *Amelanchier arborea* | 43 E, 48 W | 4 | X | | | | |
| 0358 | roundleaf serviceberry | *Amelanchier sanguinea* | 43 E, 48 W | 4 | X | | | | |
| 0360 | Madrone spp. | *Arbutus spp.* | 43 E, 47 W | 4 | | | X | | |
| 0361 | Pacific madrone | *Arbutus menziesii* | 47 | 4 | | | X | X | |
| 0362 | Arizona madrone | *Arbutus arizonica* | 43 E, 47 W | 4 | | | X | | |
| 0367 | pawpaw | *Asimina triloba* | 43 | 3 | X | X | | | X |
| 0370 | birch spp. | *Betula spp.* | 41 | 4 | X | X | | | X |
| 0371 | yellow birch | *Betula alleghaniensis* | 30 | 4 | X | X | | | X |
| 0372 | sweet birch | *Betula lenta* | 42 | 4 | X | X | | | X |
| 0373 | river birch | *Betula nigra* | 41 | 3 | X | X | | | X |
| 0374 | water birch | *Betula occidentalis* | 41 E, 47 W | 3 | X | | X | | X |
| 0375 | paper birch | *Betula papyrifera* | 41 E, 47 W | 3 | X | X | X | X | |
| 0377 | Virginia roundleaf birch | *Betula uber* | 41 E, 47 W | 3 | | | | | X |
| 0378 | northwestern paper birch | *Betula x utahensis* | 47 | 3 | | | X | | |
| 0379 | gray birch | *Betula populifolia* | 41 | 3 | X | X | | | X |
| 0381 | chittamwood,gum bumelia | *Sideroxylon lanuginosum* | 43 | 4 | X | | | | X |
| 0391 | American hornbeam, musclewood | *Carpinus caroliniana* | 43 | 4 | X | X | | | X |
| 0400 | hickory spp. | *Carya spp.* | 29 | 4 | X | X | | | X |
| 0401 | water hickory | *Carya aquatica* | 29 | 4 | X | | | | X |
| 0402 | bitternut hickory | *Carya cordiformis* | 29 | 4 | X | X | | | X |
| 0403 | pignut hickory | *Carya glabra* | 29 | 4 | X | X | | | X |
| 0404 | pecan | *Carya illinoinensis* | 29 | 4 | X | X | | X | X |
| 0405 | shellbark hickory | *Carya laciniosa* | 29 | 4 | X | X | | | X |
| 0406 | nutmeg hickory | *Carya myristiciformis* | 29 | 4 | | | | | X |
| 0407 | shagbark hickory | *Carya ovata* | 29 | 4 | X | X | | | X |
| 0408 | black hickory | *Carya texana* | 29 | 4 | X | | | | X |
| 0409 | mockernut hickory | *Carya alba* | 29 | 4 | X | X | | | X |
| 0410 | sand hickory | *Carya pallida* | 29 | 4 | X | X | | | X |
| 0411 | scrub hickory | *Carya floridana* | 29 E, 47 W | 4 | | | | | X |
| 0412 | red hickory | *Carya ovalis* | 29 E, 47 W | 4 | X | X | | | X |
| 0413 | southern shagbark hickory | *Carya carolinae-septentrionalis* | 29 E, 47 W | 4 | | | | | X |
| 0420 | chestnut spp. | *Castanea spp.* | 43 E, 47 W | 3 | X | X | | | X |
| 0421 | American chestnut | *Castanea dentata* | 43 | 3 | X | X | | | X |
| 0422 | Allegheny chinkapin | *Castanea pumila* | 43 | 3 | X | X | | | X |
| 0423 | Ozark chinkapin | *Castanea pumila* | 43 | 3 | X | | | | X |
| 0424 | Chinese chestnut | *Castanea mollissima* | 43 E, 47 W | 3 | X | X | | | X |
| 0431 | giant chinkapin,golden chinkapin | *Chrysolepis chrysophylla* | 47 | 3 | | | X | | |
| 0450 | catalpa spp. | *Catalpa spp.* | 42 | 4 | X | X | | | X |
| 0451 | southern catalpa | *Catalpa bignonioides* | 43 | 4 | X | | | | X |
| 0452 | northern catalpa | *Catalpa speciosa* | 41 | 3 | X | X | | | X |
| 0460 | hackberry spp. | *Celtis* | 41 | 3 | X | X | | | X |
| 0461 | sugarberry | *Celtis laevigata* | 41 | 3 | X | X | | | X |
| 0462 | hackberry | *Celtis occidentalis* | 41 | 3 | X | X | | | X |
| 0463 | netleaf hackberry | *Celtis laevigata* | 41 | 3 | X | | | | X |
| 0471 | eastern redbud | *Cercis canadensis* | 43 | 3 | X | X | | | X |
| 0475 | curlleaf mountain-mahogany | *Cercocarpus ledifolius* | 48 | 4 | | | X | X | |
| 0481 | yellowwood | *Cladrastis kentukea* | 43 | 4 | X | X | | | X |
| 0490 | dogwood spp. | *Cornus spp.* | 43 E, 47 W | 4 | X | X | X | | |
| 0491 | flowering dogwood | *Cornus florida* | 42 | 4 | X | X | | | X |
| 0492 | Pacific dogwood | *Cornus nuttallii* | 47 | 4 | | | X | X | |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0500 | hawthorn spp. | *Crataegus spp.* | 43 | 4 | X | X | | | X |
| 0501 | cockspur hawthorn | *Crataegus crus-galli* | 43 | 4 | X | X | | | X |
| 0502 | downy hawthorn | *Crataegus mollis* | 43 | 4 | X | X | | | X |
| 0503 | Brainerd's hawthorn | *Crataegus brainerdii* | 43 E, 47 W | 4 | X | X | | | X |
| 0504 | pear hawthorn | *Crataegus calpodendron* | 43 E, 47 W | 4 | X | X | | | X |
| 0505 | fireberry hawthorn | *Crataegus chrysocarpa* | 43 E, 47 W | 4 | X | X | | | X |
| 0506 | broadleaf hawthorn | *Crataegus dilatata* | 43 E, 47 W | 4 | X | X | | | X |
| 0507 | fanleaf hawthorn | *Crataegus flabellata* | 43 E, 47 W | 4 | X | X | | | X |
| 0508 | oneseed hawthorn | *Crataegus monogyna* | 43 E, 47 W | 4 | X | X | | | X |
| 0509 | scarlet hawthorn | *Crataegus pedicellata* | 43 E, 47 W | 4 | X | X | | | X |
| 5091 | Washington hawthorn | *Crataegus phaenopyrum* | 43 E, 47 W | 4 | X | X | | | X |
| 5092 | fleshy hawthorn | *Crataegus succulenta* | 43 E, 47 W | 4 | X | X | | | X |
| 5093 | dwarf hawthorn | *Crataegus uniflora* | 43 E, 47 W | 4 | X | X | | | X |
| 0510 | eucalyptus spp. | *Eucalyptus spp.* | 42 E, 47 W | 4 | | | X | X | X |
| 0511 | Tasmanian bluegum | *Eucalyptus globulus* | 43 E, 47 W | 4 | | | X | | |
| 0512 | river redgum | *Eucalyptus camaldulensis* | 43 E, 47 W | 4 | | | X | | |
| 0513 | grand eucalyptus | *Eucalyptus grandis* | 43 E, 47 W | 4 | | | X | | X |
| 0514 | swampmahogany | *Eucalyptus robusta* | 43 E, 47 W | 4 | | | | | X |
| 0520 | persimmon spp. | *Diospyros spp.* | 43 E, 47 W | 4 | X | X | | | X |
| 0521 | common persimmon | *Diospyros virginiana* | 42 | 4 | X | X | | | X |
| 0522 | Texas persimmon | *Diospyros texana* | 43 E, 47 W | 4 | | | | | X |
| 0531 | American beech | *Fagus grandifolia* | 33 | 4 | X | X | | | X |
| 0540 | ash spp. | *Fraxinus spp.* | 36 | 3 | X | X | X | | X |
| 0541 | white ash | *Fraxinus americana* | 36 | 4 | X | X | | | X |
| 0542 | Oregon ash | *Fraxinus latifolia* | 47 | 4 | | | X | | |
| 0543 | black ash | *Fraxinus nigra* | 36 | 3 | X | X | | | X |
| 0544 | green ash | *Fraxinus pennsylvanica* | 36 E, 47 W | 4 | X | X | | X | X |
| 0545 | pumpkin ash | *Fraxinus profunda* | 36 | 3 | X | X | | | X |
| 0546 | blue ash | *Fraxinus quadrangulata* | 36 | 4 | X | X | | | X |
| 0547 | velvet ash | *Fraxinus velutina* | 47 | 4 | | | | X | X |
| 0548 | Carolina ash | *Fraxinus caroliniana* | 36 | 4 | | | | | X |
| 0549 | Texas ash | *Fraxinus texensis* | 36 E, 47 W | 3 | | | | | X |
| 0550 | honeylocust spp. | *Gleditsia spp.* | 42 E, 47 W | 4 | X | X | X | | |
| 0551 | waterlocust | *Gleditsia aquatica* | 42 | 4 | X | | | | X |
| 0552 | honeylocust | *Gleditsia triacanthos* | 42 | 4 | X | X | | X | X |
| 0555 | loblolly-bay | *Gordonia lasianthus* | 41 | 3 | | | | | X |
| 0561 | Ginkgo, maidenhair tree | *Ginkgo biloba* | 43 E, 47 W | 3 | X | X | X | | |
| 0571 | Kentucky coffeetree | *Gymnocladus dioicus* | 42 | 4 | X | X | | | X |
| 0580 | silverbell spp. | *Halesia spp.* | 43 | 3 | X | X | | | X |
| 0581 | Carolina silverbell | *Halesia carolina* | 41 E, 47 W | 3 | | | | | X |
| 0582 | two-wing silverbell | *Halesia diptera* | 41 E, 47 W | 3 | | | | | X |
| 0583 | little silverbell | *Halesia parviflora* | 41 E, 47 W | 3 | | | | | X |
| 0591 | American holly | *Ilex opaca* | 42 E, 47 W | 4 | X | X | X | | X |
| 0600 | walnut spp. | *Juglans spp.* | 41 E, 47 W | 4 | X | X | X | X | X |
| 0601 | butternut | *Juglans cinerea* | 41 | 3 | X | X | | | X |
| 0602 | black walnut | *Juglans nigra* | 40 | 4 | X | X | X | X | X |
| 0603 | northern California black walnut | *Juglans hindsii* | 47 | 4 | | | X | | |
| 0604 | southern California black walnut | *Juglans californica* | 47 | 4 | | | X | | |
| 0605 | Texas walnut | *Juglans microcarpa* | 41 E, 47 W | 4 | X | | | | X |
| 0606 | Arizona walnut | *Juglans major* | 43 E, 47 W | 4 | | | X | | |
| 0611 | sweetgum | *Liquidambar styraciflua* | 34 | 3 | X | X | | | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0621 | yellow-poplar | *Liriodendron tulipifera* | 39 | 3 | X | X | | | X |
| 0631 | tanoak | *Lithocarpus densiflorus* | 47 | 4 | | | X | | |
| 0641 | Osage-orange | *Maclura pomifera* | 43 | 4 | X | X | | | X |
| 0650 | magnolia spp. | *Magnolia spp.* | 41 | 3 | X | X | | | X |
| 0651 | cucumbertree | *Magnolia acuminata* | 41 | 3 | X | X | | | X |
| 0652 | southern magnolia | *Magnolia grandiflora* | 41 | 3 | | X | | | X |
| 0653 | sweetbay | *Magnolia virginiana* | 43 | 3 | | X | | | X |
| 0654 | bigleaf magnolia | *Magnolia macrophylla* | 43 | 4 | | X | | | X |
| 0655 | mountain or Fraser magnolia | *Magnolia fraseri* | 41 | 3 | | X | | | X |
| 0657 | pyramid magnolia | *Magnolia pyramidata* | 41 E, 47 W | 3 | | | | | X |
| 0658 | umbrella magnolia | *Magnolia tripetala* | 41 E, 47 W | 3 | | X | X | | X |
| 0660 | apple spp. | *Malus spp.* | 43 E, 47 W | 4 | X | X | X | X | X |
| 0661 | Oregon crab apple | *Malus fusca* | 47 | 4 | | | X | | |
| 0662 | southern crabapple | *Malus angustifolia* | 43 E, 47 W | 4 | X | X | | | X |
| 0663 | sweet crabapple | *Malus coronaria* | 43 E, 47 W | 4 | X | X | | | X |
| 0664 | prairie crabapple | *Malus ioensis* | 43 E, 47 W | 4 | X | | | | |
| 0680 | mulberry spp. | *Morus spp.* | 42 | 4 | X | X | | X | X |
| 0681 | white mulberry | *Morus alba* | 42 | 4 | X | X | | | X |
| 0682 | red mulberry | *Morus rubra* | 42 | 4 | X | X | | | X |
| 0683 | Texas mulberry | *Morus microphylla* | 42 E, 47 W | 4 | | | | | X |
| 0684 | black mulberry | *Morus nigra* | 43 E, 47 W | 4 | | X | | | X |
| 0690 | tupelo spp. | *Nyssa spp.* | 35 E, 47 W | 3 | X | X | | | X |
| 0691 | water tupelo | *Nyssa aquatica* | 35 | 3 | X | | | | X |
| 0692 | Ogeechee tupelo | *Nyssa ogeche* | 43 | 4 | | | | | X |
| 0693 | blackgum | *Nyssa sylvatica* | 35 | 3 | X | X | | | X |
| 0694 | swamp tupelo | *Nyssa biflora* | 35 | 3 | X | X | | | X |
| 0701 | eastern hophornbeam | *Ostrya virginiana* | 43 | 4 | X | X | | | X |
| 0711 | sourwood | *Oxydendrum arboreum* | 43 | 4 | X | X | | | X |
| 0712 | paulownia, empress-tree | *Paulownia tomentosa* | 41 | 3 | X | X | | | X |
| 0720 | bay spp. | *Persea spp.* | 43 E, 47 W | 3 | | X | | | X |
| 0721 | redbay | *Persea borbonia* | 41 | 3 | | | | | X |
| 7211 | avocado | *Persea americana* | 43 E, 47 W | 3 | | | | | X |
| 0722 | water-elm, planertree | *Planera aquatica* | 43 | 3 | X | | | | X |
| 0729 | Sycamore spp. | *Platanus spp.* | 41 E, 47 W | 3 | X | X | X | | |
| 0730 | California sycamore | *Platanus racemosa* | 47 | 3 | | | X | | |
| 0731 | American sycamore | *Platanus occidentalis* | 41 | 3 | X | X | X | X | X |
| 0732 | Arizona sycamore | *Platanus wrightii* | 41 E, 47 W | 3 | | | X | | |
| 0740 | cottonwood and poplar spp. | *Populus* | 37 E, 44 W | 3 | X | X | | | X |
| 0741 | balsam poplar | *Populus balsamifera* | 37 E, 44 W | 3 | X | X | | X | X |
| 0742 | eastern cottonwood | *Populus deltoides* | 37 E, 44 W | 3 | X | X | | X | X |
| 0743 | bigtooth aspen | *Populus grandidentata* | 37 | 3 | X | X | | | X |
| 0744 | swamp cottonwood | *Populus heterophylla* | 37 | 3 | X | X | | | X |
| 0745 | plains cottonwood | *Populus deltoides* | 37 E, 44 W | 3 | X | | | X | |
| 0746 | quaking aspen | *Populus tremuloides* | 37 E, 44 W | 3 | X | X | X | X | X |
| 0747 | black cottonwood | *Populus balsamifera* | 37 E, 44 W | 4 | X | | X | X | |
| 0748 | Fremont cottonwood | *Populus fremontii* | 37 E, 44 W | 4 | | | X | X | X |
| 0749 | narrowleaf cottonwood | *Populus angustifolia* | 37 E, 44 W | 3 | X | | | X | X |
| 0752 | silver poplar | *Populus alba* | 37 | 3 | X | | | | X |
| 0753 | Lombardy poplar | *Populus nigra* | 37 E, 44 W | 3 | X | X | X | | |
| 0755 | mesquite spp. | *Prosopis spp.* | 48 | 4 | | | | | X |
| 0756 | western honey mesquite | *Prosopis glandulosa* | 48 | 4 | | | X | X | X |
| 0757 | velvet mesquite | *Prosopis velutina* | 48 | 4 | | | X | X | X |
| 0758 | screwbean mesquite | *Prosopis pubescens* | 48 | 4 | | | X | X | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0760 | cherry and plum spp. | *Prunus spp.* | 43 E, 47 W | 4 | X | X | X | | X |
| 0761 | pin cherry | *Prunus pensylvanica* | 43 | 3 | X | X | | | X |
| 0762 | black cherry | *Prunus serotina* | 41 | 3 | X | X | | | X |
| 0763 | chokecherry | *Prunus virginiana* | 43 E, 47 W | 4 | X | X | X | | X |
| 0764 | peach | *Prunus persica* | 43 E, 47 W | 3 | X | X | | | X |
| 0765 | Canada plum | *Prunus nigra* | 43 | 4 | X | | | | |
| 0766 | American plum | *Prunus americana* | 43 | 4 | X | X | | | X |
| 0768 | bitter cherry | *Prunus emarginata* | 47 | 4 | | | X | | |
| 0769 | Allegheny plum | *Prunus alleghaniensis* | 43 E, 47 W | 3 | X | X | | | X |
| 0770 | Chickasaw plum | *Prunus angustifolia* | 43 E, 47 W | 3 | X | X | | | X |
| 0771 | sweet cherry, domesticated | *Prunus avium* | 43 E, 47 W | 3 | X | X | X | | |
| 0772 | sour cherry, domesticated | *Prunus cerasus* | 43 E, 47 W | 3 | X | X | X | | |
| 0773 | European plum, domesticated | *Prunus domestica* | 43 E, 47 W | 3 | X | X | X | | |
| 0774 | Mahaleb plum, domesticated | *Prunus mahaleb* | 43 E, 47 W | 3 | X | X | X | | |
| 0800 | oak--deciduous spp. | *Quercus spp.* | 42 E, 48 W | 4 | X | X | X | | X |
| 0801 | California live oak | *Quercus agrifolia* | 46 | 4 | | | X | | |
| 0802 | white oak | *Quercus alba* | 25 | 4 | X | X | | | X |
| 0803 | Arizona white oak | *Quercus arizonica* | 48 | 4 | | | | X | X |
| 0804 | swamp white oak | *Quercus bicolor* | 25 | 4 | X | X | | | X |
| 0805 | canyon live oak | *Quercus chrysolepis* | 46 | 4 | | | X | | |
| 0806 | scarlet oak | *Quercus coccinea* | 28 | 4 | X | X | | | X |
| 0807 | blue oak | *Quercus douglasii* | 46 | 4 | | | X | | |
| 0808 | Durand oak | *Quercus sinuata* | 25 | 4 | | | | | X |
| 0809 | northern pin oak | *Quercus ellipsoidalis* | 28 | 4 | X | X | | | X |
| 0810 | Emory oak | *Quercus emoryi* | 48 | 4 | | | | X | X |
| 0811 | Engelmann oak | *Quercus engelmannii* | 46 | 4 | | | X | | |
| 0812 | southern red oak | *Quercus falcata* | 28 | 4 | X | X | | | X |
| 0813 | cherrybark oak | *Quercus pagoda* | 26 | 4 | X | X | | | X |
| 0814 | Gambel oak | *Quercus gambelii* | 48 | 4 | | | | X | X |
| 0815 | Oregon white oak | *Quercus garryana* | 46 | 4 | | | X | | |
| 0816 | scrub oak | *Quercus ilicifolia* | 43 | 4 | | X | | | X |
| 0817 | shingle oak | *Quercus imbricaria* | 28 | 4 | X | X | | | X |
| 0818 | California black oak | *Quercus kelloggii* | 46 | 4 | | | X | | |
| 0819 | turkey oak | *Quercus laevis* | 43 | 4 | | | | | X |
| 0820 | laurel oak | *Quercus laurifolia* | 28 | 4 | | X | | | X |
| 0821 | California white oak | *Quercus lobata* | 46 | 4 | | | X | | |
| 0822 | overcup oak | *Quercus lyrata* | 27 | 4 | X | X | | | X |
| 0823 | bur oak | *Quercus macrocarpa* | 25 | 4 | X | X | | X | X |
| 0824 | blackjack oak | *Quercus marilandica* | 28 | 4 | X | X | | | X |
| 0825 | swamp chestnut oak | *Quercus michauxii* | 25 | 4 | X | X | | | X |
| 0826 | chinkapin oak | *Quercus muehlenbergii* | 25 E, 46 W | 4 | X | X | | X | X |
| 0827 | water oak | *Quercus nigra* | 28 | 4 | X | X | | | X |
| 0828 | Nuttall oak | *Quercus buckleyi* | 28 | 4 | X | | | | X |
| 0829 | Mexican blue oak | *Quercus oblongifolia* | 48 | 4 | | | | X | |
| 0830 | pin oak | *Quercus palustris* | 28 | 4 | X | X | | | X |
| 0831 | willow oak | *Quercus phellos* | 28 | 4 | X | X | | | X |
| 0832 | chestnut oak | *Quercus prinus* | 27 | 4 | X | X | | | X |
| 0833 | northern red oak | *Quercus rubra* | 26 | 4 | X | X | | | X |
| 0834 | Shumard oak | *Quercus shumardii* | 26 | 4 | X | X | | | X |
| 0835 | post oak | *Quercus stellata* | 27 | 4 | X | X | | | X |
| 0836 | Delta post oak | *Quercus similis* | 27 | 4 | | | | | X |
| 0837 | black oak | *Quercus velutina* | 28 | 4 | X | X | | | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0838 | live oak | *Quercus virginiana* | 27 | 4 | | | | | X |
| 0839 | interior live oak | *Quercus wislizeni* | 46 | 4 | | | X | | |
| 0840 | dwarf post oak | *Quercus margarettiae* | 27 | 4 | X | | | | X |
| 0841 | dwarf live oak | *Quercus minima* | 27 | 4 | | | | | X |
| 0842 | bluejack oak | *Quercus incana* | 43 | 4 | | | | | X |
| 0843 | silverleaf oak | *Quercus hypoleucoides* | 48 | 4 | | | | X | X |
| 0844 | Oglethorpe oak | *Quercus oglethorpensis* | 27 | 4 | | | | | X |
| 0845 | dwarf chinakapin oak | *Quercus prinoides* | 43 | 4 | X | | | | X |
| 0846 | gray oak | *Quercus grisea* | 48 | 4 | | | | X | X |
| 0847 | netleaf oak | *Quercus rugosa* | 43 E, 48 W | 4 | | | | X | |
| 0850 | oak – evergreen spp. | *Quercus spp.* | 48 | 4 | | | | X | X |
| 0852 | sea torchwood | *Amyris elemifera* | 43 E, 47 W | 3 | | | | | X |
| 0853 | pond-apple | *Annona glabra* | 43 E, 47 W | 3 | | | | | X |
| 0854 | gumbo limbo | *Bursera simaruba* | 43 E, 47 W | 3 | | | | | X |
| 0855 | sheoak spp. | *Casuarina spp.* | 43 E, 47 W | 3 | | | | | X |
| 0856 | gray sheoak | *Casuarina glauca* | 43 E, 47 W | 3 | | | | | X |
| 0857 | belah | *Casuarina lepidophloia* | 43 E, 47 W | 3 | | | | | X |
| 0858 | camphor tree | *Cinnamomum camphora* | 43 E, 47 W | 3 | | | | | X |
| 0859 | Florida fiddlewood | *Citharexylum fruticosum* | 43 E, 47 W | 3 | | | | | X |
| 0860 | citrus spp. | *Citrus spp.* | 43 E, 47 W | 3 | | | | | X |
| 0863 | tietongue, pigeon-plum | *Coccoloba diversifolia* | 43 E, 47 W | 3 | | | | | X |
| 0864 | soldierwood | *Colubrina elliptica* | 43 E, 47 W | 3 | | | | | X |
| 0865 | longleaf geigertree | *Cordia sebestena* | 43 E, 47 W | 3 | | | | | X |
| 0866 | carrotwood | *Cupaniopsis anacardioides* | 43 E, 47 W | 3 | | | | | X |
| 0873 | red stopper | *Eugenia rhombea* | 43 E, 47 W | 3 | | | | | X |
| 0874 | butterbough, inkwood | *Exothea paniculata* | 43 E, 47 W | 3 | | | | | X |
| 0876 | Florida strangler fig | *Ficus aurea* | 43 E, 47 W | 3 | | | | | X |
| 0877 | wild banyantree, shortleaf fig | *Ficus citrifolia* | 43 E, 47 W | 3 | | | | | X |
| 0882 | beeftree, longleaf blolly | *Guapira discolor* | 43 E, 47 W | 3 | | | | | X |
| 0883 | manchineel | *Hippomane mancinella* | 43 E, 47 W | 3 | | | | | X |
| 0884 | false tamarind | *Lysiloma latisiliquum* | 43 E, 47 W | 3 | | | | | X |
| 0885 | mango | *Mangifera indica* | 43 E, 47 W | 3 | | | | | X |
| 0886 | Florida poinsontree | *Metopium toxiferum* | 43 E, 47 W | 3 | | | | | X |
| 0887 | fishpoison tree | *Piscidia piscipula* | 43 E, 47 W | 3 | | | | | X |
| 0888 | octopus tree, schefflera | *Schefflera actinophylla* | 43 E, 47 W | 3 | | | | | X |
| 0890 | false mastic | *Sideroxylon foetidissimum* | 43 E, 47 W | 3 | | | | | X |
| 0891 | white bully, willow bustic | *Sideroxylon salicifolium* | 43 E, 47 W | 3 | | | | | X |
| 0895 | paradisetree | *Simarouba glauca* | 43 E, 47 W | 3 | | | | | X |
| 0896 | Java plum | *Syzygium cumini* | 43 E, 47 W | 3 | | | | | X |
| 0897 | tamarind | *Tamarindus indica* | 43 E, 47 W | 3 | | | | | X |
| 0901 | black locust | *Robinia pseudoacacia* | 42 E, 47 W | 4 | X | X | X | | X |
| 0902 | New Mexico locust | *Robinia neomexicana* | 48 | 4 | | | | X | X |
| 0906 | Everglades palm, paurotis-palm | *Acoelorraphe wrightii* | 43 E, 47 W | 3 | | | | | X |
| 0907 | Florida silver palm | *Coccothrinax argentata* | 43 E, 47 W | 3 | | | | | X |
| 0908 | coconut palm | *Cocos nucifera* | 43 E, 47 W | 3 | | | | | X |
| 0909 | royal palm spp. | *Roystonea spp.* | 43 E, 47 W | 3 | | | | | X |
| 0912 | cabbage palmetto | *Sabal palmetto* | 43 E, 47 W | 3 | | | | | X |
| 0913 | key thatch palm | *Thrinax morrisii* | 43 E, 47 W | 3 | | | | | X |
| 0914 | Florida thatch palm | *Thrinax radiata* | 43 E, 47 W | 3 | | | | | X |
| 0915 | other palms | *Family Arecaceae not listed above* | 43 E, 47 W | 3 | | | | | X |

| SPCD | COMMON_NAME | SCIENTIFIC NAME | SPGRPCD | MAJGRP | Occurrence by Research Station | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NCRS | NERS | PNWRS | RMRS | SRS |
| 0919 | western soapberry | *Sapindus saponaria* | 43 | 4 | X | | | | X |
| 0920 | willow spp. | *Salix spp.* | 43 E, 47 W | 3 | X | X | X | | X |
| 0921 | peachleaf willow | *Salix amygdaloides* | 43 | 3 | X | | | | X |
| 0922 | black willow | *Salix nigra* | 41 | 3 | X | X | X | | X |
| 0923 | Bebb willow | *Salix bebbiana* | 43 E, 47 W | 3 | X | | | | |
| 0924 | Bonpland willow | *Salix bonplandiana* | 41 E, 47 W | 3 | | | | | X |
| 0925 | coastal plain willow | *Salix caroliniana* | 43 E, 47 W | 3 | X | X | | | X |
| 0926 | balsam willow | *Salix pyrifolia* | 43 E, 47 W | 3 | X | X | | | |
| 0927 | white willow | *Salix alba* | 41 | 3 | X | X | | | X |
| 0928 | Scouler's willow | *Salix scouleriana* | 41 E, 47 W | 3 | X | | X | | |
| 0929 | weeping willow | *Salix sepulcralis* | 41 E, 47 W | 3 | X | X | | | X |
| 0931 | sassafras | *Sassafras albidum* | 41 | 3 | X | X | | | X |
| 0934 | mountain-ash spp. | *Sorbus spp.* | 43 E, 47 W | 4 | X | X | | | X |
| 0935 | American mountain-ash | *Sorbus americana* | 43 | 4 | X | X | | | X |
| 0936 | European mountain-ash | *Sorbus aucuparia* | 43 | 4 | | X | | | X |
| 0937 | northern mountain-ash | *Sorbus decora* | 43 E, 47 W | 4 | X | X | | | |
| 0940 | West Indian mahogany | *Swietenia mahagoni* | 43 E, 47 W | 4 | | | | | X |
| 0950 | basswood spp. | *Tilia spp.* | 38 | 3 | X | X | | | X |
| 0951 | American basswood | *Tilia americana* | 38 | 3 | X | X | | | X |
| 0952 | white basswood | *Tilia americana* | 38 | 3 | X | X | | | X |
| 0953 | Carolina basswood | *Tilia americana* | 38 | 3 | X | | | | X |
| 0970 | elm spp. | *Ulmus* | 41 | 3 | X | X | | | X |
| 0971 | winged elm | *Ulmus alata* | 41 | 4 | X | X | | | X |
| 0972 | American elm | *Ulmus americana* | 41 E, 47 W | 3 | X | X | | X | X |
| 0973 | cedar elm | *Ulmus crassifolia* | 41 | 3 | X | | | | X |
| 0974 | Siberian elm | *Ulmus pumila* | 41 E, 47 W | 3 | X | | | X | X |
| 0975 | slippery elm | *Ulmus rubra* | 41 | 3 | X | X | | | X |
| 0976 | September elm | *Ulmus serotina* | 41 | 3 | X | | | | X |
| 0977 | rock elm | *Ulmus thomasii* | 42 | 4 | X | X | | | X |
| 0981 | California-laurel | *Umbellularia californica* | 47 | 4 | | | X | | |
| 0982 | Joshua tree | *Yucca brevifolia* | 43 E, 47 W | 3 | | | X | | |
| 0986 | black-mangrove | *Avicennia germinans* | 43 E, 47 W | 4 | | | | | X |
| 0987 | buttonwood mangrove | *Conocarpus erectus* | 43 E, 47 W | 4 | | | | | |
| 0988 | white-mangrove | *Laguncularia racemosa* | 43 E, 47 W | 4 | | | | | X |
| 0989 | American mangrove | *Rhizophora mangle* | 43 | 4 | | | | | X |
| 0990 | desert ironwood | *Olneya tesota* | 43 E, 48 W | 4 | | | X | | |
| 0991 | saltcedar | *Tamarix spp.* | 43 E, 47 W | 3 | X | X | X | | |
| 0992 | melaleuca | *Melaleuca quinquenervia* | 41 E, 47 W | 3 | | | | | X |
| 0993 | chinaberry | *Melia azedarach* | 43 | 4 | X | X | | | X |
| 0994 | Chinese tallowtree | *Triadica sebifera* | 43 | 4 | | | | | X |
| 0995 | tungoil tree | *Vernicia fordii* | 43 | 4 | | | | | X |
| 0996 | smoketree | *Cotinus obovatus* | 43 | 4 | X | | | | X |
| 0997 | Russian-olive | *Elaeagnus angustifolia* | 43 | 3 | X | | | | X |
| 0998 | unknown dead hardwood | *Tree broadleaf* | 43 E, 47 W | 3 | X | X | X | | X |
| 0999 | other or unknown live tree | *Tree unknown* | 43 E, 47 W | 3 | X | X | | | X |

# Appendix G—Tree Species Group Codes

| Species group name | Code |
|---|---|
| **Softwood species groups** | |
| **Eastern softwood species groups** | |
| Longleaf and slash pines | 1 |
| Loblolly and shortleaf pines | 2 |
| Other yellow pines | 3 |
| Eastern white and red pines | 4 |
| Jack pine | 5 |
| Spruce and balsam fir | 6 |
| Eastern hemlock | 7 |
| Cypress | 8 |
| Other eastern softwoods | 9 |
| **Western softwood species groups** | |
| Douglas-fir | 10 |
| Ponderosa and Jeffrey pines | 11 |
| True fir | 12 |
| Western hemlock | 13 |
| Sugar pine | 14 |
| Western white pine | 15 |
| Redwood | 16 |
| Sitka spruce | 17 |
| Engelmann and other spruces | 18 |
| Western larch | 19 |
| Incense-cedar | 20 |
| Lodgepole pine | 21 |
| Western redcedar | 22 |
| Western woodland softwoods | 23 |
| Other western softwoods | 24 |
| **Hardwood species groups** | |
| **Eastern hardwood species groups** | |
| Select white oaks | 25 |
| Select red oaks | 26 |
| Other white oaks | 27 |
| Other red oaks | 28 |
| Hickory | 29 |
| Yellow birch | 30 |
| Hard maple | 31 |
| Soft maple | 32 |
| Beech | 33 |
| Sweetgum | 34 |
| Tupelo and blackgum | 35 |
| Ash | 36 |
| Cottonwood and aspen | 37 |
| Basswood | 38 |
| Yellow-poplar | 39 |
| Black walnut | 40 |
| Other eastern soft hardwoods | 41 |
| Other eastern hard hardwoods | 42 |
| Eastern noncommercial hardwoods | 43 |
| **Western hardwood species groups** | |
| Cottonwood and aspen | 44 |
| Red alder | 45 |
| Oak | 46 |
| Other western hardwoods | 47 |
| Western woodland hardwoods | 48 |