Introduction:

The focus topic is *Managing the Kinland Forest to Meet Long Term Production and Forest Health Goals*. Students will conduct a cruise of the South unit of the Kinland Forest property and compare it to the predicted stand condition modeled from data collected 20 years ago, when the Nonindustrial Timber Management Plan (NTMP) was written for the property. They will determine if the stand has grown as modeled, and then make a recommendation for how the stand should be managed into the future to meet the landowner’s goals in accordance with the provisions of the NTMP.

Location:

We will be driving approximately 20 miles to Kinland Forest, southwest of Camp Sylvester near Twain Harte.
**Background Information:**

Kinland Forest

Kinland Forest is a 428-acre property originally purchased in the 1930s by the current owners’ great grandfather and managed as a mining claim. Purchased as a working mine site, it was converted to a family retreat in the 1950s. Today it is owned in equal parts by three siblings who are members of the Kinsinger family.

The property has a history of timber harvest. Logging prior to 1950 removed old growth, and second growth single tree selection harvests occurred in 1977 and 1991-1992. The 1991-1992 harvest was a salvage harvest of trees burned in the Cottonwood Fire. In 1999, owner Bob Kinsinger hired Registered Professional Forester (RPF) Leon Manich to prepare a Non-Industrial Timber Management Plan (NTMP). The plan was approved and is the CEQA document that guides all commercial harvest activities on the property.

The Forest Practice Rules and the California Environmental Quality Act

The California Environmental Quality Act of 1973 (CEQA) is a state law that requires state and local government agencies to prepare an environmental assessment before undertaking or issuing a permit for any project with possible environmental repercussions. The Forest Practices Act regulates timber harvesting in California and it specifies how to plan for timber harvest in a way that is CEQA compliant. CEQA compliant documents for commercial timber harvest include the Timber Harvest Plan (THP) and the Nonindustrial Timber Management Plan (NTMP). Kinland’s NTMP allows for periodic harvest using primarily group selection, with single tree selection as a secondary method. Both of these silvicultural methods are uneven-aged. Intermediate treatments such as commercial thinning and biomass removal are also allowed. The NTMP allows the landowner to quickly react to a good market or other conditions that would make harvest favorable at a particular time.

**Highlights of the Kinland Forest NTMP**

The property was divided into four management units based on stand conditions when the plan was written, operational limitations, and future desired stand conditions. There are three predominantly forested units labeled North, South, and East. The fourth unit is a Non-Commercial unit, which includes lava cap, meadow, and an area with the house and other buildings. Our activities and evaluation will be focused on the South unit, which is the largest unit at 215 acres and is almost exactly half of the property. This unit is on a north facing slope, so it has a more even mix of the five most common conifer species than the other units.
Group selection was chosen as the predominant silvicultural method to be used for harvest. Timber stand growth was modeled using group selections on a rotating basis so that each group selection area was in an 80-year growth cycle. By law, a group selection is an opening, or “mini clearcut”, up to 2.5 acres in size. The idea was to create a patchwork or mosaic of stand ages to increase stand diversity and allow for a mature crop of trees to be harvested about every 10 years.

Harvest Activities on Kinland Forest after the NTMP was Approved

As the saying goes, “the best-laid plans of mice and men often go awry”. The first harvest entry was 6 group selections made a few months after the plan was approved, but after that, things went off track. A total of five more harvest entries were made in 2002, 2004, 2006, 2008, and 2010, but none of them included group selections. Three factors that may have made staying on track difficult were the 2007-2010 recession, the Rim Fire of 2013, and the mortality epidemic of 2015-2017. These factors pushed log prices so low that it would have cost more to log, haul, and pay taxes than the operation would have profited.

Growth Modeling

The stand data collected as part of the NTMP planning process is used to model, or predict, the growth of the forest over time after the plan is approved. The program used in California is called CACTOS, which stands for CAlifornia Conifer Timber Output Simulator. It is an interactive computer program designed to simulate the growth and partial harvests of conifer forest stands in northern California. CACTOS is run and the output is included in the NTMP. In this plan, with 10-year harvest intervals, the stand was modeled to grow for 80 years and then most or all of the growth was modeled to be harvested, starting the cycle over again. The plan was written 20 years ago, so we are now at the end of decade 2. The goal is to use the predicted growth and harvest levels to prove that the forest will grow as much or more than is harvested, which is required for a plan to be approved. This concept is called sustained yield. To be able to compare the predicted stand metrics at the 20-year mark with what actually exists, we need to collect the same data that was collected in the original cruise.

Forest Inventory Procedure:

Pin flags have been placed in a grid pattern in the unit to mark the center of 20 one-fourth acre circular plots, which have a radius of 58.9 feet. A map of the data collection unit with the plot centers, as well as a data collection
Once your team locates its plot center using the Avenza smartphone app, you will collect data using the worksheet provided. The data sheets will be collected, and the information will be entered into a master spreadsheet and returned to you at 7:00 p.m. on Friday evening.

Field trip:

Your team will be assigned a plot for data collection. You will determine:

- The number of trees in the plot with a diameter at breast height (dbh) of 12” or greater, and their species
- The diameter at breast height for each tree, using a logger’s tape
- The height to an 8 inch top of trees with a dbh of 12” or more, using a clinometer.
- Using a sub plot of a 1/100th acre (radius of 11.8 feet), you will count the number of seedlings with a dbh of 0 to 4 inches, and the number of trees, by species, that have a dbh of between 4 and 12 inches, in 2 inch diameter classes.

Items to be Addressed in Your Presentation:

1. Background information on the Kinsinger Forest and its NTMP
2. CACTOS modeling contained in the NTMP and the predicted volume at the end of the second decade
3. A summary of the current stand and how it compares to the modeled conditions
4. Your recommendation on how to manage the Kinsinger Forest moving forward, choosing to return back to a group selection strategy, or changing to a single tree selection as a primary strategy, or a combination of both
5. Pros and cons of different silvicultural options, including relative costs

Final Product:

Your goal is to produce a 15-minute PowerPoint presentation that describes, in detail, the predicted versus current stand condition, and your suggested silvicultural prescription moving forward. You are encouraged to use photos and information collected on the field trip, interviews with resource professionals during the Challenge, and the maps, tables, and information in the resources provided. Additionally, use the judges’ score sheet as a checklist, to make sure you cover the items on which you will be scored.