2017 SEQUOIA FORESTRY CHALLENGE
<u>FOCUS TOPIC QUESTION</u>

<u>Introduction:</u>

The focus topic is *Forest Inventory at Quaker Meadow Camp*. Each team will locate their plot center, establish its boundaries, and collect data. The collected and shared data will be useful to assess current forest health, can be used to make management decisions, and can be compared to data collected in the future to assess how the forest is changing. In order to complete this forest inventory, you will need to be familiar with:

- the use of maps to identify features of the property, including the developed areas, road system, and topography, to locate your team's plot centers
- the use of forestry tools and knowledge of tree species to successfully collect data
- characteristics of a healthy and fire resilient forest

<u>Location:</u>

Quaker Meadow Camp, at 7,200 feet elevation, is located off Highway 190 about 27 miles east of Springville. Several maps of the property will be provided to you on a flash drive. It is within Sequoia National Forest and the Giant Sequoia National Monument. The Camp operates with a lease from the Sequoia National Forest.
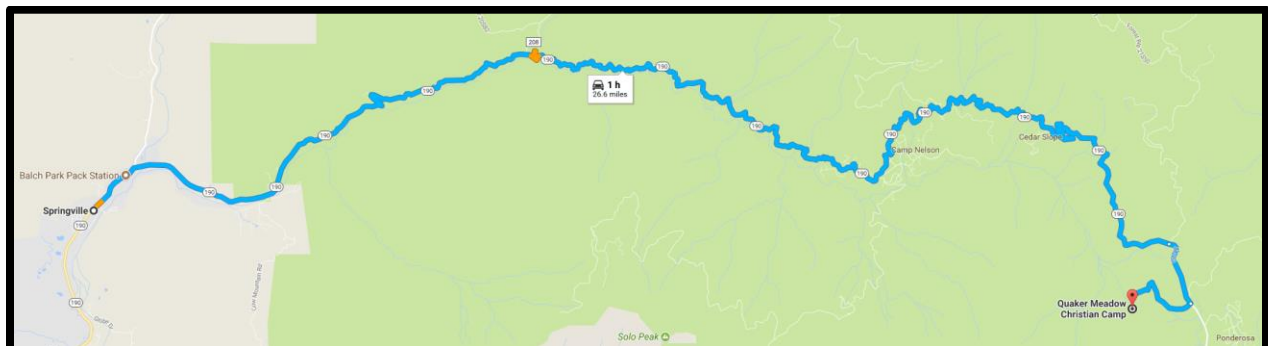
Background Information:

Fire Resilient Landscapes

Before European settlers stopped natural fire from burning the forest at frequent intervals, fire moved through the forest with mostly low intensity, killing small trees, shrubs, and brush, and occasionally climbing to the tree tops and killing very small patches of large trees. Low intensity fire did not often harm or kill the larger trees, since the bark on the trees protected the delicate cambium layer from being damaged.

Because natural, low intensity fire has been excluded for over 100 years, and because often nothing is done to remove highly flammable ladder fuels, when a wildfire does burn through an untreated "stand" (group of trees), the flames climb to the tree tops and burn the needles, killing large areas of trees, often hundreds or thousands of acres in a single fire.

By using a combination of mechanical treatments, and sometimes even prescribed fire, the forest can be returned to a more natural state that is "fire resilient", that is, it can withstand a low to moderate intensity wildfire with minimal damage.

Area and Property History

The first inhabitants of the area were Native Americans who traveled to the high country in the summertime to escape the Valley heat, and who traversed the Sierra Nevada from the San Joaquin Valley to the Owens Valley. Later, as early as 1851, the ample pastures and adequate water in the area made it ideal as a stopping place for trappers and explorers crossing the Sierra. The first homesteaders obtained land grants, primarily for pastureland for sheep during the summer. However, in 1925, the area was closed to sheep grazing. Limited logging, lumber milling, and development followed, with the nearby development of Ponderosa being subdivided in the early 1960's.

Quaker Meadow Christian Camp was founded in 1939 by the Evangelical Friends churches in California. It has since become a non-profit, non-denominational Christian organization catering to church groups and Christian organizations in Southern and Central California and beyond. Quaker Meadow administers its own summer and winter camp programs, and contracts the facility to outside groups.

The forest is nearly a pure fir stand, which means that the predominant species are White Fir and California Red Fir. Other species on the landscape, but much fewer in number, are Sugar Pine, Incense Cedar, and Giant Sequoia. Numerous trees have recently died from drought stress.

Sequoia National Forest and Giant Sequoia National Monument

The Giant Sequoia National Monument was designated by President Clinton in April 2000. The Monument encompasses 328,315 acres, and is split into two areas, the southern of which is in the Western Divide Ranger District of the Sequoia National Forest. In 2012, a revised management plan was released for the Monument, which guides restoration efforts for giant sequoia ecosystems, watersheds, habitat for old-forest dependent wildlife, and the protection of mountain communities.

Historic Forest Condition

Researchers estimate that, historically, there were about 50-100 trees per acre in much of the Sierra Nevada. Early California explorers wrote in their journals that they could ride a horse at a full gallop through the forest, and rarely have to change their direction or slow down to avoid trees.

However, data specific to the fir stands where Quaker Meadow is located is not readily available. The Sequoia National Forest was inventoried in 2005, and that data will be made available on your team's flash drive for comparison with data collected during this event.

Forest Inventory Methodology

To get an exact inventory of a forest, every single tree would need to be measured and recorded, which is not practical and not necessary in order to get a general assessment of the forest condition. To get information that is as accurate as possible without evaluating every tree, sample points are established by superimposing a grid onto a map of the property, and identifying plot centers on paper and on the ground. For these plots, the points will mark the center of a 1/10 acre circular plot, with a radius of 37.2 feet. A map of the property with the plot centers, as well as a data collection sheet, will be given to you at the beginning of the fieldtrip. A flag on a wire has been stuck into the ground at each plot center, numbered to match the numbers on the gridded map.

Once your team locates its plot centers, you will collect data using the worksheet provided. The data sheets will be collected at the end of the fieldtrip. The data will be entered into a master spreadsheet and returned to you on the flash drive you will receive at 6:30 on Thursday evening.

Fieldtrip: On the afternoon of Thursday, October 12, your team will be assigned two plots for data collection. You will collect the following information at your plots:

- The number of trees in the plot with a diameter at breast height (dbh) of 12" or greater, and categorize them into live, dead with needles, or dead without needles
- On the live trees and dead trees with needles, you will measure the dbh to the nearest 2 inch diameter class
- The basal area of the live trees
- You will measure the height and percent live crown of the first and third trees rotating clockwise from the north
- You will take a core sample of the first and third trees to determine the radial growth during the last 10 years
- On a 1/100th acre plot (11.8 foot radius), you will determine the number of seedlings (between 0 and 2 inches dbh)

Items to be Addressed in Your Presentation:

Your presentation should address the following topics:

1. The location, size, and history of Quaker Meadow Camp
2. Forest inventory methodology and a recommended frequency for data collection
3. **The results of this forest inventory and how it compares with the 2005 data. In your opinion, is the forest healthy and fire resilient in its current condition?**
4. Actions, if any, that should be taken to make the forest at Quaker Meadow Camp healthier and more fire resilient

Resources:

On Thursday evening, you will be given resources on a flash drive to load onto your team's computer. During preparation time, there will be designated computers to do internet research and you can use that information in your presentation. Additionally, you can use photos you take during the fieldtrip and statements from foresters you work with and interview during Ask a Forester.

Final Product:

Your goal is to produce a 15-minute PowerPoint presentation that describes, in detail, the current stand condition at Quaker Meadow Camp and your evaluation of current forest health. You are encouraged to use photos and information collected on the fieldtrip, 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. Remember, there is no "right" answer!