

Topcon GMS-2 Provides Mapping Solution for Roseburg Resources



Company: Roseburg Resources
Location: Weed, CA

Scenic Mt. Shasta dominates the view of Roseburg's veneer plant in Weed, California.

Project: Forest feature mapping
Location: Northern California forest lands

Topcon Products:
GMS-2 GPS receiver/GIS mapping device/field controller



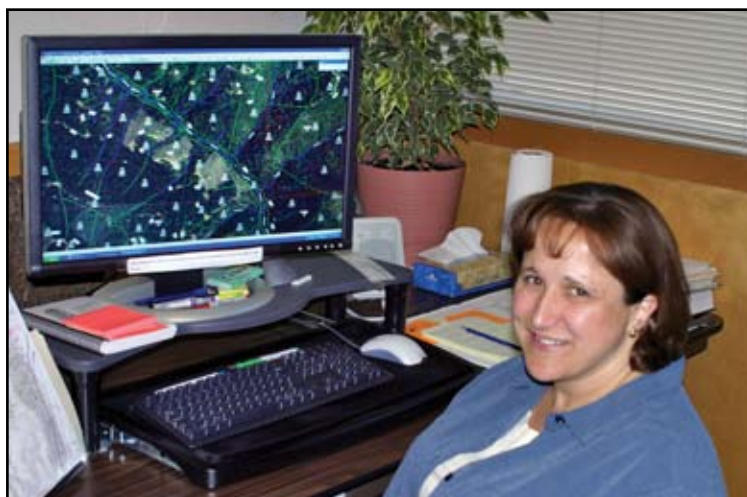
Arne Hultgren, R.P.F. planning manager

Roseburg Forest Products (RFP), the third largest closely held forest products company in western North America, manufactures a wide range of building materials, including dimensional lumber, plywood, paneling, and other specialty items. To meet the constant demand for raw materials, RFP owns and manages 750,000 acres of forest land in southern Oregon and Northern California.

Mapping is an essential tool of timber management. A GIS database was implemented in 1996 to consolidate and

coordinate data for the California timber tracts. Originally, the base layer was created by hand-digitizing USGS quad sheets. Today, aerial photos and digital-ortho quad sheets make the acquisition of base data much simpler.

Arne Hultgren, a registered professional forester, is planning manager for Roseburg Resources, California division. This subsidiary of RFP is located in Weed, employs a staff of 18, and oversees 285,000 acres of timberland located in the state. Hultgren explained the importance of Roseburg's mapping database: "Just about



Ann Wagner manages the GIS database at Roseburg Resources Weed, CA, office.

everything we do is tied to a map and consequently to the GIS system," he said. "Everything we do pivots around our GIS system so critically."

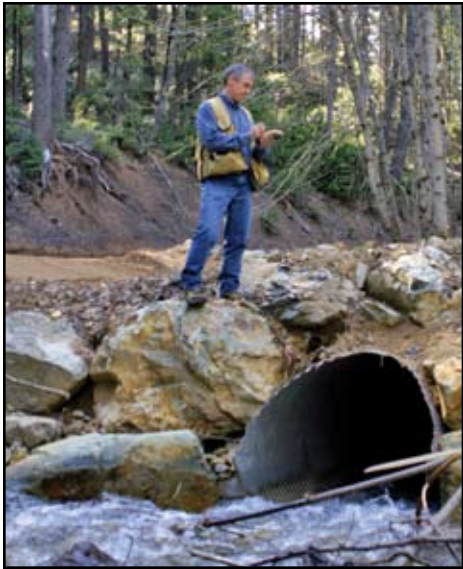
Roseburg's GIS database also provides asset management functions. "Our timberlands are 90 percent of the company's value," Hultgren said. "It's very important to document where all of our assets are. Our primary asset is trees, but there is also value in our land, roads, drainage structures, culverts, and bridges."

For the forest industry, compliance with environmental regulations is an inescapable obligation. California's timber harvest regulations are particularly stringent. Detailed environmental impact reports and explicit disclosure of all harvesting activities are required for permitting operations. To properly prepare the permit applications, accurate locations and detailed information about streams, culverts, archeological sites, endangered bird's nests, wildlife activities and other environmentally significant information must be maintained. Roseburg's GIS database serves as a repository for this critical data.

Hultgren and his staff searched for a tool that could provide precise locations and log object data for all the forest features. He experimented with recreational-type GPS handheld units to get rough

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(from front page)



Hultgren maps a remote culvert along a forest road with Topcon's GMS-2.

positions within a 60-foot radius. The major drawbacks to this type of instrument are poor accuracy and the inability to produce satisfactory results under heavy tree canopy. Backpack GIS units with external antennas were not considered because of their bulkiness and likeliness to getting snagged in underbrush. Hultgren learned about Topcon's GMS-2 GPS receiver/GIS mapping device from Ben Folger, sales manager for Topcon California. He immediately saw several advantages.

Fifty-channel dual-constellation satellite tracking - GPS and GLONASS - provides improved accuracy and enables operation under heavy tree canopies. The DGPS function, which obtains WAAS corrections, provides improved meter-level accuracy, which is perfect for forestry applications.

Hultgren obtained a GMS-2 and put the unit through several weeks of heavy use in a wide variety of applications.

The GMS-2 has enabled Roseburg's field personnel to collect all required data about a mapped object with a single instrument. This is a huge benefit, considering the large amount of gear carried on a forest reconnaissance mission. With the GMS-2 the need for a separate camera and compass is eliminated. Object attributes can be entered in TopPAD right on the GMS-2, eliminating the need for detailed field notes.

To comply with environmental impact reporting requirements, Roseburg Resources must file a report on the condition of each watercourse crossing every two years. These crossings range from simple 18-inch corrugated metal pipes all the way up to 70-foot bridge spans. Keeping track of several thousand installations in remote locations over 285,000 acres is a time-consuming chore.

Hultgren found that the GMS-2 expedited the tracking of these installations. "We can locate drainage structures from the digital image and get an idea of why they failed," he explained. "We may have a crossing that has a chronic failure on it. Being able to see images of



Robert Lewis uses Topcon's GMS-2 to map the centerline and elevation of a proposed haul road.

the installation over subsequent years gives us the ability to think about changing the design, putting in a larger pipe, different end treatment or different rock slope protection." It also helps the repair contractor understand what materials and equipment will be required before heading into remote areas.

RFP manages timber harvest operations in 20-acre units. Typically, these units are defined by roads, property lines, streams, and geographic features. Initially, these boundaries were located with rudimentary methods, sketched by hand in the field, and entered

in the GIS database. But this caused costly errors in mapping procedures. "If you're dealing with a harvest unit where the value of the timber may be in excess of \$20,000 per acre, the miscalculation of an acre is a fairly significant event that you don't want to occur," Hultgren said.

"The GMS-2 allows us to accurately record not only the shapes of the units, but also habitat retention areas," he continued. "These are important wildlife legacy structures. Now we are able to monitor these areas as the harvested stand grows back. We will be able to record the impact and how wildlife uses those particular habitat retention areas."

Following his rigorous evaluation, Hultgren is pleased with the performance of the

GMS-2. "The ability to capture images of features without carrying a separate camera and integrating them with GIS attributes is a tremendous advantage to Roseburg," he said. "The seamless WAAS correction that Topcon incorporated into the unit is really incredible. I'm getting horizontal accuracies of less than one foot, which is excellent for our purposes. The GMS-2 is not just a GPS data collector - it's so much more."



Mapping fish boundaries with the GMS-2.

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