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Applying Standard Techniques To Innovative Field Surveys

When it comes to field work, wetland biologists and cultural resource specialists have no choice but to get used to difficult working conditions. Heat, rain, and bugs require special planning for the great outdoors; however, planning for rugged conditions is just part of the equation. Sophisticated mapping and navigation technologies have become must-have field companions. Combined, these high-tech tools improve the bottom line for energy developers by increasing the efficiency of field work and enhancing the integration of field survey results with project design.

Traditionally, wooden stakes or steel posts are placed at the locations of proposed project improvements prior to wetland or cultural resource field work. These markers serve as clear guides to field crews for determining where cultural resource surveys and wetland delineations are needed. This approach still works well when the locations of project infrastructure, like wind turbines or solar trackers, have been specified. This is no longer always the case, however. Using wind development as an example, projects may take a different development path in which turbine layout alternatives are evaluated in aggregate, prior to staking final turbine locations in the field. Without any physical "dots" to connect in the field, field crews either have to investigate every acre of a project site or find an efficient solution. The former is costly overkill, and the latter can be accomplished through application of two technologies that allow field crews to easily map and navigate a project; Computer-Aided Design (CAD) and Global Positioning Systems (GPS).

CAD and GPS are standard tools of many industries and have been used in wind project development and design for many years. Blending the capabilities of each technology has powerful implications for the field work aspects of project development. In aggregate layout scenarios, CAD can be used to designate the footprint of the land that will be disturbed during construction. This CAD file can then be uploaded to GPS devices and used as a digital version of the traditional wooden stakes.

While assisting the crew's navigation in the field, the GPS can also track the actual ground they have covered within the CAD corridors defined. This information can be imported back into CAD and overlaid on the project footprint to ensure the construction disturbance areas were indeed evaluated as planned. Another advantage to using this combination of technologies is that if the project design changes while the field crew is on the site, new data can be immediately uploaded to the GPS units, providing a fresh set of dots for the crew to connect. This circumvents the need to deploy land surveyors to the project area to locate and set new wooden stakes, thereby saving both time and money.

No technology alone replaces the need for thorough project understanding and a keen ability to design - and field personnel willing to continue doing battle against the mosquitoes. But the combination of two simple standard technologies; GPS and CAD, provides an option as indispensable as DEET for getting energy project field work done as efficiently as possible.

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