

Contract for Success

Well-written IVM specifications ensure cost-effective results.

By **Lee Atkins**, *Progressive Solutions, LLC*

Herbicides, when implemented as part of a comprehensive integrated vegetation management (IVM) program, have been proven to greatly reduce the cost and environmental impact of maintaining utility rights-of-way (ROW). However, realizing these benefits requires contract specifications that address the unique aspects of this type of vegetation management and that encourage measurable performance from contractors.

What's the Problem?

Contract specifications for herbicide vegetation management often use generic construction contract templates with specifications that have little in common with managing vegetation. While a construction project usually has a clear beginning and end, ROW vegetation management is a continuous process that requires a long-term perspective. In fact, the effectiveness of a herbicide application may take several months, or even years, to fully evaluate.

In addition, descriptions of the scope of work sometimes are written too loosely to ensure high performance. On the other end of the spectrum, due to federal and state regulation of service reliability, contract specifications are often filled with verbiage to avoid litigation and/or negative public image.

Contract Language

Contract specifications should not leave loopholes that can be taken advantage of by unscrupulous contractors. For example, the commonly used benchmark of "95% control" may be interpreted by less reputable contractors that 5% of the ROW can be left untreated. What if that 5% of untreated vegetation grows into a transmission line before the next inspection? There are also herbicide mixes that can be used to achieve the appearance of 95% or more control at the time of inspection but actually control far less in the second season.

Contract language should accurately reflect the work scope to achieve a level playing field for all qualified bidders. For example, there is no reason to use a ladder in a low-volume herbicide application contract; however, otherwise qualified bidders have been excluded from such contracts because their safety manuals did not have a section on ladder safety.

Contract specifications should provide measurable criteria to evaluate contractor performance. When contract language is unambiguous and protects the interests of both parties, the results will be more accurate and a higher level of performance can be achieved.

Define "Control"

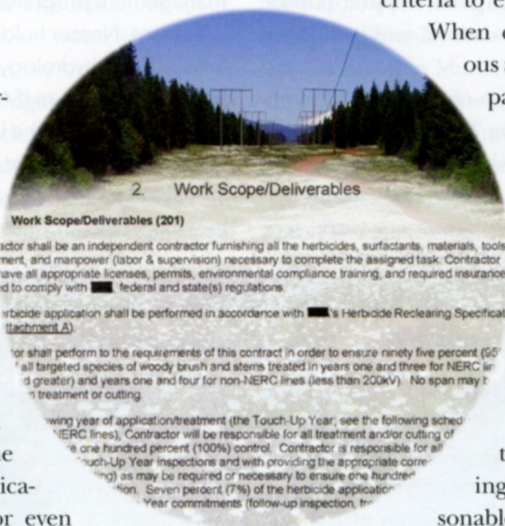
Most herbicide contracts call for 95% control of interfering vegetation. However, utility vegetation managers have no easy way to evaluate performance based on this arbitrary figure. Furthermore, achieving 95% control may not be a reasonable expectation, given that product

manufacturer labels do not even reflect these levels. Also, who said that 95% control reaches the economic threshold to insure reliability?

Three problems frequently arise:

- How to objectively evaluate control
- When to perform evaluations
- What to do about non-performance after the contractor has been paid.

Without contract specifications that detail how vegetation will be audited, the utility vegetation manager is left to subjective visual measurements, which the contractor may contest. As IVM methods become more sophisticated, visual audits become more difficult. For example, with IVM, it is desirable to retain compatible species that may be beneficial to wildlife, all of which can confound the acuity of even the best visual auditor. In addition, some species may be considered targets at different points in time or in certain locations, such as low-clearance areas, or under poles or towers. Imagine an auditor having to



make these determinations from a helicopter at 200 ft (60 m) above the ROW at 100 mph (160 kmph).

How to Measure Performance

One way to measure contractor performance objectively is to set up pre-established sample plots at locations known only to the utility. These can be visited at the end of the first and second season for live and dead plant counts from which percentage control figures can be mathematically determined. In this situation, the level of control would be defined as target vegetation with no visible living plant parts.

An alternative sampling method is to "rank set sample" random plots after an established period in time following treatment. In this technique, the utility vegetation manager randomly selects plots that are among the worst and best sites based on visual estimation. This can be accomplished from a helicopter using GPS waypoints.

Subsequently, the sites are ground checked by establishing a center point, measuring out a 37.25-ft (11.35-m) radius and then sweeping around to mark out a circular area, which is equivalent to 0.10 acre (0.04 hectare). By counting out the ratio of live to dead plants within a 0.10-acre circle, the level of control over a larger area can be extrapolated. This audit measures both performances of the recent contract and benchmarks changes in the vegetative condition for future planning.

In addition, the rank set sample technique allows the vegetation manager to better determine specific reasons for performance variation. For example, an improper herbicide prescription may not adequately control the species mix or the size of the target vegetation. If there was no change in species or other site conditions, it could mean that the applicator had a mixing/blending or sprayer nozzle problem. Both can be remedied by a reputable contractor.

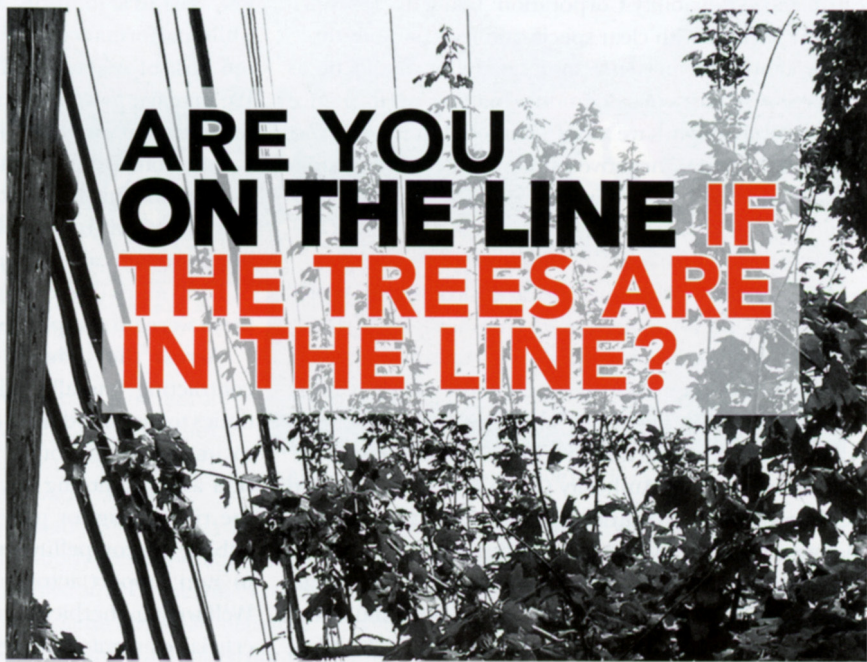
Measure Coverage First, Control Second

Contractors generally cannot wait months for payment while waiting for target vegetation to respond to treatment. A more reasonable approach is to write a contract specification that addresses "spray coverage" of

the target plants rather than percentage of control. The contractor's performance can be evaluated based on the targeted plants treated.

Post-application audits should be performed by inspectors with a solid knowledge of what the specific prescription should look like. Observed herbicide effects such as leaf chlorosis or necrosis may be used to evaluate coverage in the sampling procedures previously discussed. Adequate time must be allowed for symptoms to appear, and it should be understood that timing and symptoms may differ depending on target species, weather, product used and other site-specific factors. Sample plots should be assessed by tallying affected and non-affected plants, then extrapolating the level of coverage. The initial application should achieve 100% coverage on target species.

Second-season observations are the only reliable measure of herbicide application performance. Evaluations should take place on the same sample plots where the herbicide coverage audits were performed. This audit should determine whether target plants are dead or alive, then use this basic data to extrapolate the level of control. For example, 19 dead plants out of 20 treated plants would be 95% control. This is a tough performance level to achieve but feasible with a qualified contractor who is familiar with and dedicated to the utility's long-range plans.



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Guaranteeing Performance

Long-term contracts ensure a high level of contractor performance because the contractor is vested into the vegetation condition within that scope of work. If a contractor is required to apply herbicide the first season, and then patrol and touch up the same ROW the second season, the contractor has an interest in maximizing performance on the first pass and is more likely to meet or exceed the specified control levels. An added benefit to multiyear contracts on the same ROW is that contractor personnel become familiar with the topography, species present, concerned landowners and other site factors, making for smoother operations on subsequent cycles.

Multiyear contracts are well suited to IVM programs, which, especially on federally regulated ROW, include a documented IVM plan. The plan should take into account the concerns of various stakeholders and the differences in site and vegetation conditions. It also should implement multiple application methods and prescriptions, if appropriate. With IVM, a diverse and sophisticated approach is highly desirable for achieving good results.

A utility can improve the likelihood of a successful IVM program by eliminating contractors who have not invested in the necessary training and equipment, or do not have the capability to electronically gather, record and report the information required by the North American Electric Reliability Corporation. Using an appropriate RFP process with clear specifications is paramount.

Reputation, experience and capability should be as important as cost considerations. Judging performance on cost alone might save money initially, but it could cost more in litigation, negative public image or regulatory noncompliance in the long run.

Knowing What Success Looks Like

Several utilities have implemented successful IVM programs with performance-based contracts. With strong contract specifications, and an eye toward long-term quality rather than short-term cost, the result is good ROW stewardship and fewer problems with the public, compliance with government regulations and litigation.

Tennessee Valley Authority (TVA) has trended toward performance-based contracting. Jason Regg, transmission manager for TVA of Chattanooga, Tennessee, U.S., values the ownership that multiyear contracts bring to contractors who help shoulder the responsibility of reliability and offer shared knowledge and understanding. "The trust, quality assurance and clearer communication fostered by multiyear performance-focused contracting leads to a better relationship and a better result," says Regg.

At Mississippi Power Co. of Gulfport, Mississippi, U.S., performance-based contracting has helped to better manage the budget. Bryan Kellar, forestry specialist-staff for the transmission lines and planning department, says, "Performance-based contracting, particularly with low-volume backpack herbicide applications, has revolution-

ized our program, moving us from cyclical, just-in-time maintenance to management of early succession vegetation. Our maintenance cycle has moved from every four years to every six years. Mowing and trimming crews, as well as our asset management crews, have an easier job with less vegetation to deal with. In fact, their operational costs have been reduced so much that the recent increase in fuel and equipment costs were offset."

As an added benefit, Kellar says that the public is in favor of the utility's IVM program because it is now possible to focus on invasive species, such as Chinese Tallow.

For Coast Electric Power Association (CEPA) in Kiln, Mississippi, customer satisfaction ranks as one of its highest goals. "When I started my job in 2007, complaints averaged one per 47 miles (76 km) of ROW," explains Archie Dickens, ROW manager for CEPA. "Today, due to multiyear performance-based contracting, our complaints are one per 174 miles (280 km) of ROW. I personally have time to focus on tree removals instead of fighting public relations fires. I see performance-focused contractors as an extension of myself."

For Cookson Hills Electric Cooperative of Salisaw, Oklahoma, U.S., the benefits of performance-based contracting are accountability, the wise use of their members' dollars and safety. "When safety is the focus of our contractor, everything else performance-related will follow," says Eric Johnson, assistant general manager. "And while performance is critical, so is cost. Over the years, our cost of vegetation maintenance has been reduced. We manage twice as many miles today as we did five or ten years ago with the same budget."

Johnson also states that the members of the cooperative support his IVM program mainly because the utility's office staff is well informed about the program, taking customer calls with professionalism. As a result, out of 1,330 miles (2,140 km) of ROW maintenance this year, there were no complaints and just two inquiries.

Across the industry, multiyear performance-based contracting has allowed for the vegetation manager's duties to be shifted from ensuring contractor compliance to improving customer communication, public education and promoting environmental stewardship. Doing the right thing for power reliability, safety and wildlife habitat is a compelling story to tell and it makes it easier to gain support across a diverse group of stakeholders. Well-written herbicide application specifications are a crucial element in achieving a successful, cost-effective vegetation management program. **TDW**

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Sixty Years of Proving IVM Works for Wildlife and Reliability

In 1952, a five-year herbicide research project was designed and has managed to maintain its relevance for six decades. Several partners embarked on this journey, including Pennsylvania Electric Co. (now FirstEnergy Corp.), the Pennsylvania Game Commission, Penn State University's School of Forestry and Conservation, Amchem (now Dow AgroSciences), DuPont (no longer involved) and Asplundh Tree Expert Co. In 1953, the first research and demonstration plots were set up on a 2-mile (3.2-km) section of a new 230-kV right-of-way that crossed the Pennsylvania State Game Lands 33, hence the nickname "Game Lands 33 Research."

According to Asplundh Vice President Jim Orr, "They didn't know it then, but they were proving that integrated vegetation management (IVM) works for both wildlife and electric reliability."

Looking back to the late 1940s and 1950s, traditional vegetation management methods were extremely labor intensive, somewhat dangerous and relatively expensive. Powerful mowers and side-trimming machines did not exist. Although the post-war chemical industry was developing new herbicides, and herbicide use was appealing in terms of labor and cost, many people had concerns about its potential impact on the environment. Hunters and sportsmen, bird watchers and gardeners, farmers and utility personnel would have to be convinced.

The Game Lands 33 research partnership expected that a scientific study by expert academic researchers would provide credible results, which would hopefully

make sure that utilities had access to every possible tool to manage their right-of-way, including herbicides.

Sixty years of this "five-year project" have yielded some fascinating results. The concerns about the harmful impact that herbicides might have proved unfounded. In

fact, the data showed a positive impact. The reason is that herbicides target the woody plants like trees. The resulting shrubs and grasses supply food and shelter not found in the forest. A wide variety of

animals take advantage of this meadow-like habitat. Furthermore, these plant and animal communities help to resist the invasion of unwanted woody plants through plant competition and by animal feeding behaviors.

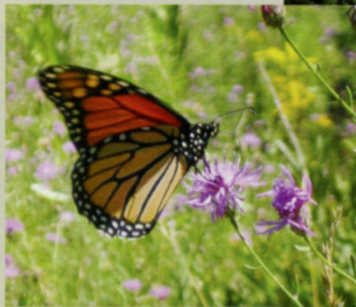
"The area contains an impressive array of species of plants and relatively unknown wildlife such as about 30 kinds of butterflies as well as birds, large and small mammals, amphibians and reptiles," says Dr. Richard Yahner, professor of wildlife conservation at Penn State University, who carries on the research today.

"Although the herbicide products and methods that are studied every five years have evolved over the years, Game Lands 33 research continues to provide valuable data," says Joe Lentz, vice president of Asplundh's Arborchem Products division. Proving that IVM methods benefit both wildlife and electric reliability is as important today as it was 60 years ago — perhaps more so, due to Federal Energy Regulatory Commission regulations regarding vegetation management on transmission lines.

Editor's note: For more information, visit <http://auf.isa-arbor.com> and search Bramble or Yahner, or visit <http://www.utilityarborist.org/images/Articles/Integrated%20Vegetation%20Management%20Sept%202004.pdf>



The 1955 Game Lands conference in Pennsylvania, U.S.



The Monarch is one of 30 kinds of butterflies in Game Lands 33.



A 2012 basal application on Game Lands 33.