

Hydroseeding Tips and Techniques From the Pros

By Janet Aird



Hydro-Plant Inc.

Three experts share their techniques.

Hydroseeding equipment, products, and application methods are changing all the time. This article takes a close look at what some long-term practitioners are doing.

Western States Reclamation

Griffith Park. In May 2007, residents of Los Angeles watched in dismay as Griffith Park, on the eastern edge of the Santa Monica Mountains, went up in flames. Wildfires had been burning all over the country, but this one was different: it was devouring a beloved public park and landmark in the middle of a densely urban area.

The flames burned more than 800 acres of the 4,000-acre park but were stopped before they reached the Hollywood sign, the Los

Angeles Zoo, the historic Greek Theater, and the Griffith Park Observatory, which had just undergone a \$93 million renovation. The fire devastated most of the picnic and hiking areas. Densely packed neighborhoods, freeways, and other major roadways downhill from the park were in danger of mudslides during the coming rainy season.

Western States Reclamation, a pioneer in stormwater management and erosion control, based in Colorado, was chosen to stabilize the hills on one side of the park.

The founders of Western States Reclamation have been involved in erosion control and reclamation since the mid-1970s. They started the company in 1983. The reclamation division works on revegetation and erosion control projects throughout the Western United States. The company does hydroseeding, hydromulching,

and drill seeding. It also employs products such as erosion control blankets and silt fencing along with many other products.

“It’s not very often we’re in an urban setting to do a forest fire rehabilitation project,” says Colby Reid, reclamation division manager, regarding the company’s project in Griffith Park. In addition to stabilizing the hillsides quickly, the company had to consider public opinion on how to handle the problem, which was intense. Most residents didn’t want any vegetation introduced from outside the park. There’s always a minute chance of impurities in the seed, Reid says, but in this case, people didn’t even want seeds of plants that were native to the park that had been grown in another location.

In addition to the public, there were 31 federal, state, local, and community governments involved. The councilman for the district, Tom LaBonge, was at the site every morning.

“Politics is involved in anywhere from 70% to 90% of jobs,” Reid says, “but this was definitely more politically driven than most of them.”

Luckily, hydroseeding wasn’t necessary. A large supply of viable seed had already built up in the soil, which hadn’t been disturbed since the last wildfire in the park, in 1933. Instead, the company hydromulched to hold the soil in place until those seeds had a chance to germinate.

Crews used two different products for the mix, basing the decision on the intensity of the fire, which determined how quickly the vegetation would come back, and on the slope of the hills.

Because of the steep slopes, the large inaccessible areas, and the need to leave the remaining vegetation as undisturbed as possible, the company subcontracted 65% to 70% of the project to Erickson Air-Crane Inc., which provided aerial hydromulch application. Western States Reclamation used ground-based equipment around power lines and other obstacles.

“We had to be careful not to get it on houses, roads, or people,” Reid says. “That made it quite interesting.”

The company has worked on a large number of projects, including some for the Colorado Department of Transportation, the US Forest Service, the National Park Service, and the Bureau of Land Management. Its projects include hazardous waste sites, oil and gas locations, landfills, and mined lands, such as the Victor Cripple Creek Goldmine in Colorado, where it has been working on various projects for many years.

Victor Cripple Creek Goldmine. According to the Pikes Peak Country Attractions Association, a gold miner named Bob Womack struck gold in what is now Cripple Creek, CO, in 1890. Womack died penniless, but more than 23 million troy ounces of gold have been found in the area since then.

The goldmine lies between the towns of Cripple Creek and Victor, 70 miles south of Denver and 24 miles west of Colorado Springs. It's a National Historic District as well as a working mine that operates 24 hours a day, every day of the year. It is the largest open pit and heap leach gold mine in the state.

"It's always been an interesting project," Reid says.

Each project site covers 20 to 30 acres. Although the hills are steep, rocky, and up to 500 feet high without roads or trails, the company has to use ground-based equipment because the projects are too small to justify the expense of flying in aircraft. It can take five people two to four hours per acre to walk up the hills, pulling several hundred feet of hose. Crews use a combination of hydroseeding with native seeds and hydromulching, Reid says. The mixes shoot only about 20 to 30 feet when they're pumping through that much hose.

Operations. Western States Reclamation purchases all its equipment. It owns three of the newest, largest Finn HydroSeeders, along with many other mid- to small-sized mulchers.

"Bigger is always better," Reid says, as long as there's access at the job site for the large equipment. Larger tanks hold more water, which is a big time-saver when the site is far from a water source.

The mix of mulch, seed, fertilizer, and tackifier depends on the job, he says, and almost every job is different.

Some clients write the specifications on what goes into the mix, but the company is set up to do specification writing as well. It partners with an environmental consulting firm, Chenoweth and Associates, which specializes in environmental assessments, natural resource evaluations, and reclamation planning. A landscape architect and a soil scientist are on staff, taking soil samples and matching the mix to them.

"We try to be turnkey on every project," Reid says.

There are different qualities of mulch, which are used for different situations. Western States Reclamation doesn't normally use paper mulches, which can be used with or without tackifiers. Tackifiers, including guar gum and copolymers, act like a glue to hold mulch in place.

Hammer-milled mulches are basically ground-up wood, and because their fibers are short, they can wash away after the first rain, Reid says. Thermally produced mulches have been heat-treated and have longer fibers, which improve matting. Both these wood mulches also can be used with or without tackifiers. A bonded fiber matrix (BFM) is a product made of thermally produced wood fibers already combined with a tackifier. For steep terrain, the company typically uses a BFM.

The site also determines the seed mix and the fertilizer. "Every scenario is different," he notes.

The company does perform some hydroseeding, but most hydroseeding is done in coastal areas where there's more rain, he says, and the seed, fertilizer, and mulch all can be applied in one load.

Often, especially in the West, which may receive no rainfall for months at a time, hydromulch is used to stabilize slopes instead of hydroseeding. It takes two passes to hydroseed in the drier West, the first time to spread the seeds and the second for the mulch. Too much seed gets hung up in the mulch when it's done in just one pass, Reid says. This adds to the cost of the project, and seeds still can dry out before they germinate.

It's common to use more than one product on the same project, he says, including hydroseed, hydromulch, and erosion control blankets and logs. "They all work better in different situations."

Hydroseeding often costs double the drill-seeding rate. It requires more seeds, because the germination rate is lower when seeds are on top of the soil, he says. In addition, if a hose is used in hydroseeding, it's very labor-intensive and slow. Another factor is the distance to the water source. The farther it is, the more expensive, because of the number of times the equipment has to be refilled. Larger hydroseeding machines, which hold more water and so keep costs down because they don't have to be refilled as often, don't have access to as many sites as smaller ones.

The company hydroseeds and hydromulches in a variety of weather conditions, Reid says,

although it doesn't apply products in rain. He's applied both successfully in up to 4 inches of snow. And the wind can help carry the products farther if you can work with it, he notes, especially on a big slope. Just be sure you're covering the whole area, he says.

Advances. "Hydroseeding technology has advanced over the years," Reid says. "It's made the process easier." The basic design of the machines is the same, but they're larger, more powerful for longer spraying distance, and more versatile, durable, and convenient. Some have two booms to allow spraying from both sides of the truck.

Hydroseeding products are getting more sophisticated, cost-effective, and durable, he says, as companies compete for customers. Some of the new products include improved mulches and BFMs, and Profile Product's FGM (flexible growth medium), Flexterra, which begins to control erosion while it is still drying and curing.

Hydroseeding Pro

Bayonne Golf Club. When the owners of a former Superfund site in New Jersey wanted to turn it into a high-end golf course, they called Daniel Sponzilli, president of Hydroseeding Pro in Fairfield, NJ.

Hydroseeding Pro has been in business since 1987. Its projects include highway hydroseeding and stabilization; mine reclamation; landfill capping; and the construction, renovation, and maintenance of parks and athletic fields. Clients include the Federal Emergency Management Agency; Keistler Air Force Base in Mississippi; the Trump National Golf Course; various departments of transportation and port authorities; and city, state, and federal governments along the East Coast from Maine to South Carolina.

The golf club, which is just across the Hudson River from Manhattan, had been a flat wasteland. Then, for five years, it became the dumping ground for tons of construction debris and sludge from the New York/New Jersey Harbor, which created slopes as steep as 90 degrees. These were covered with imported topsoils, some of them sandy. It also has areas of saltwater and freshwater.

"It was set up to look like a golf course in Scotland," Sponzilli says.

Once the environmental work was finished, site owners brought in Sponzilli to stabilize the slopes and hydroseed the entire golf course with grass. The slopes needed a very sticky, permeable mulch, he says, so he chose GeoMatrix SS. The company took soil samples from the site and customized a mulch with adhesives and polymers to complement them. Crews



Hydro-Plant Inc.

Cutting rolls of sod to make stolons

hydroseeded the entire 103-acre, 18-hole golf course in four months.

It's hard to apply mulches to porous soils, Sponzilli notes. When they're sprayed on, they tend to "beat up" the soil—hit the grains and roll them over. The material Hydroseeding Pro used lends itself to sandy conditions. In addition, he says, "The men have to be artists."

Hydroseeding was the only method that would have worked on this project, he says. "We couldn't have completed the project if we'd used any other method. Erosion control blankets would have cost triple [the original amount]."

Operations. "We're very proactive," Sponzilli says. Once contacted about a project by engineers, landscape contractors, or property owners, the company meets with them to discuss any environmental concerns and to educate them about new erosion control and slope stabilization techniques.

The company's recommendations on how to handle the project depend on the slope and the terrain on the site, the soils, the time period the client is looking at to have soil stability, and whether they want to hydroseed for quick germination or hydromulch to hold the soil in place. Hydroseeding Pro also recommend products and the rate at which to apply them. Prices for a project are determined based on the cost of overhead, including labor, and mulch and seeds. Economies of scale come into play so the company can charge comparatively less for larger areas.

The company distributes the GeoEnvironmental mixes: GeoMatrix, GeoPerm (a BFM),

and GeoMatrix SS (Soil Specific) throughout the East Coast. "We like the SS," Sponzilli says. "We can take soil samples and match the product to the soil."

The company owns nine hydroseeding machines, all of them Finns, and uses different sizes depending on the size of project. Accessibility is the most important factor, Sponzilli says. Crews use 3,000- or 4,500-gallon machines on flatter land and smaller ones in smaller areas.

They can work in any condition except rain, depending on the material. One of the advantages to working in a range of climates is that the season is year-round, he says. When work

slows down in the north in the winter, it picks up in the south.

Advances. When the company started 20 years ago, it used erosion control blankets for almost half of its projects. Now it's down to about 3%. The cost is significantly higher for projects done with erosion control blankets, Sponzilli says. Although they don't cost as much to buy, the work to install them is very labor-intensive.

"Erosion control blankets are kind of a thing of the past where we are," he notes. "On the East Coast, 98% of the work we do is spray."

Over the past five years, BFM's and mulches have become stronger and more efficient and permeable, which has made hydroseeding and hydromulching much more efficient. Hydroseeding Pro hydroseeds about 80% of its projects and hydromulches when a project needs only stabilization. When hydroseeding, crews can apply mulch and seed in one pass about 85% of the time.

Hydroseeding equipment increasingly is being put to more varied uses, Sponzilli says. These include hydrosprigging and dust control.

Hydro-Plant Inc.

About 30 years ago, Gary Weems, president of Hydro-Plant Inc., added a centrifugal pump to his Bowie hydroseeding machine and came up with a hydrostolonizer, a machine that spreads grass stolons instead of seeds.

Stolons produce both roots and shoots at their nodes and are perfectly suited to



Hydroseeding Pro

After GeoMatrix SS application at Trump National Golf Course



Western States Reclamation

Griffith Park fire project: hydromulching from a ground unit



Western States Reclamation

Griffith Park fire project: aerial application of hydromulch via Erickson Air-Crane

being shot out of a hose onto bare ground in a mix of slurry. The method is a boon for golf course owners and any others who want fast coverage of turf grasses that don't germinate from seed.

"A lot of golf courses prefer hybrid Bermuda grasses because they have finer blades," says Rob McGann, estimator for the company. "Hybrids aren't available in seed." And while hydrostolonizing—often called hydrosprigging—costs about twice as much as hydroseeding does, it's much less expensive than sod.

Operations. Weems founded the company in 1979. A full-service hydroseeding and erosion control company, it performs hydroseeding, hydromulching, drill seeding, land imprinting, and fugitive dust control.

In addition to golf courses such as Rancho Santa Fe Farms Golf Club and Carmel Valley Ranch Golf Course in California, The Royal Kunia Country Club in Hawaii, and Malinaco in Mexico, Hydro-Plant's customers include city parks and recreation departments such as Tidelands Park in Coronado, CA, and athletic fields for schools and the US Navy. The company also revegetated cliffs and hillsides damaged during the San Diego firestorm of 2003 and restored the Camp Pendleton firebreak in California.

Although crews usually hydrostolonize with Bermuda hybrids, they apply other grasses as well, depending on the conditions of the site. For example, on slopes that aren't accessible to mowers, they use grasses that don't need to be mowed, such as salt grass. For one project, a horse pasture at a high-end residence, the company used Seashore paspalum, a grass that grows along the coast, because the property's well water was too saline for Bermuda.

Recently the company made a change that improved the quality of the stolons it applies, McGann says. It used to buy them from a supplier who would cut them from sod and ship them for use the next day. Now, the company makes its own. Its has sod delivered to the job site, where crews slice it up, put it in a tank with hydromulch fiber and water, and produce stolons that are three to four inches long. The new process is more efficient than buying stolons, he says, and they're more viable because they're fresher and they retain their leaves.

"They hit the ground growing," he says.

Crews apply the stolons and the mix in one pass. The mulch is 100% virgin wood fiber from Profile, which Hydro-Plant has found works best in suspending the solids and the slurry, McGann says. And although the stolons are sprayed out of the machine in all different directions, rooting isn't a problem because the mulch holds them onto the surface, he says. Sometimes a roller will be used to fold them into the soil to further improve contact with the ground. The sites need 100% irrigation coverage, he says, and stolons need more irrigation than seeds do.

"They're viable, living plant tissues. You have to keep them continually wet during daylight until they root and begin to leaf out." In the desert, with temperatures higher than 90 degrees, this can take as little as three weeks. On the West Coast, it can take six to seven weeks.

The company owns five Bowie 3,000-gallon hydroseeding machines, which it uses both for hydrostolonizing and for larger hydroseeding jobs. It also has two smaller, trailer-mounted machines for projects that are smaller or less accessible.

Fugitive Dust Control. The company has been hydromulching for dust control for about 20 years, McGann says. Eighty-five percent of its dust-control projects are on active construction sites.

Dust control is becoming a larger issue in the United States, especially in the desert, he says, but it's an increasing concern along the West Coast as well. The EPA is implementing more stringent regulations regarding the fine, dry dust in the air that comes from fields, roads, sand and gravel operations, and construction sites.

Plain water sprayed from water trucks lasts only a short time, he notes. Instead, Hydro-Plant crews use hydroseeding machines to spray water mixed with polymers and other chemicals, which bind soil particles together and keep them from becoming airborne. Depending on the chemicals they use, the dust control is effective for two to three weeks. Although it's called hydromulching, they rarely use any mulch, and when they do, it's only a small amount.

The company works year-round. Although it can hydrostolonize only during the summer months, usually between May and September, it can hydromulch and hydroseed in all seasons.

"Just in the past five years, hydroseeding has exploded," McGann says. "More people are aware of it, and there's a lot more demand. Products have improved greatly. In years past, they weren't necessarily environmentally friendly. They've come full circle now."

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