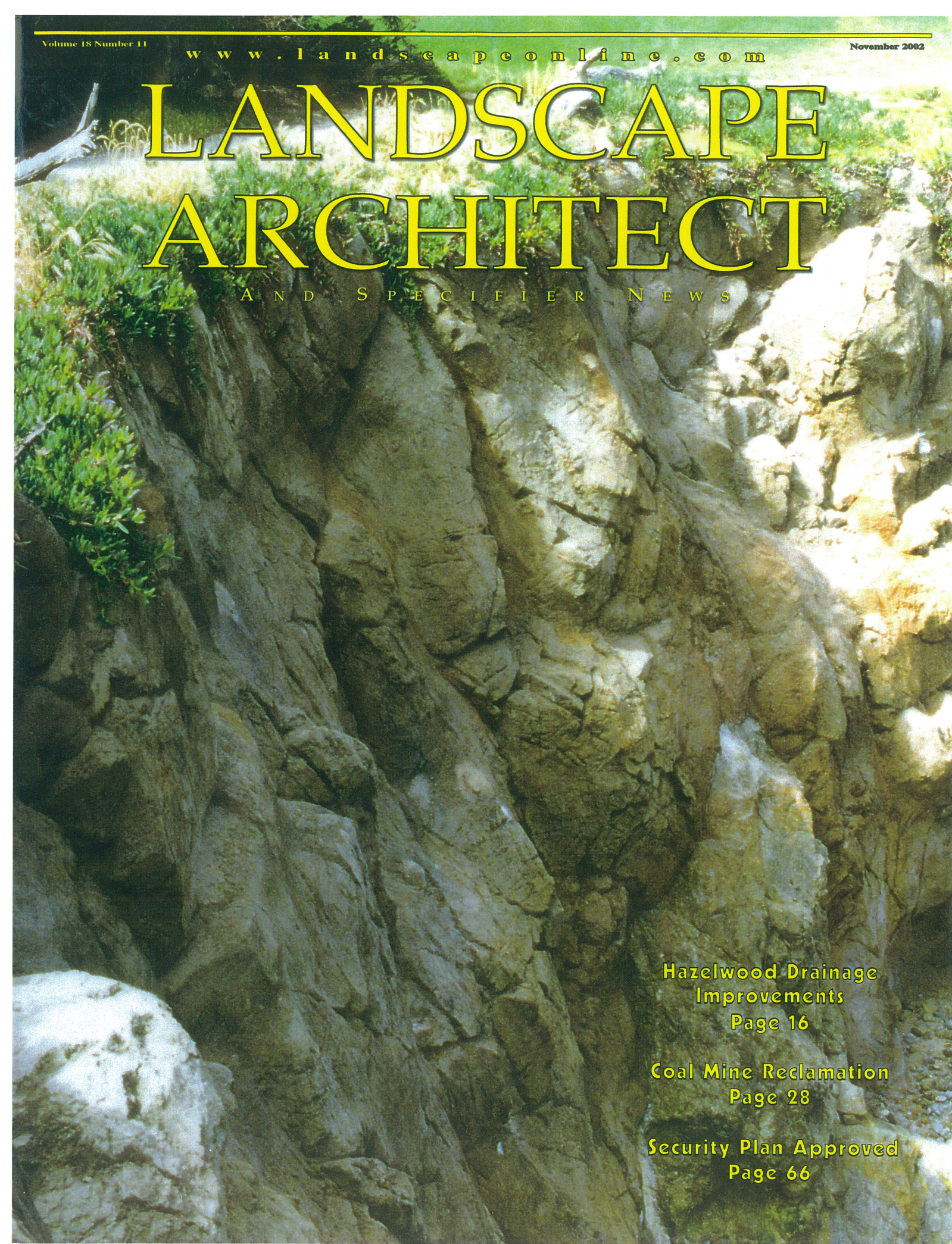


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Dynamics Duo

A Distinguished Design Firm and a Leader in Soil Technology Join Forces to Combat Erosion

By CARMELLA VANN

When a national banking giant decided to build a Corporate Leadership Center for management training in SeaTac, Washington, they sought the expertise of two firms — GGLO, who would later design the Center's 18-acres of learning, recreational, dining and guest housing facilities, and Hendrikus Schraven Landscape Construction & Design, who revolutionized the landscaping/erosion control industry with the advent of the breakthrough living Biostable™ soil and erosion control company, Soil Dynamics.

Mission Implausible?

But first, a quick look at the project, pre-Hendrikus. GGLO's mission sounded simple enough: incorporate over 7 acres of wetlands—a primary site feature that served to inspire and inform the Center's design—into the overall scheme. Of course, what works on paper does not always translate well into real life, especially when plans call for the disturbance, preservation and restoration of the original environment. While GGLO sought to clear the site of invasive plants, they also needed to manipulate the mixed forested wetlands to fit the design scheme without disturbing the wetlands or the adjacent buffer of native species that would serve as a natural, aesthetic transition to the unnatural lines of wood, plaster and concrete.

Plus, GGLO had to contend with the type of unusually wet winter conditions that could render any construction on a wetlands-intensive site virtually impossible. Meanwhile, there was the matter of saturated clay soils and steep slopes with low-grade tolerance that threatened to extend into the wetland buffer—creating the potential for erosion. To make the land useable for parking and sidewalks, an imported structural fill would be needed to provide a compactable sub-base that could support such man-made structures.

The Soil Solution

Knowing that the demands of the project and the unpredictability of the site's landscape resulted in a situation too incongruous to handle themselves, the project's landscape architects consulted with the city of SeaTac, as well as with soil experts, to devise a solution that would facilitate, as well as expedite, building in such a sensitive environment.

Enter Hendrikus Schraven Landscape and Design. With over 28 years of organic landscape construction, design, erosion control work and organic product development, plus erosion control innovations and soils, the soil pioneers were more than ready to take on the delicate task of stabilizing the unpredictable landscape in preparation for building.

Ground Control

The challenge was to sustain ecological balance without compromising the fluidity of the design plan, in which the natural environment and wetlands were integral.

To achieve this, site planners stuck closely to the following objectives:

- 1 Long term erosion control
- 2 Preserve natural landscape
- 3 Wetlands protection
- 4 Runoff reduction
- 5 Pollution degradation
- 6 Long term plant growth/
decrease plant die back
- 7 Production efficiency



Top: EssentialSoil™ is installed throughout the slope and wetlands buffer. Wetland plant installation has begun in the distance. Cedarbrook Learning Center is in the background.

Middle: Telbelts can accurately install EssentialSoil™ around irrigation boxes. Bottom: In the distance, a thick layer of bio-stable EssentialSoil™ is being laid over the structural fill and irrigation lines.

Tools of the Grade

Hydroseeding

Hydroseeding alone does not necessarily reduce runoff and will only give long term erosion control if the soil sub base is fertile and extensive enough for good root penetration. In addition to hydroseeding wild native grasses, the project required many native plants and trees as well. GGLO wanted to design from a planting palette that blended with the existing wetlands area. A strong fertile soil base was needed to support these plants. EssentialSoil™ provided this base. GGLO wanted to design from a planting palette that blended with the existing wetlands area. Furthermore, hydroseeding alone does not necessarily reduce runoff, which was also an issue.

Mats, Fibers, and Blankets

The use of matting, fibers and blankets was not considered. While effective at controlling surface erosion, these methods do not address reducing runoff, pollution degradation, long term plant health, etc. This group of erosion control techniques is fundamentally dependent on the soil sub base they are applied to. There have been many examples of failed plant growth that have left ugly and barren areas of matting and erosion control blankets on hillsides. The presence of matting and blankets alone does not ensure quick and deep root penetration and/or long term success. The soil is the key to long term success. These methods of erosion control can also be time costly when installing many diverse plants, as was done in the GGLO project.

Cellular Grids, Retaining Walls, Rockeries and Stone Embankments

GGLO did not want to use cellular grids, retaining walls and rockeries because they wanted the natural character of the wetlands to be preserved and extended onto the slope area. Stone embankments, layers, and/or buttresses were also not used because these options did not support rich plant growth or the aesthetic purposes of the project. The spreading of various sizes of stone rubble was also not an option because of the appearance of such a method.

Installation of EssentialSoil™

A method was used that is as simple as it is effective. In fact, the method of Bio-Stable™ Soil Generation or replacement is deceptively simple. It doesn't look like standard erosion control device. In fact, it's not really a "device" at all, but rather a very power method of erosion control. Bio-Stable™ Soil or EssentialSoil™ installation achieves all of the above goals with one product, one media and in one application: an incredibly rich yet stable soil that will remain on slopes without aids, protection, coverings and erosion resistant topsoil.

It has been said that soil is a nonrenewable resource. This is no longer the case. EssentialSoil™ is a regenerated living soil that can replenish projects of at any scale. Twelve years of testing and development have gone into the making of EssentialSoil™. The three-dimensional organic/mineral matrix of EssentialSoil™ creates an extremely long term erosion control method that reduces runoff by as much as 35%, degrades pollutants and cleans storm water, lowers plant die back, and preserves the natural appearance that was sought by landscape architects at GGLO.

An added advantage is that EssentialSoil™, being compaction resistant, remains friable and easy to dig, even after heavy equipment drives on it. The production efficiency of the planting crew increased dramatically when planting on EssentialSoil™.

Managing Irrigation Scheduling

One challenge was to manage the scheduling of the irrigation. The irrigation system was designed before the decision to use EssentialSoil™. The water requirements of wetland plants planted in EssentialSoil™ are very different from the water requirements in the existing wetland soils which have high clay content. The high clay content and level terrain in parts of the wetlands buffer and wetlands area saturated quickly, holding water and pooling on the surface. Clay soil needs frequent light watering so that the plant roots do not drown. Initially, some of the irrigation maintenance crews did not know what to expect when irrigating the EssentialSoil™ area. They initially over watered because they were waiting for water to build up and pool around the plants. Other areas of the project have tremendous run off during irrigation because the soils used had low infiltration rates. However, EssentialSoil™ has an infiltration rate that resembles course sand. It also retains an optimum moisture level so that plant roots receive the right amount of water. Even on the sloped area, no runoff was seen even after long periods of irrigation and rain. The irrigation was changed to a more frequent but decreased watering schedule.

Treatment of Sub Soil

Because most of the sub base under the EssentialSoil™ was a structural fill layer that was a minimum of 20 and up to 34 below the final grade, tilling the sub grade was not done. However, to promote breaking up of the clay and even deeper root penetration over time, Greensand was applied to the clay sub grade layer. Greensand assists the process of breaking up clay layers while contributing minerals to the soil.

Living Microbial Inoculation

Following the installation of EssentialSoil™ was the inoculation of the soil medium with a living microbial solution. Hendrikus' Soil Dynamics brews their own compost tea from a catalyst that has been tested over the last 5 years. This compost tea has a balance of beneficial protozoa, bacteria, nematodes and fungi. The result is an immediate inoculation of micro organisms that not only improves fertility, but pathogen resistance as well as erosive resistance in the soil itself.

Long Term Benefits

These include decreased irrigation costs in the area of EssentialSoil™ due to a large deep root mass. Overall maintenance costs will also be significantly lowered due to overall plant health and longevity. In addition, the results are reduced plant replacement and related labor costs. Long term fertilization costs will be reduced to a bare minimum for the first 1 to 3 years, at a rate of only twice per year.

Because the entire EssentialSoil™ area was completely done organically, no chemical fertilizers were used, even in the hydroseeded area. Environmentally, the project did not add any potential pollution and /or toxicity to the environment. In fact, what we did will even help to purify the storm water.

Now, that's the way to stay grounded.