



Absorbent calcined clay products, such as Quick Dry, shown in application here, can be used to dry up shallow puddles. Photo courtesy: Aimcor.

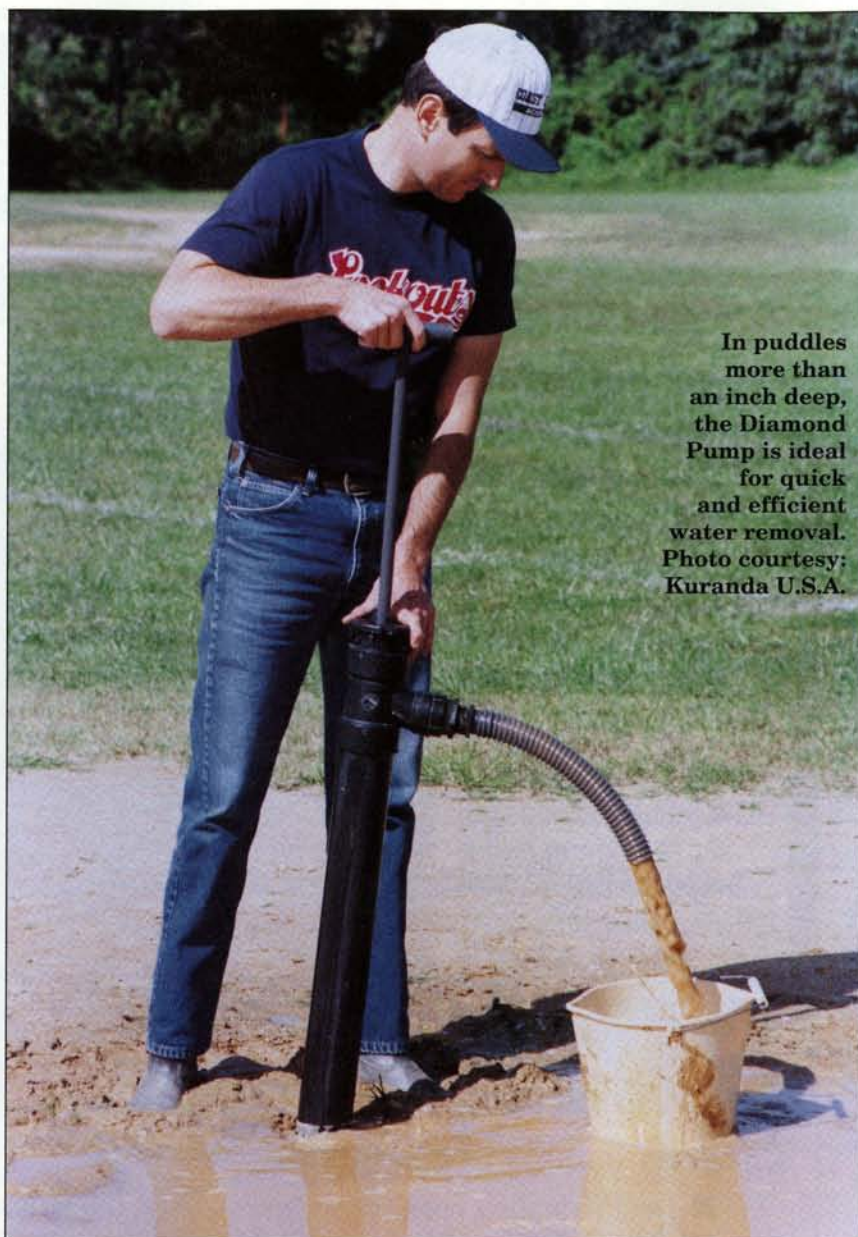
By Matthew Trulio

On June 5, something extraordinary happened in Southern California — it rained. Rainfall totals for the day varied between trace amounts and more than an inch in some areas. The bulk of the rain came in a four-hour period. By the precipitation averages of most of the country, it wasn't terribly impressive. However, by Southern California's standards it was a record, for both for the day and *entire month* of June.

The storm was well-forecasted and caught few people by surprise, least of all Steve Wightman, stadium turf manager at San Diego Jack Murphy Stadium, home of the Padres and Chargers. Despite the generally idyllic San Diego climate, Wightman stays "dialed into" the weather forecasts. It's a good habit he picked when he managed the field at Mile High Stadium in Denver.

"We have a pretty good dialogue with the National Weather Service — we can call any time, 24 hours a day, and talk to a person," he explains. "At Mile High, we actually had a meteorologist on retainer."

Wightman's concern over the weather on June 5 wasn't casual or curious — the Padres were scheduled to play the Florida Marlins that evening and season-high attendance was predicted.



In puddles more than an inch deep, the Diamond Pump is ideal for quick and efficient water removal. Photo courtesy: Kuranda U.S.A.

WINNING PLAYS FOR HANDLING UNWANTED WATER

"We were looking at having some 50,000 people," he explains. "It was bat night, and that always draws a big crowd. We didn't want to lose that game, so every effort was made to keep it.

"The National Weather Service sure hit this one right," he continues. "We were ready for it. On Thursday [June 3] we started going over our plans for putting

down the tarp and dealing with the rains during the game. Once we thought the rains were coming, we elected to put down the tarp. We got it on just as the rain hit and had to cancel batting and infield practice. At 6:20 p.m. we pulled the tarp off, and at 7:20 p.m. the game started, although the chance of showers was still there. The crew did a terrific job."

The Padre lost to the Marlins that evening. The game, however, was *saved*.

Where Water Troubles Start

In a perfect world, all athletic fields would not only have subsurface drainage systems, but also soil percolation rates that actually allow these systems to function at their optimal levels. (You may have a drainage system that can "drain 6 inches per hour," but if your percolation rate, the rate at which water travels through the soil profile, is 1 inch per hour, your rate of drainage will be 1 inch per hour.) But as any turf manager on an athletic field after a summer squall can attest, the world is less than perfect.

There are a number of reasons for poor field drainage. Compaction caused by traffic is probably the most common. But even an uncompacted soil profile can become "clogged" with organic matter over time in the natural drainage process. Thatch buildup can further inhibit drainage. Low spots, caused by traffic, improper daily maintenance or poor field layout, can produce pond-sized puddles on an athletic fields after even a moderate rain. And, of course, climate plays a role. By virtue of simple weather patterns, the water removal headaches of a turf manager in a dry climate are much less severe than those of a turf manager in a high rainfall area.

Cultural and Maintenance Solutions

Short of completely rebuilding an athletic field that becomes a quagmire with the first morning dew, there are a number steps you can take to relieve excess water problems on an athletic field. The first is to improve whatever drainage you have. That can mean retrofitting the field with subsurface drainage. However, without addressing the soil profile the new system will be of little benefit. Regular *aerification* and other maintenance practices are crucial.

"You have to perform the necessary cultural practices that address the most important issue of any athletic field, which is drainage," Wightman asserts. "It's not just for handling heavy rain before and during games. Drainage contributes to the healthy growth of turf. Make sure all turf areas are well-aerified and toppedressed frequently, and dethatched if necessary."

Low spots on baseball diamond infield skinned areas, which lead to puddles, are created as much by improper dragging

as they are by player traffic. Low spots should be lightly excavated, moistened, refilled with the appropriate infield mix, tamped and dragged.

Improper dragging also creates lips. Not only do lips make for erratic baseball hops, but they also form mini-dams, which prevent water from draining to the outfield and cause puddles on skinned areas. Using correct dragging techniques (see *sportsTURF* January 1993, "Big Game Field Preparation") will help alleviate this problem. If lips do build up during a game, they should

be removed after the contest is completed.

Water Control Arsenal

There a number of tools for controlling excess moisture on athletic fields. One of the most effective, in both preventative and curative applications, is calcined clay.

In general, calcined clay products are made of extremely porous clay materials. Part of their manufacturing process includes being fired at high temperatures, which keeps the otherwise unstable materials from breaking down

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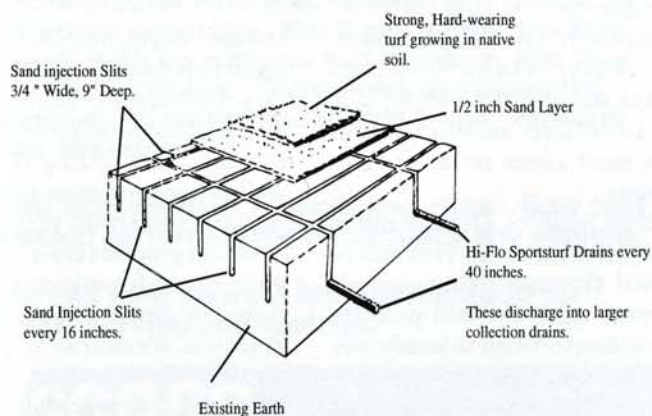
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Handling Unwanted Water

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in the field. Calcined clays can absorb their weight — even a bit more than their weight — in water. The primary benefits are compaction control and moisture control, in both cool and warm climates.

“We used a number of products to control moisture — Turface, Terragreen and Diamond Dry, which is a corn-husk byproduct used for skinned area drying,” says Wightman. “We use a tremendous amount of calcined clay for building our infield. If we had no rain at all, we would still use 25 tons of it. We also spot-apply calcined clay if we have puddling.”

Wightman refers to two of the three most common ways of applying calcined clay products:

- Incorporation into the infield skinned area mix before or during construction. Adding calcined clays enables the mix to handle excess moisture.

- Incorporation into turf areas through topdressing following aeration. Calcined clays increase soil porosity, which in turn reduces compaction that leads to drainage problems.

- Spot-application into puddles. Calcined clay can be used to “dry up” puddles through spot-application. However, when using calcined clay products to control puddles, it is suggested to restrict use to shallow puddles, in most cases no more than 2 inches deep.

Deep, large puddles often demand mechanical water removal. This can be accomplished through using pumps; however, most athletic field puddles aren't large or deep enough to justify conventional pump use. There are mechanical products manufactured specifically for this purpose.

Tarps are a physical, preventative tool for handling moisture on athletic fields. Their selection is critical to successful implementation. Tarp manufacturers will gladly assist you with

finding the right size, shape and color tarp. Wightman offers a few basic suggestions to consider before you set out to buy.

“Color and weight are important,” he explains. “In the southern regions of the country, where you don't have as much ice or snow, a lighter material, say 7 ounces per square yard, would be suitable. But in the colder regions of the country you might need something in the 14 ounce per square yard range. And always consider handling and manpower — how you're go deal with tarp.”

To address tarp handling, Wightman holds “tarp practice” on a couple of Saturdays before the Padres begin their

hotter it gets underneath,” he asserts. “With a dark tarp on a hot day, 15 or 20 minutes on the grass may be all it takes to burn the grass blades, whereas it might take a lot longer with a light-colored tarp.”

In tarp application, timing is crucial. A wet tarp can weigh as much as 50 percent more than a dry tarp. The easiest way to apply a tarp, suggests Wightman, is to surround it on all four sides and keep “pumping” air under it as you move.

“Try to get the tarp on the field in about 60 seconds,” says Wightman. “In a heavy rain, if it takes much longer than a

minute or a minute and a half, you may not be able to get the rest of the tarp unfolded. In a down-pour, you're going to be lucky to get it on the field.”

Timing means not only being prepared to use tarps, but also having a good idea of what kind of weather is coming your way and when it will arrive. The National Weather Service, as previously mentioned, is the most accurate and cooperative source of this data and is more than willing to supply information to turf managers, from those who manage

professional baseball diamonds to those who work on high school gridirons.

While calcined clays, tarps and mechanical devices are effective tools for controlling and removing excess water on athletic fields, Wightman emphasizes that they are by no means replacements for sound, consistent cultural practices.

“Make sure your field is set up to deal with rainfall,” he concludes. “Most turf managers don't have the budget for a \$10,000 tarp. Money spent on regular and proper core aeration, topdressing, periodic dethatching, mowing and fertilizing will go a long way toward preparing your field for rainfall, as well as keeping it healthy.” □



Subsurface drainage, installed during field construction or retrofitted, combined with properly designed and constructed soil profile, is the key to turf health, as well as most water “ponding” problems.

Photo courtesy: Cambridge Sportsturf Drainage Inc.

season. Wightman and his crew spend about four hours on these days going over tarp procedures, including unrolling, covering the field, removing water from the tarp and rolling it back into the wall. These practice sessions are particularly important to the Jack Murphy Stadium grounds crew, since they don't have enough personnel to move the tarps on game days and must enlist stadium workers, who often have no tarp-moving experience, to help. When the tarp is actually brought out to cover the field, regular grounds crew members are interspersed between stadium workers to provide guidance during the process.

Tarp color, says Wightman, is critical. “Remember, the darker the tarp, the