



*If your bunkers have issues, an effective solution may be less expensive than you think.*

## MAKING OLD BUNKERS NEW AGAIN

BY ELLIOTT DOWLING, AGRONOMIST, NORTHEAST REGION

**B**unkers are often a source of golfer frustration but, whether you like them or not, bunkers are an integral part of golf and a feature that is not likely to go away any time soon. While bunkers can add strategic and aesthetic value to a golf hole, they can also be a source of dissatisfaction due to their placement, appearance or condition.

Bunkers are arguably the most dissected and disagreed upon feature of a golf course. The way a bunker should look and play is seemingly always up for debate. Simply put, there is no perfect or ideal bunker. There are opinions aplenty about sand color, sand firmness, the best type of sand, and how the bunkers play at the course down the street – which always seems to be better than your course. Because so many factors vary from course to course, there will always be the great bunker debate over how they should look and play.

If golfers are becoming restless with the current condition of the bunkers at your course, they have probably asked how the bunkers can be improved. The answer to this question is not always simple, and certainly varies from course to course. Before you consider an expensive renovation project, evaluate your bunkers

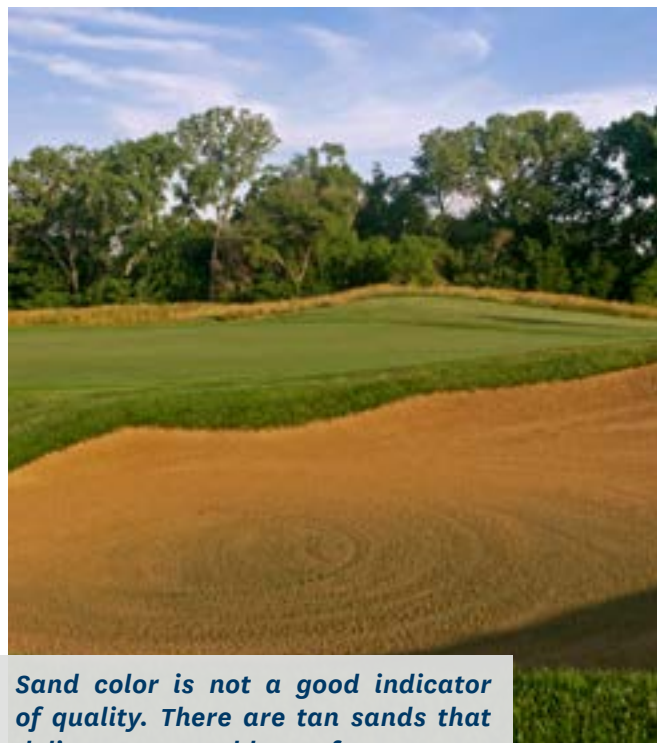
and decide what ails them. This evaluation process may reveal that bunker condition and playability can be improved without expensive renovation efforts.

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### Evaluating Bunkers

There are several criteria that can be used to evaluate the functionality of bunkers. Before undertaking a renovation of any sort, it is important to have a clear understanding of what the problems are to guide the path toward improvement. In some cases, expensive renovations have been avoided by properly evaluating bunkers and only correcting what is needed to solve the issue. To properly evaluate your bunkers, answer the following questions:

- Do the bunkers drain after a moderate or heavy rain?
- Is the sand contaminated with soil and debris?
- Does formerly white sand have a tan or off-color appearance?
- How does the landform around each bunker look? Does it funnel water into or away from the bunker?
- Are exposed edges leading to increased soil contamination?
- Is it too costly and time consuming to maintain a crisp edge around the bunkers?



***Sand color is not a good indicator of quality. There are tan sands that deliver comparable performance to white, engineered sands for a much better price.***

- Do the bunkers have steep sand or grass faces that are difficult to maintain?
- Can your current bunkers be maintained for a reasonable amount of money and time?
- What is the main source of golfer complaints about the bunkers?
- Do golfers say that the bunkers play too firm or too soft?

These are questions that must be answered about bunkers before deciding on the best way to improve what you currently have.

### Solutions for Common Problems

Most golf courses will look to the easiest and most cost-effective way to repair or improve anything on the course, bunkers included, and rightfully so.

Spending too much money on things that aren't necessary could put the facility in a poor financial position.

To determine the least-expensive or most-efficient way to improve the bunkers, use the list of questions above to identify the key issues. Once the main problems are determined, choosing the best path forward is easier. The following sections discuss several of the most common issues with bunkers and some options for addressing the problem.

### **The sand is contaminated but the bunker drainage system works fine**

When bunker sand is contaminated with soil or organic material the bunkers often drain slowly or hold water, playability can be poor, or the appearance could be better. If your bunkers have a drainage system and you have determined that it still functions properly by flushing water through the pipes, changing sand could be all that is necessary. Simply remove the contaminated sand and replace it with a [new sand that has desirable physical characteristics](#).

Selecting the appropriate sand is strictly up to the facility. For example, some facilities want bright white sand and are willing to pay a premium price to have that sand shipped across the country to their location. While this is a fine solution if you have the money and are willing spend it on sand, many facilities try to choose a sand that can be found closer to home for a more reasonable price.

Depending on your location, white sand could be available for a reasonable price. However, a local source for sand could be tan or brown, which is completely acceptable as long as the sand performs and plays as desired. Color is just for



***Clogged bunker drains cause serious issues. Companies can find and clear drains for you, or you can locate the clog and address the issue yourself.***

looks and has no impact on the actual quality of a sand. Like most things in golf course management, there are specific criteria for determining a good bunker sand. Understanding these criteria will help you decide on a sand, which could be tan, that is a significant upgrade from what you currently have at a price you'd rather pay.

### **The bunker drainage system is not functioning properly**

One of the most common bunker issues is improperly functioning drainage. Drain tile can become clogged or crushed and lose its functionality. In the absence of functioning drainage, bunkers will remain wet and likely play firmer than desired. With heavy rain or irrigation, water may pond in bunker floors and require significant labor costs to restore normal playability.

Superintendents can confirm if a drain pipe is





*Soil is likely to break away from an exposed soil bunker edge, especially during rain. Soil that falls from the edge contaminates the sand.*

blocked and slowing water movement by flushing water through the bunker drainage system or with the use of a camera and pipe snake. If the pipe is clogged, there are companies that use high-pressure water to blast through blockages and clean the perimeter of drain tiles, flushing away debris and returning the pipe to its original performance. This is the easiest method, albeit potentially expensive, to clean existing drains without digging.

In most instances, without internal drainage, bunkers will perform poorly regardless of sand quality. On the other hand, bunkers with a functioning drainage system will still perform poorly if the sand does not meet minimum guidelines with its infiltration rate, which should be no less than 30 inches per hour.

An important feature of bunker drainage design is including a cleanout port on the high side of the bunker. Exposing a pipe to the surface and covering it with a drain cap will allow a hose to be placed into the drainage tile to flush sediments or other obstructions from the pipe to improve functionality. A cleanout port also allows you to test whether your bunker drainage system is functioning properly if the bunker begins holding water.

**Architectural changes are needed to preserve what you have**

Some courses are in the fortunate position to have both functioning drainage and clean sand, with no glaring issues yet. In this instance, sand contamination from sediment or organic debris is most likely what will initiate future bunker issues. Although it is impossible to keep all contaminants out of bunkers – e.g., grass

clippings and tree debris – looking at the architecture of the bunkers can help extend their life expectancy.

A specific area to consider is the edge or lip of the bunker. Many courses maintain a crisp vertical edge that requires several labor hours per bunker every month to maintain. Labor concerns notwithstanding, an exposed soil lip is an obvious source of contamination. Exposed bunker edges can easily deposit soil into the sand through rain, foot traffic or maintenance practices – like the edging required to maintain that sharp edge.

Slight architectural changes can reduce the amount of contamination that falls into the sand from the bunker edge. Rather than an exposed soil edge, wrap sod over the edge to cover the soil. This will reduce the amount of soil and rocks that fall into the sand. You can also rake the sand to cover the exposed edge, which will limit the amount of soil or debris that can enter the bunker.

In some instances, water moving into the bunkers from the surrounding topography is the source of contamination, not the bunker edge. Adjusting surface grades and drainage can deflect water around the bunkers, rather than through them, and reduce the number and severity of washouts that accelerate contamination and failure. Adjusting the shaping around bunkers does not need to be very invasive or expensive. In fact, very minor and seemingly simple modifications are all that are necessary to make a significant improvement in many cases.

### **The bunkers are failing but you don't have the resources for long-term solutions**

Many courses recognize that their bunkers are failing, leading to playability concerns and dissatisfied

golfers. However, because of limited resources they are not able to replace the sand, install drainage or make architectural changes. There are still things that can be done in these situations to improve bunker performance.

One of the more popular methods to clean existing bunker sand is using a sand sifter. There are several effective options available to perform this process, ranging from more expensive machines to less expensive hand tools. The mechanical option is more efficient but certainly comes at a premium price when compared to hand tools.

If cleaning sand is not an option, either because the sand is too contaminated or because the process will be too time consuming, adding a layer of new sand on top of the current sand can provide some relief – although very short-term relief and with mixed results. This method always appears to be the easiest and most cost-effective method to temporarily “fix” poorly performing bunkers. However, it is important to understand that adding a new layer of sand never actually fixes the problem but simply buries the problem deeper. Yes, this could buy you time, but how much and to what level of improvement is difficult to say.

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There is rarely enough sand added on top to make a big difference and a very light layer of sand is hardly enough to correct any problem. Money is often wasted by taking this approach because



*The difference between lined (left bunker) and unlined bunkers is tremendous. Investing in liners yields more reliability and a longer life expectancy for the sand.*

your investment in new bunker sand is almost immediately contaminated by the old sand, reducing its usefulness very quickly. If you continue adding new sand for several years you might realize you spent a lot of money achieving very little when that same money could have been spent on a more long-term solution.

If your bunker sand is so contaminated that it has started to look and play more like soil than sand, replacing the sand is inevitable. Until total replacement is possible, superintendents have found success using long tines on a mechanical rake to loosen the existing sand. This approach is best if performed on a routine schedule because mechanically loosening sand will not be very effective as a one-time procedure. Plan on loosening the sand at least once per week, if not more frequently, depending on the level of contamination.

A somewhat more expensive option is using a venting

machine like the Air2G2™ to loosen sand particles. Other options to consider are applying wetting agents to the sand to break surface tension and improve infiltration or applying materials to break down surface algae that is negatively impacting performance. In theory, this will help return a white color to the sand – if applicable – and improve water infiltration, but the results have been inconsistent in many cases.

### **The bunkers need to be completely rebuilt**

The principal purpose of this article is to help diagnose and remedy bunker issues with the most cost-effective measures possible for your facility. That said, it should be mentioned that if you want to fix bunkers in a way that has the longest life expectancy and highest chance of success then a total rebuild could be exactly what you need. Based on current technology and field experience regarding

bunker construction, installing a liner – either a durable liner or a sod liner – is a good idea to keep native soil and rocks from migrating into the sand.

In my opinion, sand selection is less of a concern than a reliable liner. A sand that is manufactured and white or a tan color will play equally well if it meets the same performance standards. On the other hand, keeping as much soil and organic debris out of the sand as possible will extend bunker life expectancy. Moreover, liners can reduce the severity and frequency of washouts following heavy rains, saving labor hours and maintaining cleaner sand. Ultimately, installing a durable liner to reduce sand contamination from the subsoil and keep sand on bunker faces will extend the [life expectancy](#) of your investment.

There is no doubt that liners, drainage and new sand will improve bunker performance and reliability, but they come at a premium price. Some courses feel that a total bunker renovation is their best choice and they might be right. Other courses, however, feel that correcting one factor outlined above – like drainage, sand or architecture – will fix their bunker problem without investing the same resources required for a total rebuild.

## **Conclusion**

Bunkers are often a target of golfer complaints and superintendent disdain, but that doesn't need to be the case long term. There are ways to address many common bunker issues – some more costly or time consuming than others – without necessarily performing a full-scale renovation. There are also many ways to improve bunkers with in-house labor and equipment. Don't be so quick to dismiss poorly performing bunkers and assume that the only fix is wholesale renovation. Use a checklist to determine the exact issue, or issues, and work through those issues to produce better playability and easier maintenance. A [USGA agronomist](#) can also help evaluate bunker issues and work closely with you to develop a customized plan for the course.

*Elliott Dowling is an agronomist in the Northeast Region*