



**USGA** COURSE CONSULTING SERVICE

# Site Visit Report

## **Recreation Centers at Sun City West** Sun City West, Arizona

Visit Date: April 14, 2025

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**USGA** GreenSection

# Executive Summary

Thank you for your kind hospitality and the invitation to return to the Recreation Centers of Sun City West (RCSCW) to conduct a Course Consulting service visit on behalf of the USGA Green Section. It has been two years since my last consulting visit; however, I was able to stop by last year to see the damage on the Echo Mesa putting greens. It was good to see bermudagrass recovering in the damaged areas. We covered a wide breadth of golf course topics during this visit. A brief summary of those topics is included below:

- **Staff levels and golfer expectations.** Staff levels are lower on these golf courses compared to most others in Southern Arizona, and golfer expectations need to be aligned with the low budget allocated to labor.
- **Equipment replacement program.** The club stakeholders have done a good job keeping up with equipment replacement. This must continue.
- **Bermudagrass recovery from overseeding.** We will discuss the key components of a proactive transition management program to facilitate successful bermudagrass recovery from overseeding.
- **Putting greens.** The bermudagrass is recovering nicely from overseeding on the putting greens. We will discuss a modification to the putting green aeration program, perhaps shifting to an aggressive event in the summer.
- **Overseeding.** We will discuss the ideal overseed dates as well as seed rates.
- **Trees.** Every golf course in Southern Arizona has lost trees over the past few years, especially trees that are older than 30 years. New trees are being planted on Echo Mesa, and many trees were planted on Grandview during the renovation.
- **Water conservation and the Course Coefficient.** I applaud your efforts to continue replacing aging irrigation systems and removing irrigated turf to reduce your reliance on water use. I would also like to introduce the concept of the Course Coefficient and demonstrate some interesting values on Grandview.
- **Roughs.** We will discuss improvements to the nonoverseeded roughs, including adding new chemistries to the weed control program.
- **Weed control.** We will discuss utilizing multiple chemistries for weed control to avoid resistance.

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# Staff Levels and Golfer Expectations

## Observations and Recommendations

### 1. High Expectations/Low Staffing

It is apparent the expectations for the quality of the course care at these seven golf courses are not necessarily aligned with the budget for staffing.

- There are only 10 to 11 staff members per 18-hole golf course, which is three or four fewer staff members than what I typically see at public golf courses. There are a few municipal properties in Southern Arizona that only have seven to nine employees; however, as you might expect, the level of conditioning is quite poor.
- From my experience, for the 18-hole golf courses, you need a total of 13 to 16 employees to provide good quality course conditioning. Higher-end golf courses will typically have 18 to 23 staff members per 18-hole golf course. The higher-end private golf courses typically have 25 and as many as 40 employees for an 18-hole property.
- The amount of labor budgeted for these properties at RCSCW is below average, yet the expectations remain high. There is only enough labor to conduct routine mowing and golf course setup. In summer when mowing requirements are higher, even that amount of maintenance is difficult to complete.
- For those reading this report that are not familiar with behind-the-scenes work in the golf course maintenance world, there is no real magic to producing high-end quality conditions. It comes down to having enough people, having excellent equipment, and dedicating that team to very frequent mowing and attention to detail. Frequent mowing at low mowing heights is a sure way to shine up a golf course and improve aesthetics and playability. However, the amount of labor at these golf courses is not set up to accommodate this level of maintenance.
- It is important to note here that while it is absolutely recommended to continue to remove irrigated turf to comply with the Arizona Department of Water Resources recommendations, these new desert vegetation areas will require more labor to manage when compared to the areas that were once nonoverseeded roughs. You may consider outsourcing this maintenance or, even better, add two or three additional staff at each golf course that has undergone turf reduction.

# Equipment Replacement Program

## Observations and Recommendations

### 1. Equipment Turnover

Many golf courses I work with lease equipment and turn equipment over every four to five years. For those that purchase equipment, if they are on a good equipment replacement program, they are typically spending \$300,000 to \$500,000 per year for an 18-hole property. Even with this budget, this typically only means purchasing three to six pieces of equipment each year.

- For the RCSCW, you have allocated roughly \$1.5 million for equipment replacement each year, spread over seven golf courses. That is a little over \$200,000 per year per golf course, which is a good program. It is just slightly less than average.
- For the golf course maintenance team, the reliability and efficiency of the equipment is critical to complete tasks in the morning hours prior to play without interruption. When equipment is failing and the team cannot complete work prior to golf, operational efficiency drops significantly.

In summary, you have been adhering to a good-quality equipment replacement program for some years now. I support this program and recommend that it continue.

# Bermudagrass Recovery from Overseeding

## Observations and Recommendations

### 1. Healthy Bermudagrass Emerging

Samples collected on Deer Valley and Grandview all revealed healthy bermudagrass rhizomes ready to emerge from winter overseeding. This is a great sign that you can be optimistic about a successful bermudagrass transition; however, the bermudagrass may still suffer under the ryegrass if the maintenance practices were to favor the overseeded ryegrass.

### 2. Proactive Transition Program

A proactive transition management program is essential for success. Ideally, this program would start in late January or early February every year and will slowly work to shift the competitive advantage from the overseeded ryegrass to the understory bermudagrass. Here is a review of the proactive transition management strategies:

- **Irrigation.** From mid-April through mid-June or until the bermudagrass has fully recovered (whichever is sooner), it is recommended to irrigate at 100% to 110% of evapotranspiration. This will result in wetter than ideal conditions for play; however, the quality and coverage of bermudagrass will be sacrificed if conditions are dry during this time frame.
- **Nitrogen.** It is recommended to apply 2 to 3 pounds of nitrogen per 1,000 square feet on all overseeded areas between April 15 and the end of May. No other nutrients are required, just nitrogen. Use the simplest and cheapest form available. Ammonium sulfate is often an excellent choice.
- **Sapphire®.** There are many ways to utilize Sapphire; however, in my opinion and in my experience, I prefer to start spraying early (as soon as late February) and spray routinely at only 3 to 4 ounces per acre at two- to three-week intervals. If this amount of spraying is not pragmatic for you due to labor constraints, then I would revert to the 6-ounce rate and plan four applications, with the first beginning in mid-March, and space the applications approximately three weeks apart. You may need a cleanup application to kill remaining ryegrass and any annual bluegrass. This is often best done with Kerb® at 30 ounces per acre. You also may consider Revolver®. When spraying Sapphire, I do not believe you will need to spray the growth regulator Anuew™.

- **Mechanical practices.** It is recommended to use any tool you have available to make a hole, slice or to stand up the ryegrass, followed by mowing. Any means to create a void to help bermudagrass capture sunlight will prove beneficial. Courses in this area use a variety of tools such as solid-tine aeration, slicing using a machine such as an Aerway, and you may consider experimenting with the Imants RotoKnife. Vertical mowing is quite efficient, and even using a large brush to stand up the ryegrass followed by mowing is another good strategy.

## Putting Greens

### Observations

#### 1. General Condition

We were able to spend some time on Echo Mesa, Grandview and Deer Valley. I was pleased to see healthy bermudagrass emerging underneath the overseed on all three courses.

- Soil profile samples showed a robust and healthy bermudagrass rhizome population, a good sign that you will enjoy another strong bermudagrass transition season. The soil profile samples also showed no concerning layers and healthy roots down to 6 to 7 inches.
- The Echo Mesa and Grandview greens were recently aerated with 3/8-inch solid tines on a 2- by 3-inch spacing. While the greens will heal rapidly from this disruption, ball roll was impacted. It will take likely another week or so to return to smooth conditions.
- The Echo Mesa greens were damaged due to vandalism in the fall, and I wrote a brief summary of my observations in the fall of last year. Unfortunately, the overseeded grasses never fully matured in these damaged areas. However, now in mid-April, there is healthy bermudagrass beginning to fill in the bare areas. It will take some time for the bermudagrass to grow in, and there is surface algae present where there was no grass.



Areas damaged from vandalism on the Echo Mesa greens are seeing bermudagrass recovery.



Soil profiles show deep roots (left) extending beyond 7 inches and no physical limitations to drainage. The shear strength (right) was strong at over 20 Nm.

## Recommendations

### 1. Expediting Bermudagrass Transition

The practices to facilitate bermudagrass recovery from overseeding are similar to the strategies provided above for the fairways.

- Increase irrigation, increase nitrogen, and use small-diameter solid tines, spiking, light-intensity vertical mowing, and brushing to disturb the overseeded turf and thus encourage the understory bermudagrass.
- The biggest difference from the fairways is that the Sapphire does not impact the *Poa trivialis* on the greens, and I would not recommend using any chemicals.

### 2. Restoring Smooth Conditions after Aeration

After aeration, it is recommended to continue to apply sand to greens in addition to deep watering and rolling to ensure the entire canopy is filled with sand as well as the voids from aeration. If not enough sand is applied, the sand will fall in the holes and leave small depressions that disrupt ball roll. We discussed raising the mowing height on Grandview temporarily to avoid mowing the sand and allow the turf to grow up through the sand.

### 3. Echo Mesa Greens

It is recommended to use a hand tool to spike, scratch and disrupt the algae crust that has formed in the damaged areas. Spray fungicides such as Mancozeb and Daconil® to mitigate algae growth. Spot fertilize with ammonium sulfate frequently to encourage recovery. The acidifying effect from the ammonium sulfate will also help combat the algae.

#### 4. Modified Aeration Program Consideration

It is popular in the Coachella Valley and in Southern Arizona on bermudagrass greens to conduct only one or two disruptive aeration events annually.

- Switching to one intensive event would improve surface conditions for more days out of the year, and you can still achieve your agronomic goals.
- This one event would require approximately a seven-day closure and is best conducted between mid-June and mid-August. The remainder of the year, you would conduct venting operations using 1/8-inch or 1/4-inch solid or hollow tines to mitigate compaction, increase receptiveness and improve soil water infiltration.

Below are the steps involved with this intensive aeration event:

- Apply approximately 0.250 to 0.300 pounds of nitrogen per 1,000 square feet several days prior to this aeration event.
- Conduct vertical mowing with blades set approximately 1/8 inch below the bottom of the rollers. Make upwards of six to eight passes over the greens, clear the debris, and mow at a height of 0.080 inches, approximately. The goal is to stand up bermudagrass and scalp the material growing horizontally along the surface.
- Next, conduct the deep-tine aeration with approximately 3/4-inch solid tines.
- Immediately after the deep-tine event, conduct the first hollow-tine event with 5/8-inch outside-diameter tines on a 1.5- by 2-inch (or 2- by 2-inch) spacing.
- Conduct a second pass at a 30° offset. This can be done the same day or the day after the first pass.
- Be sure to heavily water the greens after applying the sand.
- Do not let the sand sit for more than an hour on the greens.
- Do not mow for at least seven days and apply more sand to completely fill all the holes.
- Extensively roll the greens to firm and smooth.

## Overseeding

### Recommendations

We discussed a few modifications to the overseeding program.

#### 1. Overseed Rate

It is recommended to apply 700 to 1,000 pounds of seed per acre in the fall to achieve a healthy and robust ryegrass stand by late November. We discussed changing to 100% perennial ryegrass. These changes will absolutely improve the quality of the overseed surfaces. They also increase the risk of poor transition, but if you continue to follow a proactive program, you will be rewarded with good results.



## 2. Overseed Schedule

We also discussed moving the start of overseeding on any of the seven golf courses to the first or second week of October. Ideally, the golf courses would be overseeded between October 15 and October 20. Unfortunately, with seven golf courses, this is just not practical. It is, however, not recommended to overseed in late September. The team discussed a three-week closure and one week with cart path restrictions upon opening. I feel this is a worthwhile compromise.

# Trees

## Observations and Recommendations

### 1. Declining Pine Population

It is common now to see decline in the pine trees on these properties as well as around other golf courses in Southern Arizona. The pines are typically over 30 years old. With the stress of the high heat and very minimal rainfall over the past two to three years, pines are in decline and at risk of damage to insects and disease.

### 2. Shade

The pine trees cast a great deal of shade. In many cases, it is good that the pines have to be removed. While I'm sure some may disagree with that statement, the facts are that golf course turf plus traffic and shade performs very poorly. We must remember that this is not a park. This is a golf course and a playing surface, and the playing surface needs adequate sunlight to perform at its best.

### 3. Tree Planting

The team have been actively planting trees and planted 278 trees on Grandview during the renovation project. They are planting 110 trees on Echo Mesa during this project. It is good to report that these trees are generally oaks and pistachio trees that grow slowly and do not cast near the amount of shade as the large pine trees. Furthermore, these trees are being planted outside of turf.

# Water Conservation and the Coarse Coefficient

## Observations

### 1. Conservation Efforts

It was good to hear that the courses under the RCSCW golf umbrella are meeting the water allotment imposed by the Arizona Department of Water Resources under the Fifth Management Plan. The golf course leadership continue in their water conservation efforts as demonstrated through their capital improvement projects with irrigation replacement, turf reduction, lake lining and lake edge restoration. Further, there are plans to install a new hybrid bermudagrass on No. 9 Echo Mesa and withhold overseeding to investigate how this strategy works to provide an excellent playing surface and reduce water use.



Turf reduction completed on Grandview has been successful to reduce water use and increase the visual interest of the golf course. However, these areas require more labor to maintain compared to the nonoverseeded bermudagrass.

## 2. Course Coefficient

The Course Coefficient is a concept initiated by Rob Collins, the golf course superintendent at Paradise Valley Country Club. I recently published an article on this in the *Green Section Record* which you can review here: [Introducing the Course Coefficient – A Water Use Benchmarking Tool](#). The Course Coefficient is a simple calculation that reports the ratio of annual water use to annual water demand.

- A Course Coefficient of 1 is indicative of a course that is watering at the expected annual evapotranspiration rate. Ideally, golf courses would be watering with a Course Coefficient slightly under 1.0.
- I was able to calculate the Course Coefficient for the entire property including all seven golf courses for the past three years. Results were 0.87, 0.86 and 0.81 for years 2024, 2023 and 2022, respectively. This is a good result and indicates your Course Coefficient is lower than most in Southern Arizona; however, there is some room for improvement.
- It was interesting to see that the Course Coefficient on Grandview was 0.82 in 2022 and reduced to 0.77 in 2024. While this is only one year of data, it is a good result and seems to indicate that the renovation has paid off. In addition to better playing conditions and better aesthetics, the golf course is performing well with less water.

## Recommendations

### 1. Continued Conservation Efforts

In 2026, the lower seven Colorado Basin states will come together and must agree on a new formula to share the water from the Colorado River. It is very likely that Arizona will again see lower water allotments. This will surely trickle down to the golf industry either directly or indirectly. As such, it is critical for the entire industry in Southern Arizona to continue to work towards water conservation efforts and tell that story to media outlets. Your efforts to replace irrigation, remove irrigated turf, remediate lakes, and evaluate new grasses that use less water are exactly the type of strategies the industry needs. I applaud your efforts and I'm excited to see the results on the Echo Mesa No. 9 fairway.

# Roughs

## Observations and Recommendations

### 1. General Condition

The roughs on all three golf courses we observed on the day of the visit had intermittent thin and bare areas despite not being overseeded. The roughs also have a fairly high annual bluegrass infestation, and it was reported that goosegrass is also problematic in the summer.

Rough bermudagrass coverage can be improved with increased nitrogen inputs and site-specific watering and aeration.



### 2. Bolstering Bermudagrass Health and Coverage

Please consider the following strategies to bolster bermudagrass health and coverage in the roughs:

- It is recommended to significantly increase nitrogen in the nonoverseeded roughs. For the next two years, I would recommend applying 6 to 8 pounds of nitrogen per 1,000 square feet per year. The nitrogen should be applied in spring from mid-April through early June, then resumed between early September and mid-November. Apply very little nitrogen in July and August.
- It will also be necessary to improve irrigation coverage in the roughs. This is easier said than done and will require a good deal of auditing and frequent changes to irrigation scheduling, replacing nozzles and raising/leveling sprinklers.
- It is also recommended to use portable, low-precipitation-rate sprinklers to add water to site-specific areas. These portable sprinklers can be set out throughout the day.
- Conduct some type of slicing, solid-tine and/or hollow-tine aeration in roughs or, at the very least, in high-traffic areas.

### 3. Slowing Growth around Bunkers

It is recommended to use a variety of different chemicals to control weeds and slow the growth of the bermudagrass around the bunkers. I have seen multiple products used, including Turflon® Ester, glyphosate, glufosinate, Diquat, and various plant growth regulators. If applied correctly and not applied at heavy rates, these chemicals can replace the need for frequent mechanical edging.

## Weed Control

### Recommendations

#### 1. Multiple Chemistries

It is critical to use multiple chemistries for both cool-season and warm-season weeds to avoid weed resistance.

- Continue to use prodiamine but apply the first week of September.
- In late November or early November, apply Revolver plus MSM plus Princep® to provide a combination of post- and preemergent weed control.
- In late December, apply glyphosate at 14 to 16 ounces per acre and make two applications spaced about three weeks apart.
- It is recommended to continue to use Pendulum® AquaCap (pendimethalin) in late January or early February.
- It is also recommended to continue with the oxadiazon application in early April to mid-April.
- You may consider a mid-to-late May application of Pennant® Magnum and follow with a second application about six weeks later for continued goosegrass control.
- In the summer, it is recommended to use Plateau® herbicide with the first application in June. Continue monthly with applications at 1 ounce per acre on the golf courses that are open for play. There will be some slight phytotoxicity on the bermudagrass, but it will recover rapidly. On the golf courses that are closed, use Plateau on all the bermudagrass except the putting greens and increase the rate to 3 to 4 ounces per acre. This will slow bermudagrass growth and provide effective weed control at very inexpensive cost.
- Several alternative chemistries in the fall include [StriCore](#) and [StayGuard](#) in mid-November for combined preemergence and postemergence control.
- We discussed shutting down tee times at about 2:00 to help facilitate herbicide applications.

## Concluding Comments

It was a pleasure to spend the morning with the agronomy team at the Recreation Centers at Sun City West and to have the opportunity to meet with all the superintendents and discuss agronomic planning. It was impressive to see the irrigation installation on Echo Mesa. I would recommend in the future adding a 10% contingency on the construction projects to allow the team to address unforeseen challenges that always seem to arise during renovation projects. Best wishes for the upcoming summer months and, as always, please do not hesitate to contact me should you have any further questions or concerns. Thank you for your support of the USGA Green Section.

Respectfully submitted,



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# USGA Green Section

## Turfgrass and Environmental Research

The [USGA Green Section](#) appreciates your support of the Course Consulting Service. First started in 1953, the Course Consulting Service provides unbiased assessments of golf facilities to optimize resources and reduce consumption of critical resources. The proceeds from the Course Consulting Service directly support the USGA's annual \$2 million investment in [turfgrass and environmental research](#), which provides an estimated [\\$2 billion annual benefit to the U.S. golf industry](#). In 2025, our research team released the [USGA Water Conservation Playbook](#) to detail strategies for golf courses to optimize water usage. Follow the QR Code to contact us for more information.



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