COURSE CONSULTING SERVICE

Onsite Visit Report

Recreation Centers at Sun City
Sun City, Arizona

Visit Date April 25, 2023

Present:

Bill Cook, General Manager
Brian Duthu, Director of Golf
Dennis Dulaney, Superintendent, South
Chuck Hyppa, Superintendent, North, Lakes West, Lakes East, Quail Run, Riverview
Chuck Manning, Superintendent, Willowcreek/Willowbrook
James Barnaby, Assistant Superintendent, Lakes West, Lakes East
Noe Rodriguez, Assistant Superintendent, Willowcreek/Willowbrook
Michael Wermers, Assistant Superintendent, North/Quail Run
Brandon Hodgkins, Assistant Superintendent, Quail Run
Karen McAdam, RCSC Board Vice President
Jean Totten, RCSC Board Secretary
Jim Rough, RCSC Board Director
RCSC Green Committee Members
Brian Whitlark, USGA Green Section

United States Golf Association
Brian Whitlark, Regional Director | Green Section | West Region
3677 E Turnberry Ct. | Gilbert, AZ | (480) 215-1958| bwhitlark@usga.org

The USGA Green Section develops and disseminates sustainable management practices that produce better playing conditions for better golf.

Executive Summary

Thank you for your kind hospitality and the invitation to return to the golf courses at the Recreation Centers at Sun City (RCSC) to conduct a Course Consulting Service visit on behalf of the USGA Green Section. It was great to see the completion of the Lakes East/West maintenance facility. What a positive impact this has made on the golf course maintenance staff, as well as an improvement in the condition of the turf care equipment given that it is now stored indoors out of the sun. We were able to briefly see all eight golf courses during this visit. The overarching theme is to improve the consistency of playing conditions on greens and bunkers among the golf courses, in addition to water conservation topics. On the water conservation topic, it was great to see conversion of the front nine of the North Golf Course to TifTuf bermudagrass this year. This golf course will not be overseeded in the future, and I think you'll find there is an opportunity to save up to 30%, perhaps even 35%, annual water use following the conversion. A brief summary of the topics discussed in this report is included below:

- **Putting greens.** The putting greens were generally in good condition on all of the golf courses visited. However, I feel there is room for improvement in consistency of ball roll among the golf courses. It will be recommended to measure green speed more routinely and utilize the prism gauge to evaluate the field height of cut on a more routine basis as well. It is important to continue with the combination of the deep-tine and hollow-tine aeration in July, especially on the golf courses with older rootzones. We also discussed modifying the irrigation regime to a less frequent overhead irrigation program.
- **Bunkers.** Bunker conditions were by far the biggest source of complaints during our visit. It will be recommended to measure sand depths in greenside bunkers on a routine schedule, labor permitting, and adjust sand depths, with the goal of 6 to 9 inches in the low areas of the bunkers and 2 to 3 inches on the bunker faces.
- **Green surrounds.** It will be recommended to increase the overseeded area in green surrounds in the fall of this year to improve playability and turf density. It will also be recommended to initiate more stringent traffic restrictions to mitigate damage in high-traffic areas.
- **Fairways.** The bermudagrass transition is going well in all fairways we visited. It was great to see the front nine on the North Golf Course is in the early stages of converting from common bermudagrass to TifTuf bermudagrass.
- **Quail Run irrigation replacement.** The irrigation system on the Quail Run Golf Course is well over 40 years old and system failures are common. It is good to hear there is a plan in place to replace the system in 2025.
- **Water conservation.** It was great to hear the club has secured over $500,000 in funding from the federal government for water conservation efforts among the eight golf courses. This money will be used for a combination of turf reduction and conversion to TifTuf bermudagrass and eliminating overseeding. The goal is to bring the water portfolio for RCSC into compliance with the Fifth Management Plan over the next 12 years. Mr. Cook and the team at RCSC have been very proactive with the Arizona Department of Water Resources and have come to an agreement to phase in water conservation changes over the next 12 years.
- **Miscellaneous topics.** Finally, there were a few comments on cart paths and damage in the canals on the Lakes West Golf Course. These infrastructure items are included in the asset replacement plan.

Table of Contents

Putting Greens

General Observations

1. **Improved Quality of Cut**

   It was great to see a better quality of cut across the board on putting greens compared to last year. The prism gauge was used to provide a magnification of the turf blades. Through the prism gauge, it was clear there are fewer uncut leaf blades and far less leaf shredding than observed last year. Compliments are extended to the equipment management team at each facility on improving the quality of cut, which also improves the overall playing experience.

2. **Varying Effective Height of Cut**

   We did observe variety in the effective height of cut among the golf courses. Some of this is intentional.

   - Courses such as Lakes East and Quail Run intend to mow greens at a higher height of cut, with the goal to produce slower green speeds given more beginner golfers play these golf courses and there is typically more slope on these golf courses. Among these courses, the effective height of cut was measured at about 0.160 to 0.170 inches. It was reported that Quail Run green speeds are about 8 to 8.5 feet as measured by the USGA Stimpmeter, which is right within the established goal.
   - Among the full-length golf courses, the effective field height of cut ranged from as low as 0.120 inches to as high as 0.170 inches. This is an area for improvement. Ideally, field height of cut would be more similar and green speeds would be more consistent among these courses.

The prism gauge reads a field height of cut at about 0.170 inches (top) and much lower at about 0.120 inches (bottom).

3. Healthy Rootzones

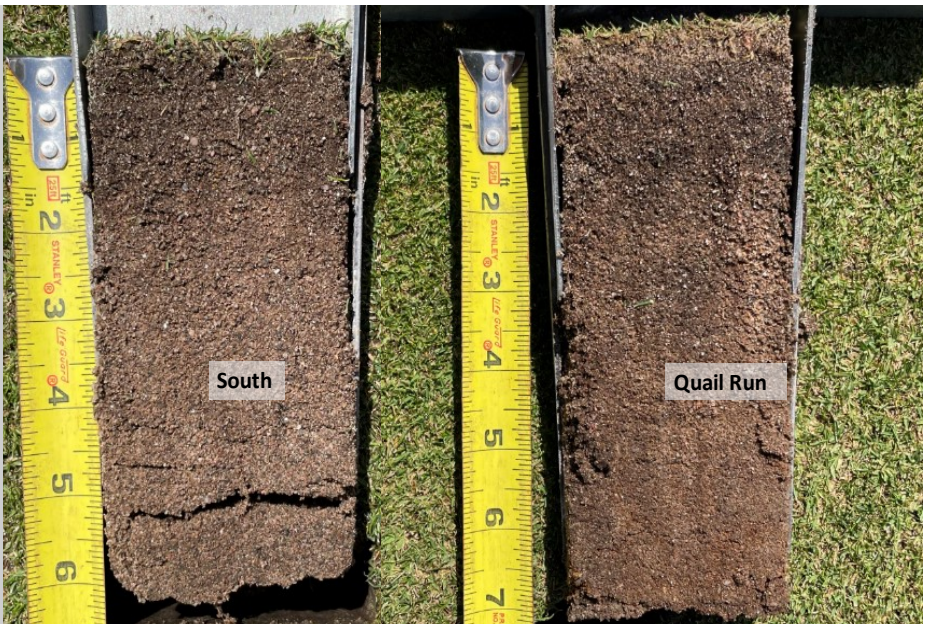
It was good to see that among all the golf courses, I did not observe any significant layering in greens that would indicate poor management.

- In all of the greens viewed, we observed a uniform soil profile from the surface down to a depth of 7 inches and no indication of excessive surface organic matter.
- Roots generally ranged from 3½ to 4 inches and all the way down to 7 inches. The deepest rooting was found on the South greens with 6- to 7-inch rooting depth.
- There is a bit of elevated organic matter in the Riverview greens in the top 1 to 2 inches.

From these observations, I can conclude that the aeration and sand topdressing programs and nitrogen fertility inputs are on track to provide healthy surfaces yet avoid excessive thatch and organic matter accumulation.

No indication of high organic matter at the surface in WillowCreek. There is some organic matter buildup in the Riverview greens which will require a bit more sand for dilution.

Roots extend to 6 to 7 inches in the South greens. Despite the age, the Quail Run rootzone remains in good condition.



4. **Frequent Irrigation**

   All the golf courses except for South are irrigated frequently, as often as once per night. This strategy leads to chronic high surface moisture, and there was indication of excess surface moisture. A good example was noted on the North greens.

General Recommendations

1. **More Routine Monitoring of Surface Characteristics**

   It is recommended to more routinely measure surface characteristics on the putting greens. I realize labor is limited at these golf courses; however, I feel this recommendation is very pragmatic. More routine monitoring will ultimately provide more consistency among the golf courses and assist each golf course in tracking surface playing conditions and making data-based adjustments to mowing/rolling routines and nitrogen inputs.

   - It is recommended for each golf course to measure green speed more routinely. Many courses are measuring green speed every day on only one green. This is a fast measurement that takes less than two minutes and is a great way to help make decisions on mowing frequency, mowing height, and plant growth regulator applications. It would be great to share this information among the golf course superintendents so that they can more accurately provide more consistent green speed conditions. Again, courses such as Lakes East and Quail Run obviously intend to have slower green speeds and higher height of cut.
   - It is also recommended to more routinely use the prism gauge to measure the field height of cut and record this value as you change the bench mowing height for the putting green mowers.
   - An additional characteristic you may consider quantifying on a daily basis is clipping yield. Many golf courses across the country are beginning to measure clipping yield. Many start with one green only and deposit the clippings from mower baskets into a clear volumetric-labeled container and record this value. Superintendents report this information has been extremely beneficial to help guide fertility inputs and growth regulator application frequency and rates.

2. **Aeration and Sand Topdressing**

   It is recommended to continue with your plan to aerate each golf course once annually in the summer months.

   - If possible, it is recommended for each golf course to use a deep solid tine, followed immediately with a hollow tine with 1/2-inch or 5/8-inch diameter hollow tines. The deep tine is especially useful on the older golf courses.
   - On the front nine of the North Golf Course, we discussed conducting two aerations this year, taking advantage of the course closure. Each aeration should consist of a combination of deep- and hollow-tine aeration. If possible, I recommend making two hollow-tine passes during each event. Given the higher organic matter observed on Riverview, it would be good to make two core aeration passes over these greens as well.

3. Less Frequent Irrigation

It is recommended to experiment with less frequent irrigation on the putting greens. Select one green of your choice on each golf course to experiment with a different irrigation program.

- For the summer months, it would be recommended to apply from 60 to 90 minutes of water to the greens once a week. Individual run times should start at only five or six minutes with only one, or at most two, sprinklers running per green at a time. Cycle soak to ensure that there is no runoff water sheeting across the greens. Completing this amount of irrigation may require seven to eight hours to avoid runoff.
- This type of irrigation cycle will fully wet the greens and then will allow you to dry the greens for several days before running overhead irrigation again.
- This may require some hand watering several days after the deep irrigation event. This is a more ideal method to water the greens and will allow the greens to dry at the surface between irrigation events.
- Approximately three and maybe even up to four days after the deep irrigation, it will be necessary to apply about 25 to 35 minutes of run times on greens. Perhaps the greens may need a third weekly overhead irrigation event during the peak of the summer months.
- Ideally, the greens would not need any more than three irrigation events weekly during the summer months.
- Wetting agents are critical to putting green water management. Apply wetting agents 12 months out of the year on all courses.

It will take some time to become more comfortable with this type of irrigation program and that's why I suggest starting with just one green on each golf course. With the front nine on the North Course closed, this would be an ideal time to experiment with this strategy.

Course-Specific Observations and Recommendations

1. Willowcreek and Willowbrook Greens

The prism gauge reading on the Willowcreek and Willowbrook greens was about 0.160 to 0.170 inches. This is significantly higher than the bench height of cut setting, which was reportedly 0.130 inches. It was good to see less indication of surface algae on the Willowcreek greens compared to previous years. The greens exhibited a dense and healthy surface which primarily consisted of the overseeded *Poa trivialis*.

- It is recommended to discuss the field height of cut with the equipment manager and perhaps adjust the mower set up such that the field height of cut is closer to the bench setting. Typically, the field height of cut is 0.010 to 0.015 inches lower than the bench setting. If there is no error in the mower setup, perhaps conduct a few days of double mowing to lower the effective height of cut.
- It is recommended to continue with your routine sand topdressing program as it has clearly done a nice job of mitigating surface algae.

2. Riverview Greens

We were only able to see No. 18 green on Riverview. Upon walking on this green, it was clear this green is very different from the Willowcreek and Willowbrook greens. On Riverview, there is far more bermudagrass and the greens were drier. The rootzone in these green drains extremely fast, and it is difficult to maintain consistent moisture. However, the rootzone sample collected did reveal the beginnings of an organic matter layer at the surface. The prism gauge readings on this green revealed only about 0.120 inches. There were several comments that the green speeds on Riverview were perhaps a bit too fast during the winter months.

- It is recommended to increase sand topdressing on the Riverview greens, which Mr. Hyppa the has already put in place.
- If labor permits, make two core aeration passes over the greens.
- It is recommended to utilize a wetting agent routinely on these greens to hopefully improve soil moisture consistency and the ability of the greens to take water.
- This fall, you may consider raising the height of cut on the Riverview greens to avoid excessively fast ball roll conditions.

3. Lakes East and West Greens

The prism gauge measured at about 0.120 to 0.130 inches on the Lakes East and West greens. Rootzone conditions on these greens were healthy, with no limiting soil layers and no indication of excessive surface organic matter. These greens contained a healthy mixture of emerging bermudagrass and overseeded grass.

- The primary recommendation for the Lakes East and West greens is to continue with the deep tine in conjunction with core aeration every year on both golf courses.

4. North Greens

The immediate surface of the greens was wetter than the other golf courses, and there was some indication of surface algae, especially in old pitch marks that have not been properly repaired. The prism gauge on the North Golf Course back nine which had been cut daily was measured at 0.140 inches.

- It is recommended to conduct small-diameter venting aeration on the North greens immediately and continue on a routine basis every two weeks to improve water movement into the greens and try and reduce surface moisture.
- Continue with routine sand topdressing. Conduct two aeration events on the front nine that is closed. On the back nine, make two passes with the core aeration machine to remove more surface organic matter and incorporate more sand.
- Changing to a less frequent irrigation schedule will be a big benefit on the North greens.

5. **South Greens**

The South greens, in my opinion, displayed the best turf density and ball roll conditions among the golf courses we visited. The prism gauge reading was about 0.120 inches in the late afternoon. The rootzone revealed good conditions despite being a golf course where the greens were built about 60 years ago. There is no indication by observing the rootzone that the greens need to be rebuilt for agronomic purposes. Rooting depth was excellent, with roots observed growing down to a depth of 6 to 7 inches.

- There are no specific recommendations for the South greens other than to emphasize the importance of continuing with your sand topdressing and scheduled summer aeration as planned and to use a combination of the deep tine and hollow tine.

6. **Quail Run Greens**

The Quail Run greens displayed a good mixture of bermudagrass and overseeded turf. Rootzone samples showed a healthy profile despite a golf course with greens that are probably close to 50 years old. These greens have a tremendous amount of slope. Given the slope and the level of player that typically plays this golf course, the staff mow at a higher height of cut to produce slower green speeds. The golfers that joined us on the visit commented on the quality of the playing conditions on the greens and are happy with the green speeds. The prism gauge reading on the Quail Run greens was about 0.160 to 0.170 inches.

- It is essential to utilize the deep tine in combination with a hollow tine for the summer aeration.
- It is also recommended to conduct small-diameter venting operations throughout the year to help soften greens and to encourage water infiltration.

Bunkers

Observations

1. **Inconsistent Sand Depth = Firmer Than Ideal Conditions**

On each course we were able to visit, we observed at least one greenside bunker and measured sand depth and bunker firmness. In all cases where sand depth was less than 5 inches, the bunkers were too firm. Bunkers that are too firm make it very difficult for golfers to properly hit recovery shots, and this can easily frustrate golfers.

Within the same bunker, sand depth varied from about 7 inches (left) to only about 1½ inches (right). The deeper sand yielded good playability while the shallow sand was too firm.

2. **No Indication of Contaminated Sand**

   It is good to report no visible indication of contaminated bunker sand when collecting soil profiles among the golf courses. However, this is based on observations only. A true sand evaluation should be conducted, especially on the sand bunkers more than five to six years old. Send to a physical soil testing laboratory for bunker sand analysis.

Where the bunker sand depth is greater than 5 inches, the sand at the surface is drier (note the lighter-colored sand within the top 1 inch of this profile) and playability is better. Also, note there is no indication of sand contamination.

3. **Compromised Liner**

   We observed the Better Billy Bunker™ liner flaking off the gravel in strategic locations on several of the golf courses. While this flaking often gets blamed on the mechanical bunker rake, in the case on the North Golf Course, the flaking off of the gravel was observed well up on to the bunker face where only hand raking is used.

4. **Difficult Recovery Shots**

   There is reportedly difficulty for golfers hitting recovery shots at some courses (Riverview, for example). These types of comments were consistent throughout the day. It was interesting that most of the golfers commenting seem to appreciate the shallower bunkers from which it is easier to hit recovery shots. In fact, some golfers prefer the bunkers where they are able to hit a recovery shot with their putter.

Recommendations

1. **Managing Sand Depths**

   It is recommended for each golf course to more routinely monitor sand depths and move bunker sand around within the bunkers. A good goal is to continually maintain a minimum of 5 inches and preferably 6 to 9 inches of bunker sand depth in the lowest area of the bunkers. It is recommended to maintain only 2 to 3 inches of sand on the bunker faces. Perhaps this practice can be completed once monthly in the greenside bunkers only. Add sand to bunkers as necessary to achieve these depths.

Green Surrounds

Observations

1. **Turf Density and Quality**

   Turf density and quality in green surrounds is always of second importance on the golf course, right behind the putting greens. Turf density and quality at RCSC is good to average in green surrounds. Areas that were overseeded and cut below 1/2 inch are generally in good condition. On Willowcreek, the height of cut was 1.5 inches and turf quality was inconsistent. There is a high incidence of *Poa annua* and clumpy ryegrass, and in high-traffic areas, turf density is poor. This is especially true in walk-on areas from cart paths to greens.

Recommendations

1. **Increased Overseed Area**

   It is recommended on all golf courses to increase the overseeded area around the greens.

   - Ideally, you would be able to overseed from the cart path to the green and begin the overseed about 20 to 30 yards in front of the beginning of the first greenside bunker, as a guideline.
   - On the non-cart path side, it would be ideal to overseed the slope around the greens and stop the overseed in the flat area below the green surround slopes.
   - As a means to maintain the current overseed acreage while still increasing overseeding around greens, the group joining us discussed slightly narrowing the overseed in the fairways and shortening the overseed at the beginning of the fairways.

2. **Traffic Control**

   With the goal of improving turf density in green surrounds, it will be necessary to encourage golfers riding in carts to reenter the cart path approximately 30 to 40 yards from the approach area to the putting greens. Golf facilities have used a wide variety of traffic control strategies.

   - Many courses utilize signage.
   - Some have used a painted line and placed a yellow rope on the ground on top of this line indicating where golf carts should leave the hole and reenter the cart path.
   - Another option is to use the gate system which is quite popular in the Coachella Valley where two 5- to 6-foot-long sturdy poles are placed at the beginning of the fairway where golf carts are encouraged to leave the cart path and enter the golf hole, followed by two similar gates where golf carts are encouraged to leave the fairway and reenter the cart path.

   This photo was taken recently at the Desert Highlands Club in Scottsdale. They are using small stakes to reroute golf carts around this high traffic area.

   - Stakes and ropes are also popular and perhaps the most effective, but one can argue this is a nuisance for golfers and for golf course maintenance staff trying to mow these areas.

No system is perfect. If you can achieve 60% to 80% control, this is a win. Enforcement is best accomplished by fellow golfers. Peer-to-peer enforcement of the adherence to cart restrictions and calling out those golfers who do not abide by the cart rules seems to work the best to gain larger acceptance of the rules. Remember, the ultimate goal is to provide a better golf experience for all golfers. Here are several articles on the subject of golf cart traffic control: Curtailing Cart Damage (usga.org), Course Care: Managing Golf Cart Traffic (usga.org), Traffic Control 2021 - Golf Course Industry.

Fairways

Observations

1. **All Fairways on Their Way to Successful Bermudagrass Transition**

   It was good to see a healthy bermudagrass population growing and ready to emerge from winter overseeding on all golf courses. Mowing heights are generally about 1/2 inch, which is 0.200 to 0.150 inches higher than what I see on most golf courses in Southern Arizona at this time of year. This higher height of cut is provided to help golfers with slower swing speeds sweep the ball off the surface. Golf courses lower height of cut this time of year to encourage more sunlight exposure to the understory bermudagrass.

2. **Consistent Soil Conditions**

   While we did not collect soil profile samples from fairways on all golf courses, on those we did sample, the soil texture was similar.

   - Where there was deeper soil moisture such as found on the South Golf Course, roots were found easily to a depth of 7 inches.
   - Where conditions were drier such as on the Quail Run Golf Course, roots were found to 4 to 5 inches and possibly deeper; however, it was extremely difficult to extract a sample deeper than about 4 inches due to the hard, dry soil.

   The good news is that the soils at these golf courses easily support healthy turf and there is no need for expensive soil amendments or sand topdressing to modify the soils.

3. **North Turf Conversion**

   It was great to see that the fairways on the front nine on the North Golf Course are in the process of conversion from common bermudagrass to TifTuf bermudagrass.

   - The TifTuf bermudagrass variety was released from University of Georgia and has been studied for well over 20 years. It has made its way into the Southwest over the past five years or so and has been the best-performing bermudagrass.
   - The TifTuf has excellent drought tolerance, excellent traffic tolerance, and a much shorter winter dormancy when compared to common bermudagrass.
   - The ball sits up much better in the TifTuf bermudagrass, offering a better ball lie.

The ball sits down in the common bermudagrass canopy (left) and sits up nicely on TifTuf bermudagrass (right).

Recommendations

1. **Bermudagrass Transition**

   Planting the intermediate ryegrass rather than perennial ryegrass allows the courses at RCSC to more easily transition from the overseed turf to the understory bermudagrass without using chemicals. There are, however, important cultural practices that need to be employed to encourage sunlight exposure to the understory bermudagrass and encourage water to penetrate the soil and reach the bermudagrass roots.

   - First and foremost, the height of cut is important. The lower the height of cut, the more sunlight exposure to the understory bermudagrass. By early March, most courses in Southern Arizona have lowered fairway heights to 0.400 inches or below. Rough heights are usually lowered to 0.750 inches and eventually to 0.625 inch by the first part of April.
   - For the golf courses at RCSC, it is recommended to maintain a height of cut around 0.750 inches from overseeding through the winter months in fairways and overseeded areas around greens. In fact, if you wish, you can raise the height of cut in the green surrounds to 1.250 inches. However, it is important to begin lowering the height of cut by late January. Ideally, all the overseeded areas would be cut at the same height at about 0.500 inches by early March. The lower height of cut in the overseeded turf around the greens will provide more shot options available to golfers. For example, with the lower height of cut, golfers can choose the option of putting or using a low-lofted iron or hybrid-type of club to hit pitch and chip shots.
   - In the spring months, it is also recommended to conduct a light-intensity vertical mowing to cut the leaf blades growing horizontally along the surface of the ground, followed by mowing. This will provide a better playing experience with more upright leaf blades. Furthermore, this practice will encourage more sunlight to reach the understory bermudagrass leaves emerging from overseeding.
   - Another important practice is to conduct some form of slicing or solid-tine aeration to encourage better water penetration into the soil.

2. TifTuf Conversion on North Front Nine

The process to kill the existing bermudagrass and establish the TifTuf is not easy. It was great to hear you have developed a very thoughtful and well-planned process to kill the existing bermudagrass.

- A fall nonselective herbicide application was made, which is an important application to make when the bermudagrass is metabolizing nutrients and sending those nutrients down to the underground rhizomes.
- The next application will be made about a week after this course visit, followed by core aeration on May 8 and 9.
- It is recommended to use some form of a spring-tine rake to disrupt the soil surface to encourage the bermudagrass to recover from the underground rhizomes such that the new leaves will take in and absorb the third nonselective herbicide application which is planned for May 23 and 24.
- The second core aeration event is planned on May 30, and the final nonselective herbicide application is planned in June. The final application will remove the Fusilade® from the application.
- If the budget permits, it is recommended to use an inexpensive wetting agent throughout this process to encourage more uniform soil moisture. This will help during the herbicide application process and also help better distribute water throughout the soil during the grow-in process.

3. Weed Control

Weeds will emerge during the grow-in process due to open voids in between the sprig material and frequent watering and fertility.

- For broadleaf weeds, a Trimec® product or SpeedZone® will be useful to spot spray; however, mowing is typically the best defense against broadleaf weeds. It is recommended to mow the TifTuf as early as possible and mow often with sharp reels and bedknives.
- We discussed the importance of using a preemergent herbicide such as an oxadiazon product in early September.
- In late November, it is also recommended to use Semera™ combined with prodiamine for additional preemergence and early postemergence control.
- It will also be helpful to have a sulfonylurea herbicide such as Tribute® Total, Revolver® or Monument® on hand and utilize in the late fall to kill the emerging weeds that have escaped the preemergence herbicide barrier.

The bottom line is, it is recommended to use a variety of different chemicals with both preemergence and postemergence activity.

Quail Run Irrigation

Observations and Recommendations

1. **Replacement of Antiquated System**

   The irrigation system on Quail Run is well past its useful life and there are frequent leaks and pipe breaks. It was reported that the joints have pinhole leaks at a frequency of several per week. This is a tremendous labor strain on the maintenance staff. Typically, courses will replace their irrigation systems built with PVC pipe between year 25 to 35. This system is well over 40 years old. It is recommended to replace the system, and it was good to hear from the course leadership that plans are already in place to replace the system in year 2025.

Water Conservation

Observations

1. **Federal Funding**

   It was great to hear from the course leadership that they were able to secure grants totaling over $500,000 for water conservation efforts at this facility. These funds will be used for turf reduction projects and conversion from common bermudagrass to TifTuf bermudagrass.

2. **Lake Renovation**

   Renovation of the largest lake at RCSC has been planned for a long time, and it was good to see this renovation underway. While negatively impacting the Lakes West Golf Course due to limited water availability, this is a very important project that will reportedly run through August.

Recommendations

1. **Turf Conversion**

   Converting to TifTuf bermudagrass and eliminating overseeding is expected to save golf courses about 20% to 30% annual water use. Once the TifTuf is established, it will be important for the course superintendents to change the watering pattern for the TifTuf bermudagrass to take advantage of its drought tolerance. A good way to do this is to begin to lower the percentage of ET inputs down from 80% to 70% to 60%, and perhaps even 50%.

2. **Turf Reduction**

   Turf reduction has a long history of demonstrating water savings in the Desert Southwest. Turf reduction is expensive, and much of that expense can be attributed to the rock that is placed in replace of the turf. I do feel there is an opportunity to conduct turf reduction at a lower cost compared to what you have historically done at RCSC.

- Nearby Westbrook Village Golf Course has been successful with strategic areas of turf reduction with two nonselective herbicide sprays and no surface removal of the organic matter left behind, rather simply placing 2 inches of rock on top of the dead turf. Sparse desert plantings are installed to break up the rock areas. I much prefer the sparse plantings for the obvious reason of water savings, but also to avoid frustrating golfers with errant shots that may find an occasional shrub.

This desertscape area at Westbrook Village Golf Club was turfgrass just a year ago. The club spent from $10,000 to $12,000 per acre on this ongoing turf reduction project.

Miscellaneous Topics

Observations and Recommendations

1. **Concrete Canals**

   The concrete canals are a feature on the Lakes West Golf Course, and the concrete is failing in localized areas. We observed areas of concrete failure near the pedestrian bridge on hole No. 9. It was good to hear from club leadership that the canals are an item within the reserve study and there is a plan to replace/repair the canals as necessary. We discussed perhaps bringing this water underground and replacing with a dry creek bed. While this would save water lost to evaporation, I'm afraid this would be a very costly project.

2. **Uneven Ground Adjacent to Cart Path**

   There are areas adjacent to the cart paths where the turf has been worn away from concentrated golf cart traffic. Golfers that choose to walk in these areas may encounter an uneven surface. It was good to point these areas out, and the golf course superintendents immediately took responsibility, noting they will address this issue by filling in and improving the grade.

Uneven ground adjacent to cart paths (left) can be addressed by sodding and roping off to golf carts. Broken concrete in the canals (right) is limited. Repairs are planned within the asset replacement plan.

Closing Comments

It was great to have such attentive green committee and board members join us throughout the day and to visit all eight of the golf courses. It was also good to see the club leadership being very proactive with the water issues. Between repairing lakes, converting to TifTuf, and continuing with strategic turf reduction, I am optimistic the water use for the entire facility will come into compliance with the Arizona Department of Water Resources Fifth Management Plan over the next decade. Thank you for your continued support of the USGA Green Section. Please do not hesitate to contact my office should you have any further questions or concerns.

Respectfully submitted,

Brian Whitlark

Brian Whitlark, Agronomist
USGA Green Section

Distribution:

Brian Duthu, Director of Golf

Additional Considerations

USGA *Green Section Record*

If you would like to receive the USGA's electronic publication, the *Green Section Record,* click here. It is free, informative, and sent directly to you via email every two weeks.

About the USGA Course Consulting Service

As a not-for-profit agency that is free from commercial connections, the USGA Course Consulting Service is dedicated to providing impartial, expert guidance on decisions that can affect the playing quality, operational efficiency and sustainability of your course.

First started in 1953, the USGA Course Consulting Service permits individual facilities to reap the benefits of on-site visits by highly skilled USGA agronomists located in Green Section offices throughout the country.

For questions regarding this report or any other aspect of the USGA Course Consulting Service, please do not hesitate to contact our office.