

July 26, 2022

Residents of Sun City Mesquite,

Your Landscape Committee monitors all of the landscape common areas and turfgrass areas within Sun City as well as reviewing resident issues brought to the Committee. We offer insights and suggestions to Seabreeze and Kokopelli as well as taking plant inventory and inspecting village entrances and irrigation systems. We've received numerous complaints concerning turfgrass areas being over watered and feel an explanation is in order.

We have visited every turfgrass area within Sun City and have taken soil samples out of each one using a steel soil probe. The newer turf areas are the wettest due to shallow roots on top of very hard clay. The older turf areas have developed 3-4 inches of soil on top of the clay due to the process of roots growing, dying, growing, etc, etc., creating organic material, which is how soil is formed. Using a hydraulic aerification machine like the ones used to aerify golf course greens would help loosen the clay, bring oxygen into the clay, increase water percolation and allow for deeper root growth.

Kokopelli uses a computer irrigation system called Calsense which waters all areas within Sun City based on ET, which stands for Evapotranspiration which is the loss of water from a vegetative surface through the combined process of plant transpiration (the process of water loss in the form of water vapors into the atmosphere from the leaf surface and stems) and soil evaporation. Both environmental and biological factors affect ET, including solar radiation, temperature, atmospheric dryness, wind, and soil moisture.

Kokopellis Calsense irrigation controllers receives ET data from an offsite weather station every day and the system waters accordingly. However, the weather station does not take into account the water saturation level of the soil and thus over watering has occurred. Fine tuning the correct amount of water to apply requires daily monitoring. The Landscape Committee tries to look at these areas as often as we can and relay our observations to Kokopelli.

The Limestone clay and hard pan soils in Mesquite retain moisture, resist water percolation and inhibit plant rooting depth making for a difficult situation. In addition Mesquite soils are extremely alkaline with a pH of around 10+ which inhibits certain nutrient availability to the plant.

Irrigation water penetrates the clay soil down to only a few inches and then backs back up to the surface making for soggy undesirable conditions. Because of the clay soils and shallow roots these turf areas are extremely difficult to manage. Over irrigation creates soggy conditions and cutting back on irrigation quickly dries the turf out.

There are two periods where over watering the turfgrass areas is necessary. During September & October the Bermuda grass is over-seeded with cool season perennial Ryegrass, which must be watered multiple times during the day for proper seed germination. The other period is April & May when the Bermuda grass comes out of winter dormancy and starts to replace the over-seeded Ryegrass.

Those of you who play golf in the desert realize that you're playing on two very different surfaces. The Summer Bermuda grass is replaced each fall with over seeded cool season Ryegrass. Then in the spring the Ryegrass is replaced with Bermuda grass through the process of transition.

Water conservation is a top priority in the desert so if you observe irrigation over spray onto the roads or any broken emitter please contact the Pioneer Center so Kokopelli can be notified.

The Landscape Committee meets the second Monday of each month at 8:00am in the Pioneer Center Conference room. Residents with issues or concerns are encouraged to attend.

Mark Cupit, Mariann Estes, Tom Lockard, Rick Blitzstein, Landscape Committee

May 23, 2022

Tom Lockard and I decided to check a few turf areas a week after Rusty set turf controllers to Summer watering schedule of 3 times per day at 8 minutes per run time, 24 minutes total. A majority of the areas were almost perfect for soil moisture for this time of year, and with soil temperatures of 65F there was Bermuda growth activity In most of the areas except where the winter Ryegrass was long and thick.

- **Overland Trail** was wet with shallow roots of 2". Soil plug test revealed 2" of soil on top of hard pan clay.
- **Reunion Valley** was wet with similar conditions as Overland Trail.
- **Prominence** was perfect. Soil probe test revealed 8" of roots and soil on top of clay.
- **Branding Iron** was perfect. Soil probe test revealed 8" of roots and soil on top of clay.
- **Water Barrel** was perfect with 4"-5" roots and soil on top of clay.
- **Settlers Canyon** had a couple wet spots but overall was a huge improvement. Only 2" of soil and roots on top of hard pan clay.
- **Split Rail** perfect moisture with 5"-6" roots and soil on top of clay.
- **Conestoga** one of the oldest turf areas had good moisture and 6" of soil and roots.
- **Prairie Schooner** perfect moisture with 6"-7" roots and soil on top of clay, but Ryegrass very lush and thick will inhibit Bermuda transition.
- **Tannery Cove** good moisture level with 3" roots and soil on top of clay.
- **Hickory Wind** good moisture levels with 3" soil on top of clay and 6" roots.
- **Tortoise Mountain** overall the majority of area had good moisture levels however, turf by street was dry and a few low areas were wet. 4" roots in 2" of soil on top of clay.

Mark Cupit

May 7, 2022

May 9, 2022 review of water issues by Mark Cupit and Tom Lockard

Tom Lockard and I visited 5 turfgrass area on Saturday May 7, 2022 from 9:30AM-10:30AM.

- **Prominence**: Turfgrass was very dry. Irrigation controller said next run time was 6:00PM. Question for Art, is 6:00PM the only run time for Prominence and what percentage of ET? How many total minutes of water?
- **Wishing Well**: Turfgrass was dry. Irrigation controller said next run time was 6:00PM on Sunday May 8. Question for Art, is this true, just one run time per day or every other day? And what percentage of ET and how many total minutes of water?
- **Reunion Valley**: Turfgrass was dry. Irrigation controller said next run time was 6:00PM. There was one area that was saturated which I believe due to a pop-up being too low and as it ran the water spray was into the turfgrass thatch causing run-off. Same questions as above for Art.

The three areas above although dry were fine considering temperatures in the low 90's and 20MPH+ winds. The over seeded Ryegrass was very tall which will inhibit Bermuda transition.

- **Settlers Canyon**: VERY WET. Standing water and run-off down the side of the street. The lady that lives next door claimed the water comes on every day at 7:00AM-11:00AM-3:00PM. I revisited the site at 11:00AM and did not observe irrigation running. Question for Art, how many run times and what are they? How many total minutes of water and at what percentage of ET? Ryegrass is very tall which will inhibit Bermuda transition.
- **Horseshoe Pass**: Moisture level at 10:00AM was perfect. It was obvious the area had already watered that morning. Question for Art, how many run times, what percentage of ET, and how many total minutes? The overseeded Ryegrass was sparse and because of that there was a lot of Bermuda present.

We still strongly suggest watering all turfgrass area in the early evening.

April 11, 2022

Kokopelli seasonal irrigation schedule for turfgrass areas

Based on typical, average monthly temperatures and rain events. ET, or Evapotranspiration is the loss of water from a vegetative surface through the combined process of plant transpiration (the process of water loss in the form of water vapours into the atmosphere from the leaf surface and stems) and soil evaporation. Both environmental and biological factors affect ET, including solar radiation, temperature, atmospheric dryness, wind, and soil moisture. Calsense receives ET data and the system waters accordingly. However The ET data does not know or take into account the current moisture levels in the turfgrass areas which results in over-watering. The clay soils in Mesquite retain water like a sponge and rooting depth is shallow.

- **September-October:** Over-seeding of Bermuda with cool season Ryegrass will require multiple watering cycles for seed germination, and grow-in. ET set at 100%. In order to keep Ryegrass seed moist Turfgrass must be watered multiple times throughout the day resulting in wet, saturated turf.
- **November-December-January-February-March:** After over-seeded Ryegrass establishment, ET can be adjusted to 50% with irrigation start times set for dusk, with no watering during the day, except as needed for fertilizer applications. Watering should be done 3-4 times only during the 7-day-week, and only one run-time except during unseasonably warm and windy periods where a second run time may be required just before dawn.
- **April-May:** Bermuda transition requires ET set at 100% with water running 2 times during the day to encourage Bermuda growth.
- **June-July-August:** with a 100% stand of Bermuda ET set at 100% watering 7-days a week with all run times starting at dusk and a second run time starting at around 4:00am.

Mark Cupit