



# SOIL AND WATER CONSULTING

## Data Collection Report

Summer 2021

Date of Collection: 6/14/21

Client: Tucson Country Club



# Testing Results

|                          | <u>6/20/19</u> | <u>7/11/20</u> | <u>6/14/21</u> |
|--------------------------|----------------|----------------|----------------|
| Humidity/Air Temperature | 7%/100°        | 30%/107°       | 5%/110°        |
| Greens Temperature       | (avg)76.25°    | (avg)76.35°    | (avg)86.75°    |
| Fairway Temperature      | (avg)79.15°    | (avg)79.6°     | (avg)81.9°     |

| <b>WATER</b> | <b>Acceptable Range<br/>For Water Sample</b> | <b>Hole #15<br/>6/20/19</b> | <b>Lake fill<br/>6/16/20</b> | <b>Hole #3<br/>6/14/21</b> |
|--------------|----------------------------------------------|-----------------------------|------------------------------|----------------------------|
| EC           | <2.25 mmhos/cm                               | 0.26                        | 1.20                         | 0.38                       |
| Sodium       |                                              | 27.84                       | 129.20                       | 64.16                      |
| Calcium      | 20 - 60 ppm                                  | 24.08                       | 90.36                        | 15.22                      |
| Magnesium    | 10 - 25 ppm                                  | 2.26                        | 16.77                        | 1.75                       |
| Potassium    | 5 - 20 ppm                                   | 2.51                        | 9.62                         | 1.72                       |
| Sulfur       | 30 - 90 ppm                                  | 25.22                       | 182.37                       | 36.15                      |
| Bicarbonate  | <120 ppm                                     | 101.87                      | 270.81                       | 117.62                     |
| Boron        | <0.67 ppm                                    | <0.05                       | 0.26                         | 0.09                       |
| Chloride     | <177 ppm                                     | 10.89                       | 129.02                       | 37.62                      |

| <b>TEE</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>3<br/>6/14/21</b> |
|------------|-----------------------------------------------|----------------------|
| Nitrogen   | 2.49%-4.56%                                   | 4.62                 |
| Phosphorus | 0.26%-0.38%                                   | 0.44                 |
| Potassium  | 0.95% - 1.97%                                 | 1.78                 |
| Calcium    | 0.50%-0.90%                                   | 0.61                 |
| Magnesium  | 0.13%-0.16%                                   | 0.19                 |
| Sodium     | 622-1709 ppm                                  | 2,360.00             |

| <b>FAIRWAY</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>3<br/>6/14/21</b> |
|----------------|-----------------------------------------------|----------------------|
| Nitrogen       | 2.49%-4.56%                                   | 5.45                 |
| Phosphorus     | 0.26%-0.38%                                   | 0.61                 |
| Potassium      | 0.95% - 1.97%                                 | 2.70                 |
| Calcium        | 0.50%-0.90%                                   | 0.47                 |
| Magnesium      | 0.13%-0.16%                                   | 0.21                 |
| Sodium         | 622-1709 ppm                                  | 2,330.00             |

| <b>GREENS</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>3,12 (avg)<br/>6/14/21</b> |
|---------------|-----------------------------------------------|-------------------------------|
| Nitrogen      | 3.0%-6.5%                                     | 4.72                          |
| Phosphorus    | 0.2%-0.55%                                    | 0.67                          |
| Potassium     | 0.86%-2.55%                                   | 1.89                          |
| Calcium       | 0.21%-0.50%                                   | 0.50                          |
| Magnesium     | 0.09%-0.22%                                   | 0.18                          |
| Sodium        | 506- 2264 ppm                                 | 3,800.00                      |

| <b>TEES</b>               | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>6,15(avg)<br/>6/20/19</b> | <b>4,13(avg)<br/>7/11/20</b> | <b>3,12(avg)<br/>6/14/21</b> |
|---------------------------|-------------------------------------------------------|------------------------------|------------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 2.75                         | 3.37                         | 3.45                         |
| Sulfur                    | 12 - 16 ppm                                           | 34.00                        | 43.00                        | 43.00                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 14.00                        | 14.50                        | 11.00                        |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 2,942.00                     | 4,852.00                     | 4,445.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 9.62%/226                    | 8.53%/157.5                  | 13.12%/479                   |
| Potassium - TEC of 0 - 35 | 100 ppm                                               | 203.00                       | 241.50                       | 273.50                       |
| Manganese                 | >50 ppm                                               | 52.50                        | 48.50                        | 65.00                        |

| <b>FAIRWAYS</b>           | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>6,15(avg)<br/>6/20/19</b> | <b>4,13(avg)<br/>7/11/20</b> | <b>3,12(avg)<br/>6/14/21</b> |
|---------------------------|-------------------------------------------------------|------------------------------|------------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 3.52                         | 3.89                         | 5.08                         |
| Sulfur                    | 12 - 16 ppm                                           | 28.00                        | 83.50                        | 63.50                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 16.00                        | 17.50                        | 15.50                        |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 2,988.00                     | 3,855.00                     | 5,274.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 10.59%/270                   | 9.89%/326                    | 13.6%/587                    |
| Potassium - TEC of 0 - 35 | 100 ppm                                               | 367.00                       | 308.00                       | 332.50                       |
| Manganese                 | >50 ppm                                               | 42.50                        | 22.00                        | 40.00                        |

| <b>GREENS</b>             | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>6,15(avg)<br/>6/20/19</b> | <b>4,13(avg)<br/>7/11/20</b> | <b>3,12(avg)<br/>6/14/21</b> |
|---------------------------|-------------------------------------------------------|------------------------------|------------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 0.73                         | 1.03                         | 1.26                         |
| Sulfur                    | 12 - 16 ppm                                           | 12.50                        | 21.00                        | 27.50                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 11.50                        | 11.50                        | 13.00                        |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 1,083.00                     | 2,573.00                     | 2,589.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 11.38%/229                   | 11.67%/263                   | 16.81%/416                   |
| Potassium - TEC of 0 - 35 | 150 ppm                                               | 253.50                       | 410.00                       | 347.50                       |
| Manganese                 | >50 ppm                                               | 55.00                        | 74.50                        | 73.00                        |

| <b>TEE</b>             | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>13<br/>7/11/20</b> | <b>3<br/>6/14/21</b> |
|------------------------|--------------------------------------------------------|-----------------------|----------------------|
| Nitrate - Bermudagrass | 5 - 10 ppm                                             | 52.10                 | 23.30                |
| Phosphorus             | 2 - 10 ppm                                             | 1.78                  | 0.76                 |
| Potassium              | 40 - 100 ppm                                           | 28.46                 | 21.24                |
| Calcium                | 60 - 200 ppm                                           | 83.47                 | 55.13                |
| Magnesium              | 20 - 70 ppm                                            | 10.67                 | 7.60                 |
| Sodium                 | 0 - 30 ppm                                             | 119.83                | 163.41               |
| Soluble Salts          | <1,920 ppm                                             | 620.00                | 614.00               |
| Bicarbonate            | <60 ppm                                                | 88.19                 | 121.45               |
| Chloride               | <1,000 ppm                                             | 66.00                 | 99.00                |
| SAR                    | <4%                                                    | 3.28                  | 5.47                 |

| <b>FAIRWAY</b>         | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>13<br/>7/11/20</b> | <b>3<br/>6/14/21</b> |
|------------------------|--------------------------------------------------------|-----------------------|----------------------|
| Nitrate - Bermudagrass | 5 - 10 ppm                                             | 126.80                | 27.60                |
| Phosphorus             | 2 - 10 ppm                                             | 2.82                  | 3.07                 |
| Potassium              | 40 - 100 ppm                                           | 66.01                 | 24.72                |
| Calcium                | 60 - 200 ppm                                           | 140.35                | 53.11                |
| Magnesium              | 20 - 70 ppm                                            | 22.26                 | 8.02                 |
| Sodium                 | 0 - 30 ppm                                             | 271.13                | 215.07               |
| Soluble Salts          | <1,920 ppm                                             | 1,238.00              | 719.00               |
| Bicarbonate            | <60 ppm                                                | 68.42                 | 96.49                |
| Chloride               | <1,000 ppm                                             | 150.00                | 137.00               |
| SAR                    | <4%                                                    | 5.61                  | 7.27                 |

| <b>GREENS</b>           | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>4,13(avg)<br/>7/11/20</b> | <b>3,12(avg)<br/>6/14/21</b> |
|-------------------------|--------------------------------------------------------|------------------------------|------------------------------|
| Nitrate - Bentgrass/Poa | 1-3 ppm                                                | 61.80                        | 7.00                         |
| Phosphorus              | 2 - 7 ppm                                              | 3.34                         | 3.15                         |
| Potassium               | 25-40 ppm                                              | 61.02                        | 21.45                        |
| Calcium                 | 50- 75 ppm                                             | 61.54                        | 30.05                        |
| Magnesium               | 15-30 ppm                                              | 11.67                        | 5.13                         |
| Sodium                  | 0 - 30 ppm                                             | 99.51                        | 129.98                       |
| Soluble Salts           | <1,000 ppm                                             | 668.00                       | 481.00                       |
| Bicarbonate             | <60 ppm                                                | 73.41                        | 62.60                        |
| Chloride                | <200 ppm                                               | 80.50                        | 110.50                       |
| SAR                     | <4%                                                    | 3.05                         | 5.74                         |