

SPRING 2016
Data Collection Report
Soil & Water Consulting



CanyonGate Country Club



SOIL and WATER CONSULTING

Course Name: CanyonGate Country Club

Date of Visit: March 23, 2016

	<u>3/16/15</u>	<u>6/17/15</u>	<u>9/23/15</u>	<u>3/23/16</u>
Humidity/Air Temperature	35%/80°	15%/107°	15%/100°	25%/70°
Greens Temperature	60°	80°	66°	43.9°

WATER	Acceptable Range For Water Sample	<u>3/16/15</u>	<u>6/17/15</u>	<u>9/28/15</u>	<u>3/23/16</u>
EC	<2.25 mmhos/cm	1.48	1.11	1.28	1.49
Sodium		173.80	100.10	139.10	179.10
Calcium	20 - 60 ppm	75.62	70.00	73.65	70.19
Magnesium	10 - 25 ppm	24.74	28.50	24.97	21.70
Potassium	5 - 20 ppm	17.28	10.18	11.27	16.12
Phosphorus	0.1 - 0.4 ppm	2.92	0.41	0.87	1.50
Nitrate	5 - 50 ppm	11.59	7.18	6.59	15.83
Sulfur	30 - 90 ppm	234.81	134.82	208.41	236.46
Bicarbonate	<120 ppm	168.44	217.81	129.93	155.50
Boron	<0.67 ppm	0.27	0.17	0.19	0.25
Chloride	<177 ppm	205.10	146.04	174.12	193.19



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GREENS	Acceptable Range For Alkaline Soils Sample	2,4,5,8,12,13, 14,15,17 (avg) 3/16/15	PG,3,5,8,9,12, 16,17,18 (avg) 6/17/14	1,3,6,7,9,10, 11,16,18 (avg) 9/28/15	2,4,5,8,12,13, 14,15,17 (avg) 3/23/16
Organic Matter (Humus)	2 - 3%	0.84	0.80	0.70	0.67
Sulfur	12 - 16 ppm	35.56	32.33	27.00	41.56
Olsen - Phosphorus	13 - 20 ppm	34.22	35.33	32.89	25.78
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,906.89	2,725.56	2,712.67	2,761.11
Magnesium	>7% base saturation or at least 200 lbs/acre	11.84%/263.78	10.67%/217.7	11.19%/223.56	10.20%/191.4
Potassium - TEC of 0 - 35	150 ppm	105.00	106.22	53.67	100.78
Copper	>0.8 ppm	0.70	0.72	0.56	0.68
Manganese	4 ppm or more	2.00	1.00	1.44	1.44
Zinc	>1 - 2 ppm	5.81	4.27	4.28	4.84

GREENS	Acceptable Range For Saturated Paste Sample	1,6,7,9,16,18 (avg) 9/28/15	5,12,13,14,15,17 (avg) 3/23/16
Nitrate - Bentgrass	1-3 ppm	1.70	7.47
Phosphorus	2 - 7 ppm	3.42	7.02
Potassium	25-40 ppm	37.69	48.38
Calcium	50- 75 ppm	48.45	57.35
Magnesium	15-30 ppm	17.53	20.28
Sodium	0 - 30 ppm	68.75	127.07
Soluble Salts	<1,000 ppm	468.50	680.83
Bicarbonate	<60 ppm	163.51	98.03
Chloride	<200 ppm	69.17	115.17
SAR	<4%	2.15	3.68

GREENS	Acceptable Range For Tissue Sample	2,8,13,17 (avg) 3/23/16
Nitrogen	3.0%-6.5%	4.89
Phosphorus	0.2%-0.55%	0.58
Potassium	0.86%-2.55%	2.21
Calcium	0.21%-0.50%	1.01
Magnesium	0.09%-0.22%	0.39
Sulfur	0.23%-0.39%	0.59
Boron	5-24 ppm	41.83
Iron	99-500 ppm	408.50
Manganese	30-160 ppm	138.50
Copper	9-40 ppm	19.80
Zinc	5-60 ppm	64.08
Aluminum	63- 408 ppm	216.00
Sodium	506- 2264 ppm	3,627.50



RECOMMENDATIONS



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Thoughts on the Visit

This Spring, every client that I visited I took a profile section out of one of their greens. Because I work with all ages of golf courses I have seen anything from a new sod layer to the typical 4-5" pan layer where it was a USGA recommended/constructed green. The picture of your profile (below) is not unusual but it does pose some problems. If you remember from school, the video that showed water moving through a soil profile. Even if there was coarse material layered over finer material, (which is the good rule of thumb when selecting topdressing sands) whenever the water hit a layer, it had to fill the first layer before it drained into the next layer and so on through the soil. It seems like simple physics and gravity, but it does matter to you with regards to moving water in and out of your greens. I see much more dead grass from too much water that from not enough and when you have 2 or more perched water tables in a 12-14" soil profile, that can wreak havoc on the turf. Then add the traffic from machines and people to that, it is reasonable to get disease and worn areas on the greens. So, how can you fix it? Nothing will be quick but you can work on it and improve drainage as time goes on. Cultivate in every layer. Verti-cutting and topdressing works on the thatch, 3-5" core aeration will help the current root zone and most of all below 5"! It is the layer least worked on and the area can show the most dramatic results.

My biggest takeaway, and what we seemed to talk most about, was the poa annua. I think anything that you do on the greens that stops poa's natural growth, sets it back during stressful times and generally injures it is a bad thing. Certainly you may have a green or two that could be "saved" to all bentgrass, but you are managing poa/bentgrass greens for sure. Although I don't think that you need to encourage poa annua, I think trying to stop it is a strategy that will always have the greens on a rollercoaster. So, I am talking about not using growth regulators that are known to set back poa; Use fungicides in the heat that won't effectively shut down the plant's growth; Not aerifying greens when poa is already under stress, etc. In the meantime you can continue to seed bentgrass and do things to encourage the Dominant Plus. Just avoid the things that you know will effect poa annua negatively.



Notes from the visit

- Take - All patch diagnosed on "bad" greens. Sprayed Banol and will later spray Insignia.
- Applied 0.5# per 1,000 sq. ft. of Nitrogen prior to sample collection.
- Aeration On Monday March 28th. Moved due to tournament schedule so all "bad" greens and spots were aerified and fertilized with 10-4-16 prior to sample collection.
- Trimmitt will be the only growth regulator used in 2016.
- The greens are increasing in poa annua population.

Fertilizer and Product Recommendations

Greens (Monthly applications)

Calcium- 5 pounds of product per 1,000 square feet. (Gypsum)
AT FLUSHES and AERIFICATIONS ONLY!

Magnesium/Potassium- 4 pounds of product per 1,000 square feet. (0-0-22;K-Mag)

Manganese- Spray 3 ounces per 1,000 square feet rate.
(techmagnum)

*** Continue every 2 week pHacid spray program.**