Client: CanyonGate Country Club

Spring 2025 Report

	3/14/23	4/9/24	3/19/25
Humidity/Air Temperature	rainy/60°	15%/74°	15%/60°
Greens Temperature	(avg)51.65°	(avg)56°	(avg)55°
Fairway Temperature	(avg)51.5°	(avg)57°	(avg)56°

WATER	Acceptable Range For Water Sample	Hole #9 Pond 3/14/23	Hole #18 4/9/24	Hole #5 3/19/25
pH	6.0-6.5	7.77	7.15	7.66
EC	<2.25 mmhos/cm	0.99	0.94	0.98
Sodium		93.06	86.61	90.68
Calcium	20 - 60 ppm	75.09	72.68	73.16
Magnesium	10 - 25 ppm	26.96	22.09	24.58
Potassium	5 - 20 ppm	4.92	4.71	6.77
Sulfur	30 - 90 ppm	238.81	210.29	218.74
Bicarbonate	<120 ppm	171.27	169.89	175.71
Boron	<0.67 ppm	0.11	0.14	0.13
Chloride	<177 ppm	102.47	93.95	94.30

TEE	Acceptable Range For Tissue Sample	14 3/19/25
Nitrogen	3.34%-5.10%	3.42
Phosphorus	0.35% - 0.55%	0.45
Potassium	2.0% - 3.42%	2.32
Calcium	0.25%-0.5%	1.11
Magnesium	0.16%-0.32%	0.35
Sodium	229-1107 ppm	1,914.30

FAIRWAY	Acceptable Range For Tissue Sample	14 3/19/25
Nitrogen	3.34%-5.10%	3.66
Phosphorus	0.35% - 0.55%	0.57
Potassium	2.0% - 3.42%	1.85
Calcium	0.25%-0.5%	1.23
Magnesium	0.16%-0.32%	0.43
Sodium	229-1107 ppm	1,555.90

GREENS	Acceptable Range For Tissue Sample	5,14(avg) 3/19/25
Nitrogen	3.0%-6.5%	3.38
Phosphorus	0.2%-0.55%	0.50
Potassium	0.86%-2.55%	2.03
Calcium	0.21%-0.50%	1.04
Magnesium	0.09%-0.22%	0.37
Sodium	506- 2264 ppm	2,413.45

TEES	**Acceptable Range For Alkaline Soils Sample**	**5,14(avg) 3/17/22**	**5,14(avg) 3/19/25**
Organic Matter (Humus)	2 - 3%	3.87	3.97
Sulfur	12 - 16 ppm	71.00	57.50
Olsen - Phosphorus	13 - 20 ppm	21.00	22.50
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,306.00	3,908.00
Magnesium	>7% base saturation or at least 200 lbs/acre	17.79%/650	18.39%/635
Potassium - TEC of 0 - 35	100 ppm	231.50	268.00
Manganese	>50 ppm	14.00	17.50

FAIRWAYS	**Acceptable Range For Alkaline Soils Sample**	**5,14(avg) 3/17/22**	**5,14(avg) 3/19/25**
Organic Matter (Humus)	2 - 3%	7.58	7.16
Sulfur	12 - 16 ppm	105.50	114.50
Olsen - Phosphorus	13 - 20 ppm	57.50	95.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	5,004.00	5,448.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.35%/888	20.94%/1,023
Potassium - TEC of 0 - 35	100 ppm	275.50	338.00
Manganese	>50 ppm	16.00	20.00

GREENS	**Acceptable Range For Alkaline Soils Sample**	**5,14(avg) 3/17/22**	**5,14(avg) 3/19/25**
Organic Matter (Humus)	2 - 3%	0.68	0.71
Sulfur	12 - 16 ppm	33.00	26.00
Olsen - Phosphorus	13 - 20 ppm	5.00	0.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,697.00	1,728.00
Magnesium	>7% base saturation or at least 200 lbs/acre	12.65%/164	13.92%/186
Potassium - TEC of 0 - 35	150 ppm	65.00	49.00
Manganese	>50 ppm	23.50	48.00

TEES	**Acceptable Range For Saturated Paste Sample**	**5 3/17/22**	**14 3/19/25**
Nitrate - Bermudagrass	10 -15 ppm	128.50	<0.5
Phosphorus	2 - 10 ppm	6.42	3.59
Potassium	40 - 100 ppm	52.82	28.71
Calcium	60 - 200 ppm	247.13	88.98
Magnesium	20 - 70 ppm	106.63	36.80
Sodium	0 - 30 ppm	103.36	125.00
Soluble Salts	<1,920 ppm	1,441.00	691.00
Bicarbonate	<60 ppm	156.69	230.09
Chloride	<1,000 ppm	182.00	91.00
SAR	<4%	1.38	2.81

FAIRWAYS	**Acceptable Range For Saturated Paste Sample**	**5 3/17/22**	**14 3/19/25**
Nitrate - Bermudagrass	10 -15 ppm	30.50	21.00
Phosphorus	2 - 10 ppm	3.57	3.88
Potassium	40 - 100 ppm	51.90	32.75
Calcium	60 - 200 ppm	237.12	126.12
Magnesium	20 - 70 ppm	98.88	50.33
Sodium	0 - 30 ppm	114.40	120.19
Soluble Salts	<1,920 ppm	1,227.00	820.00
Bicarbonate	<60 ppm	249.80	198.59
Chloride	<1,000 ppm	205.00	109.00
SAR	<4%	1.57	2.29

GREENS	**Acceptable Range For Saturated Paste Sample**	**5,14(avg) 3/17/22**	**5,14(avg) 3/19/25**
Nitrate - Dominator Bentgrass	1-3 ppm	<0.5	<0.5
Phosphorus	2 - 7 ppm	2.78	2.14
Potassium	25-40 ppm	36.89	20.07
Calcium	50- 75 ppm	87.58	41.90
Magnesium	15-30 ppm	29.42	15.88
Sodium	0 - 30 ppm	59.28	82.18
Soluble Salts	<1,000 ppm	471.50	392.00
Bicarbonate	<60 ppm	140.27	122.30
Chloride	<200 ppm	55.50	38.00
SAR	<4%	1.41	2.75

	Green #5 0- 2 1/2" (3-2025)	Green #6 0- 2" (12-2018)	Green #5 Below 2 1/2" (3-2025)	Green 1,6,16(avg) Below 2" (12-2018)	Greens Topdressing Sand (3-2025)
Clay	2.7	1.2	2.2	1.2	0.1
Silt	0.5	3.9	1.0	1.6	0.8
Sand	92.7	94.7	96.7	97.1	99.0
Gravel	4.1	0.2	0.1	0.1	0.1
Organic Material	1.98	0.21	0.23	0.11	0.16
Sieve #:					
Fine Gravel 10	4.1	0.2	0.1	0.1	0.1
Very Coarse Sand 18	6.3	5.9	7.4	7.4	8.6
Coarse Sand 35	38.5	31.8	40.1	39.4	47.7
Medium Sand 60	35.1	37.4	34.9	35.7	34.5
Fine Sand 100	9.2	12.5	10.0	10.1	6.9
Very Fine Sand 140	2.3	5.0	2.6	3.2	0.8
Very Fine Sand 270	1.4	2.0	1.6	1.5	0.5
Infiltration Rate in/hr	n/r	n/r	2.6"	11.5"	n/r

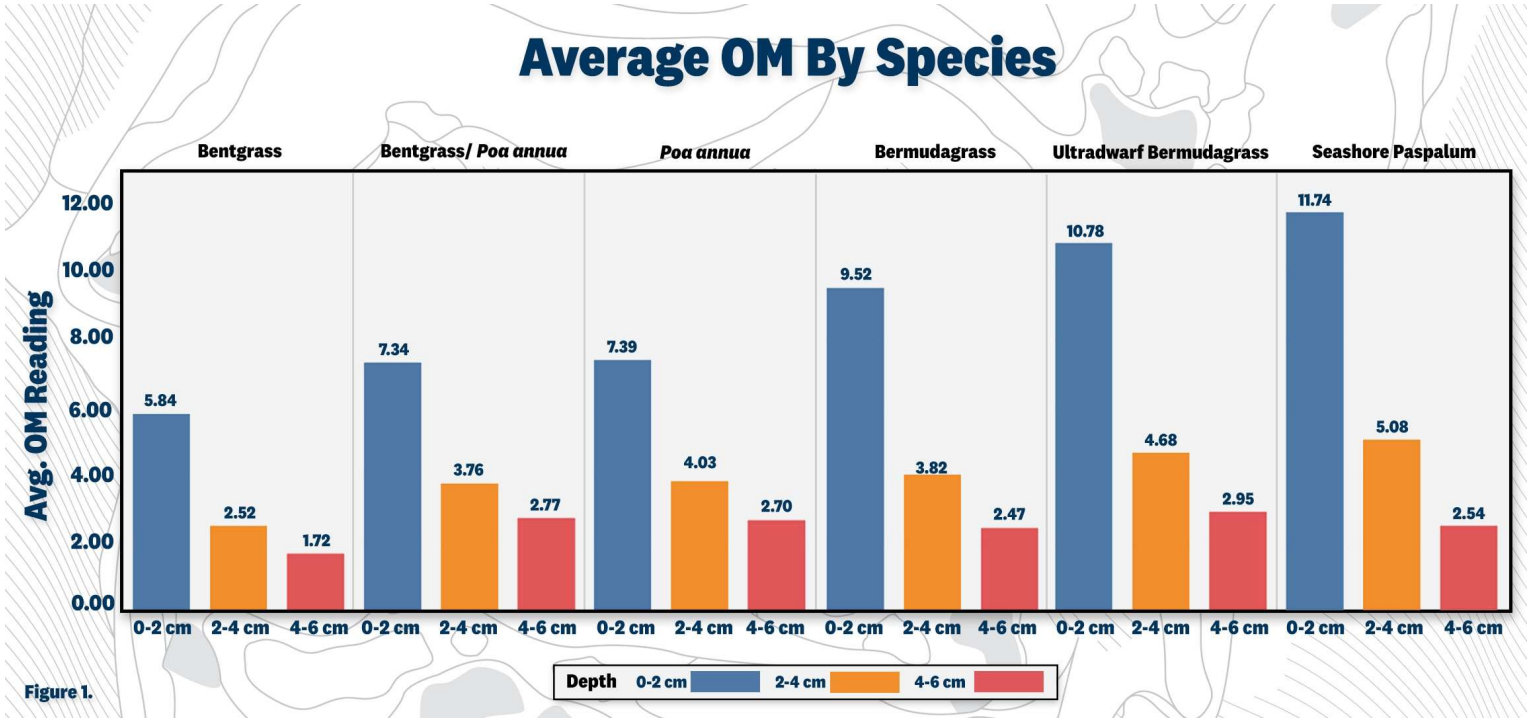

Figure 1.

https://www.usga.org/content/usga/home-page/course-care/green-section-record/62/issue-22/are-you-managing-putting-green-organic-matter-or-is-it-managing-.html#sectionFilters=research&returnable

	Green #5 (3-2025)	USGA Research *National Averages (Bentgrass)*
Organic Material 0-2cm	9.26	***5.84***
Organic Material 2-4cm	3.15	***2.52***
Organic Material 4-6cm	1.24	***1.72***

Nutrient Deficiencies

		P	K
TEE	5	19	400
TEE	14	26	136
FAIRWAY	5	100	389
FAIRWAY	14	90	287
GREEN	5	11	53
GREEN	14	15	45

Potassium can be added in the form of 0-0-50 at a rate of 2 pounds of product per 1,000 sq ft two times in the next three months

Comments and Next Level Cultural Practices

- I know I see the benefits from the new irrigation system in the turf and we may be seeing some soil sodium reduction in the tees and fairways. As you know, the greens being made from straight sand, ebb and flow with watering.
- I highlighted the Phosphorus level in the fairways to point out that there is not a need for P for the rest of my lifetime!
- On the greens core samples, there is a significant change from the cores I did in December of 2018. The infiltration rate has reduced and the organic material in the top 2-3" has increased. I would recommend consistent weekly or bi-weekly verti-cutting and the use of Ninja tines or small and shallow coring tines used monthly in the growing season for the top layer. In the bottom layer using something to "break up" the compaction that has happened over the years would help. Verti-drain or Air2G2.
- Something to keep in mind is that these greens are no longer "new". I think that gets lost after a renovation ages to nearly 10 years. More is required with regards to cultural practices as the greens age. Even though the potable water has been in use for several years and is better than the reclaimed, it is high in bicarbonate.