

SPRING 2017

Data Collection Report

Soil & Water Consulting



The Revere Golf Club



SOIL and WATER CONSULTING

Course Name: Revere Golf Club

Date of Visit: March 23, 2017

	<u>3/24/16</u>	<u>9/26/16</u>	<u>3/23/17</u>
Humidity/Air Temperature	15%/75°	15%/90°	38%/54°
Greens Temperature	43.1°	62°	56°
Fairway Temperature	46.5°	68°	58°

WATER	Acceptable Range For Water Sample	Hole #14 <u>3/24/16</u>	Hole #7 <u>9/26/16</u>	Hole #1 <u>3/23/17</u>
EC	<2.25 mmhos/cm	2.13	1.99	2.16
Sodium		293.60	244.20	287.00
Calcium	20 - 60 ppm	94.61	90.45	97.76
Magnesium	10 - 25 ppm	26.70	29.52	30.23
Potassium	5 - 20 ppm	20.80	21.82	28.11
Phosphorus	0.1 - 0.4 ppm	0.80	2.15	2.29
Nitrate	5 - 50 ppm	8.78	12.12	11.99
Sulfur	30 - 90 ppm	275.76	366.00	281.49
Bicarbonate	<120 ppm	177.10	72.71	159.82
Boron	<0.67 ppm	0.40	0.36	0.34
Chloride	<177 ppm	469.77	376.16	369.01



SOIL and WATER CONSULTING

Lexington Course



SOIL and WATER CONSULTING

TEE	Acceptable Range For Alkaline Soils Sample	14 3/24/16	7 9/26/16	1 3/23/17
Organic Matter (Humus)	2 - 3%	3.34	4.26	3.64
Sulfur	12 - 16 ppm	104.00	81.00	74.00
Olsen - Phosphorus	13 - 20 ppm	18.00	21.00	28.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	5,332.00	3,560.00	3,918.00
Magnesium	>7% base saturation or at least 200 lbs/acre	10.76%/474	7.04%/380	12.56%/464
Potassium - TEC of 0 - 35	100 ppm	364.00	366.00	457.00
Copper	>0.8 ppm	1.53	1.74	1.37
Manganese	>1 ppm	3.00	1.00	2.00
Zinc	>1 - 2 ppm	7.32	8.68	8.03

FAIRWAY	Acceptable Range For Alkaline Soils Sample	14 3/24/16	7 9/26/16	1 3/23/17
Organic Matter (Humus)	2 - 3%	3.79	4.86	5.21
Sulfur	12 - 16 ppm	604.00	1,445.00	5,337.00
Olsen - Phosphorus	13 - 20 ppm	38.00	41.00	25.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,854.00	8,050.00	18,232.00
Magnesium	>7% base saturation or at least 200 lbs/acre	10.95%/642	9.38%/636	4.09%/530
Potassium - TEC of 0 - 35	100 ppm	517.00	794.00	569.00
Copper	>0.8 ppm	1.70	0.96	0.97
Manganese	>1 ppm	5.00	2.00	2.00
Zinc	>1 - 2 ppm	5.63	7.45	5.32

GREENS	Acceptable Range For Alkaline Soils Sample	14 3/24/16	7 9/26/16	1 3/23/17
Organic Matter (Humus)	2 - 3%	1.77	1.82	2.26
Sulfur	12 - 16 ppm	81.00	70.00	111.00
Olsen - Phosphorus	13 - 20 ppm	8.00	7.00	6.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,100.00	2,690.00	2,824.00
Magnesium	>7% base saturation or at least 200 lbs/acre	8.05%/246	8.0%/206	8.16%/238
Potassium - TEC of 0 - 35	150 ppm	726.00	605.00	731.00
Copper	>0.8 ppm	0.53	0.81	0.62
Manganese	4 ppm or more	2.00	2.00	1.00
Zinc	>1 - 2 ppm	10.32	10.71	9.37



SOIL and WATER CONSULTING

TEE	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/26/16	1,10 (avg) 3/23/17
Nitrate - Ryegrass	5 - 10 ppm	<0.5	18.85
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	2.48	3.78
Potassium	40 - 100 ppm	35.88	36.73
Calcium	60 - 200 ppm	163.31	113.08
Magnesium	20 - 70 ppm	47.12	32.89
Sodium	0 - 30 ppm	313.53	329.96
Soluble Salts	<1,920 ppm	1,535.50	1,456.00
Bicarbonate	<60 ppm	251.36	255.02
Chloride	<1,000 ppm	423.00	324.00
SAR	<4%	5.56	7.01

FAIRWAY	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/26/16	1,10 (avg) 3/23/17
Nitrate - Ryegrass	5 - 10 ppm	1.10	7.90
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	1.50	1.53
Potassium	40 - 100 ppm	52.56	70.73
Calcium	60 - 200 ppm	368.48	508.25
Magnesium	20 - 70 ppm	76.86	93.34
Sodium	0 - 30 ppm	351.73	579.18
Soluble Salts	<1,920 ppm	2,083.00	2,998.50
Bicarbonate	<60 ppm	179.37	223.30
Chloride	<1,000 ppm	263.50	543.00
SAR	<4%	4.35	6.20

GREENS	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/26/16	1,10 (avg) 3/23/17
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.6
Phosphorus	2 - 7 ppm	0.86	0.84
Potassium	25-40 ppm	14.83	16.65
Calcium	50- 75 ppm	47.70	69.26
Magnesium	15-30 ppm	12.15	18.35
Sodium	0 - 30 ppm	91.13	153.07
Soluble Salts	<1,000 ppm	439.00	650.50
Bicarbonate	<60 ppm	104.94	125.68
Chloride	<200 ppm	60.00	77.00
SAR	<4%	3.07	4.21



SOIL and WATER CONSULTING

TEE	Acceptable Range For Tissue Sample	1,10 (avg) 3/23/17
Nitrogen	3.34%-5.10%	4.94
Phosphorus	0.35% - 0.55%	0.69
Potassium	2.0% - 3.42%	2.74
Calcium	0.25%-0.5%	0.68
Magnesium	0.16%-0.32%	0.28
Sulfur	0.27% - 0.56%	0.58
Boron	5-17 ppm	27.05
Iron	97-934 ppm	476.00
Manganese	30-73 ppm	41.20
Copper	6-38 ppm	13.35
Zinc	16-84ppm	85.20
Aluminum	52-92 ppm	233.00
Sodium	229-1107 ppm	5,110.00

FAIRWAY	Acceptable Range For Tissue Sample	1,10 (avg) 3/23/17
Nitrogen	3.34%-5.10%	4.64
Phosphorus	0.35% - 0.55%	0.67
Potassium	2.0% - 3.42%	2.86
Calcium	0.25%-0.5%	0.58
Magnesium	0.16%-0.32%	0.25
Sulfur	0.27% - 0.56%	0.53
Boron	5-17 ppm	40.25
Iron	97-934 ppm	283.00
Manganese	30-73 ppm	37.80
Copper	6-38 ppm	12.30
Zinc	16-84ppm	60.05
Aluminum	52-92 ppm	154.50
Sodium	229-1107 ppm	4,890.00

GREENS	Acceptable Range For Tissue Sample	1,10 (avg) 3/23/17
Nitrogen	3.0%-6.5%	4.07
Phosphorus	0.2%-0.55%	0.53
Potassium	0.86%-2.55%	1.85
Calcium	0.21%-0.50%	1.07
Magnesium	0.09%-0.22%	0.24
Sulfur	0.23%-0.39%	0.65
Boron	5-24 ppm	53.20
Iron	99-500 ppm	473.00
Manganese	30-160 ppm	52.65
Copper	9-40 ppm	20.65
Zinc	5-60 ppm	61.85
Aluminum	63- 408 ppm	282.00
Sodium	506- 2264 ppm	2,655.00



SOIL ^{and} WATER CONSULTING

Concord Course



SOIL and WATER CONSULTING

TEE	Acceptable Range For Saturated Paste Sample	16 9/26/16	1 3/23/17
Nitrate - Ryegrass	5 - 10 ppm	<0.5	3.90
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	1.17	3.93
Potassium	40 - 100 ppm	24.27	36.14
Calcium	60 - 200 ppm	68.42	91.06
Magnesium	20 - 70 ppm	19.25	23.80
Sodium	0 - 30 ppm	237.48	235.69
Soluble Salts	<1,920 ppm	964.00	1,158.00
Bicarbonate	<60 ppm	197.67	244.04
Chloride	<1,000 ppm	175.00	260.00
SAR	<4%	6.53	5.68

FAIRWAY	Acceptable Range For Saturated Paste Sample	16 9/26/16	1 3/23/17
Nitrate - Ryegrass	5 - 10 ppm	<0.5	2.20
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	0.25	0.62
Potassium	40 - 100 ppm	41.47	77.39
Calcium	60 - 200 ppm	384.07	469.81
Magnesium	20 - 70 ppm	71.39	100.59
Sodium	0 - 30 ppm	308.61	580.00
Soluble Salts	<1,920 ppm	2,016.00	3,251.00
Bicarbonate	<60 ppm	173.27	280.65
Chloride	<1,000 ppm	161.00	838.00
SAR	<4%	3.79	6.33

GREENS	Acceptable Range For Saturated Paste Sample	16 9/26/16	1 3/23/17
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5
Phosphorus	2 - 7 ppm	1.08	1.21
Potassium	25-40 ppm	16.52	20.78
Calcium	50- 75 ppm	60.21	62.30
Magnesium	15-30 ppm	16.64	18.27
Sodium	0 - 30 ppm	99.58	128.45
Soluble Salts	<1,000 ppm	531.00	608.00
Bicarbonate	<60 ppm	124.46	148.86
Chloride	<200 ppm	74.00	66.00
SAR	<4%	2.93	3.68



SOIL and WATER CONSULTING

TEE	Acceptable Range For Tissue Sample	1 3/23/17
Nitrogen	3.34%-5.10%	4.57
Phosphorus	0.35% - 0.55%	0.59
Potassium	2.0% - 3.42%	2.08
Calcium	0.25%-0.5%	0.61
Magnesium	0.16%-0.32%	0.24
Sulfur	0.27% - 0.56%	0.51
Boron	5-17 ppm	25.60
Iron	97-934 ppm	328.00
Manganese	30-73 ppm	47.30
Copper	6-38 ppm	11.50
Zinc	16-84ppm	61.20
Aluminum	52-92 ppm	175.00
Sodium	229-1107 ppm	4,050.00

FAIRWAY	Acceptable Range For Tissue Sample	1 3/23/17
Nitrogen	3.34%-5.10%	5.02
Phosphorus	0.35% - 0.55%	0.59
Potassium	2.0% - 3.42%	2.40
Calcium	0.25%-0.5%	0.66
Magnesium	0.16%-0.32%	0.27
Sulfur	0.27% - 0.56%	0.55
Boron	5-17 ppm	56.90
Iron	97-934 ppm	418.00
Manganese	30-73 ppm	56.20
Copper	6-38 ppm	10.50
Zinc	16-84ppm	50.30
Aluminum	52-92 ppm	193.00
Sodium	229-1107 ppm	4,860.00

GREENS	Acceptable Range For Tissue Sample	1 3/23/17
Nitrogen	3.0%-6.5%	4.40
Phosphorus	0.2%-0.55%	0.56
Potassium	0.86%-2.55%	1.95
Calcium	0.21%-0.50%	1.09
Magnesium	0.09%-0.22%	0.27
Sulfur	0.23%-0.39%	0.74
Boron	5-24 ppm	49.50
Iron	99-500 ppm	915.00
Manganese	30-160 ppm	103.00
Copper	9-40 ppm	22.10
Zinc	5-60 ppm	80.20
Aluminum	63- 408 ppm	384.00
Sodium	506- 2264 ppm	3,060.00



RECOMMENDATIONS



Thoughts on the course visit

So far this year, between some helping rains and what you have applied yourself, the data is telling us that conditions should be improved. Which is what I see. You mentioned the amount of play has increased and it is clear that things are better. I recently looked through pictures and notes I keep in your folder and I saw things that you used to deal with that you are not anymore. This doesn't mean nothing needs to happen of course, but you will note that my fertility recommendations are minimal. For the greens it is simply to help with sodium issues and increase deficient potassium levels. Hopefully, you were able to apply each at your recent aerification in April.

Now, the questions really revolve around what are your next goals for the course. You seem like you are putting out fewer "fires" on the property and that may free time to do more cultural practices. The one that we have discussed the most, and that you are still debating, is vert-cutting the greens. I believe it would benefit the greens long term. You could either do it shallow and frequently or make it more of a project. Topdressing first is a good technique to get the sand incorporated in as well.

Notes from the visit

- Greens mowing height- 0.120"
- Proxy/ Primo may not have worked??
- Gypsum and 0-0-50 applied in February.
- 18-3-18 with slow release applied to Concord Course greens.
- April 10th core aerification on Lexington Course greens. Concord course greens have been solid tined and will be aerified again at the end of May.
- Fairway mowing height- 0.500"
- Iron and 21-0-0 applied to fairways in Jan and Feb.
- 18-4-19 applied to fairways in March.
- 1.3" of rain since the first of January.
- Purchased Sulfur burner.

Fertilizer and Product Recommendations

Tees & Fairways

Nothing required currently.

Greens (Monthly applications)

Calcium- 5 pounds of product per 1,000 square feet.
(Gypsum)

Potassium- 4 pounds of product per 1,000 square feet (0-0-50)

***Epsom salts and pHacid spray and water in monthly.**