



SOIL AND WATER CONSULTING

Data Collection Report



Spring 2018



	<u>4/20/16</u>	<u>4/24/17</u>	<u>5/9/18</u>
Humidity/Air Temperature	38%/55°	71%/55°	49%/69°
Fairway Temperature	51.1°	60°	(avg)67°
Greens Temperature	46.6°	59°	(avg)73.3°

WATER	Acceptable Range For Water Sample	Irrigation Water 4/20/16	Irrigation Water 4/24/17	Irrigation Water 5/9/17
pH	6.0-6.5	6.76	7.01	6.72
EC	<2.25 mmhos/cm	0.18	0.13	0.25
Sodium		25.60	17.90	55.56
Calcium	20 - 60 ppm	5.95	5.27	12.13
Magnesium	10 - 25 ppm	1.63	1.41	2.95
Potassium	5 - 20 ppm	2.46	2.12	3.14
Sulfur	30 - 90 ppm	6.20	3.31	7.87
Bicarbonate	<120 ppm	35.28	30.96	53.73
Boron	<0.67 ppm	<0.05	<0.05	<0.05
Chloride	<177 ppm	31.49	17.02	73.19

TEES	Acceptable Range For Standard Soil Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18	TEES	Acceptable Range For Saturated Paste Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	1.71	1.75	2.02	Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	11.00	14.00	6.50	Phosphorus	2 - 10 ppm	0.36	0.71	0.74
Mehlich III - Phosphorus	350 lbs/acre	329.50	321.00	279.50	Potassium	40 - 100 ppm	15.28	31.92	13.94
Calcium	68%	73.54	75.74	74.21	Calcium	60 - 200 ppm	17.69	28.19	23.70
Magnesium	15%	16.26	12.23	13.18	Magnesium	20 - 70 ppm	3.34	8.12	6.73
Potassium	5%	1.15	1.16	1.49	Sodium	0 - 30 ppm	4.26	6.23	6.73
Sodium	<2%	2.29	2.39	2.76	Soluble Salts	<1,920 ppm	62.50	201.50	169.00
Boron	1 - 1.5 ppm	0.44	0.71	0.59	Bicarbonate	<60 ppm	65.89	91.52	101.28
Iron	120 ppm	228.50	268.50	189.00	Chloride	<1,000 ppm	16.50	37.50	13.50
Manganese	50 ppm	9.00	9.00	6.50	SAR	<4%	0.17	0.26	0.32

FAIRWAYS	Acceptable Range For Standard Soil Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18	FAIRWAYS	Acceptable Range For Saturated Paste Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	3.33	2.24	3.51	Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	22.00	14.50	15.50	Phosphorus	2 - 10 ppm	0.38	0.82	0.61
Mehlich III - Phosphorus	350 lbs/acre	391.50	522.00	401.00	Potassium	40 - 100 ppm	9.25	23.91	18.56
Calcium	68%	64.87	65.20	65.80	Calcium	60 - 200 ppm	12.69	20.77	34.03
Magnesium	15%	19.71	13.17	15.29	Magnesium	20 - 70 ppm	2.65	7.66	12.24
Potassium	5%	2.86	3.04	1.97	Sodium	0 - 30 ppm	3.95	7.55	10.67
Sodium	<2%	1.75	2.25	2.14	Soluble Salts	<1,920 ppm	66.50	171.50	227.00
Boron	1 - 1.5 ppm	0.63	0.67	0.79	Bicarbonate	<60 ppm	53.69	79.32	87.86
Iron	120 ppm	338.00	275.50	234.00	Chloride	<1,000 ppm	13.00	27.50	25.50
Manganese	50 ppm	14.00	9.50	7.50	SAR	<4%	0.17	0.37	0.40

GREENS	Acceptable Range For Standard Soil Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18	GREENS	Acceptable Range For Saturated Paste Sample	7,14 (avg) 4/20/16	1,10 (avg) 4/24/17	6,15 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	0.76	0.85	0.94	Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	9.00	7.00	3.50	Phosphorus	2 - 7 ppm	0.32	0.72	0.96
Mehlich III - Phosphorus	350 lbs/acre	222.00	192.50	165.00	Potassium	25-40 ppm	6.87	15.29	12.88
Calcium	68%	64.09	67.79	62.06	Calcium	50- 75 ppm	12.41	23.07	17.41
Magnesium	15%	15.81	18.79	24.77	Magnesium	15-30 ppm	5.77	12.06	10.50
Potassium	5%	2.41	2.15	1.50	Sodium	0 - 30 ppm	2.58	8.64	5.30
Sodium	<2%	3.60	4.49	5.84	Soluble Salts	<1,000 ppm	89.50	179.50	142.50
Boron	1 - 1.5 ppm	<0.22	0.46	0.58	Bicarbonate	<60 ppm	61.01	125.68	91.52
Iron	120 ppm	122.50	92.00	80.00	Chloride	<200 ppm	9.50	20.50	13.00
Manganese	50 ppm	30.00	24.50	18.50	SAR	<4%	0.11	0.37	0.25



	<u>4/29/16</u>	<u>5/3/17</u>	<u>5/8/18</u>
Humidity/Air Temperature	75%/50°	27%/63°	39%/73°
Fairway Temperature	51.7°	70°	(avg)68.8°
Greens Temperature	50.3°	68°	(avg)71.9°

WATER	Acceptable Range For Water Sample	Hole #10 4/29/16	Hole #18 5/3/17	Hole #2 5/8/18
pH	6.0-6.5	7.85	7.65	7.46
EC	<2.25 mmhos/cm	1.15	0.83	1.06
Sodium		138.50	103.30	111.10
Calcium	20 - 60 ppm	64.65	34.10	65.48
Magnesium	10 - 25 ppm	14.89	12.08	18.23
Potassium	5 - 20 ppm	3.45	2.06	2.21
Sulfur	30 - 90 ppm	39.54	10.34	22.82
Bicarbonate	<120 ppm	182.14	155.50	183.68
Boron	<0.67 ppm	<0.05	<0.05	<0.05
Chloride	<177 ppm	247.14	157.44	217.87

TEES	Acceptable Range For Standard Soil Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	1.79	3.93	3.78
Sulfur	50 - 100 ppm	16.50	21.00	11.00
Mehlich III - Phosphorus	350 lbs/acre	824.50	820.00	666.50
Calcium	68%	76.23	75.88	75.09
Magnesium	15%	13.41	12.69	12.66
Potassium	5%	1.67	3.42	3.45
Sodium	<2%	1.99	1.18	1.97
Boron	1 - 1.5 ppm	36.00	0.61	0.77
Iron	120 ppm	241.00	313.50	168.50
Manganese	50 ppm	23.50	51.00	40.00

FAIRWAYS	Acceptable Range For Standard Soil Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	3.89	4.47	4.95
Sulfur	50 - 100 ppm	41.00	27.50	17.00
Mehlich III - Phosphorus	350 lbs/acre	261.00	251.50	341.00
Calcium	68%	65.43	69.50	70.07
Magnesium	15%	15.62	16.51	14.99
Potassium	5%	4.65	4.93	4.34
Sodium	<2%	1.89	2.26	2.18
Boron	1 - 1.5 ppm	0.43	0.54	0.35
Iron	120 ppm	99.00	144.50	91.50
Manganese	50 ppm	84.00	63.00	64.50

GREENS	Acceptable Range For Standard Soil Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	2.69	2.64	3.01
Sulfur	50 - 100 ppm	13.00	50.50	36.50
Mehlich III - Phosphorus	350 lbs/acre	481.00	536.00	449.00
Calcium	68%	67.07	74.90	71.92
Magnesium	15%	19.90	13.58	16.47
Potassium	5%	6.21	4.29	4.69
Sodium	<2%	2.69	2.09	2.68
Boron	1 - 1.5 ppm	0.52	0.41	0.35
Iron	120 ppm	169.50	282.50	187.50
Manganese	50 ppm	48.50	33.00	36.50

TEES	Acceptable Range For Saturated Paste Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Nitrate - Poa/Bentgrass	5 - 10 ppm	<0.5	<0.5	2.05
Phosphorus	2 - 10 ppm	1.05	0.62	0.78
Potassium	40 - 100 ppm	10.38	17.60	13.11
Calcium	60 - 200 ppm	42.48	28.06	18.40
Magnesium	20 - 70 ppm	10.47	9.09	5.25
Sodium	0 - 30 ppm	17.83	8.20	10.13
Soluble Salts	<1,920 ppm	236.00	191.00	147.00
Bicarbonate	<60 ppm	135.45	119.58	57.35
Chloride	<1,000 ppm	23.00	13.00	23.00
SAR	<4%	0.00	0.35	0.55

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Nitrate - Poa/Bentgrass	5 - 10 ppm	<0.5	<0.5	2.05
Phosphorus	2 - 10 ppm	0.14	0.42	0.27
Potassium	40 - 100 ppm	16.07	13.25	12.89
Calcium	60 - 200 ppm	49.85	31.46	23.12
Magnesium	20 - 70 ppm	13.58	10.74	6.74
Sodium	0 - 30 ppm	19.46	19.41	13.14
Soluble Salts	<1,920 ppm	289.00	238.50	182.00
Bicarbonate	<60 ppm	59.79	112.26	56.13
Chloride	<1,000 ppm	20.50	27.00	19.50
SAR	<4%	0.65	0.78	0.62

GREENS	Acceptable Range For Saturated Paste Sample	1,10 (avg) 4/29/16	9,18 (avg) 5/3/17	2,11 (avg) 5/8/18
Nitrate - Poa/Bentgrass	1-3 ppm	<0.5	<0.5	2.15
Phosphorus	2 - 7 ppm	0.60	0.79	0.35
Potassium	25-40 ppm	16.70	37.71	35.52
Calcium	50- 75 ppm	22.35	61.82	86.08
Magnesium	15-30 ppm	7.52	18.93	21.37
Sodium	0 - 30 ppm	18.10	19.23	25.98
Soluble Salts	<1,000 ppm	167.50	396.50	515.50
Bicarbonate	<60 ppm	97.62	126.90	79.31
Chloride	<200 ppm	12.50	43.00	22.00
SAR	<4%	0.85	0.55	0.66



	<u>4/29/16</u>	<u>4/26/17</u>	<u>5/10/18</u>
Humidity/Air Temperature	50%/75°	77%/64°	75%/75°
Fairway Temperature	53°	60°	(avg)71.2°
Greens Temperature	54°	61°	(avg)72.7°

WATER	Acceptable Range For Water Sample	Pond 4/29/16	Pond 4/26/17	Hole #9 5/10/18
pH	6.0-6.5	6.07	6.14	6.24
EC	<2.25 mmhos/cm	0.41	0.35	0.44
Sodium		24.36	20.90	41.10
Calcium	20 - 60 ppm	37.84	30.23	28.33
Magnesium	10 - 25 ppm	5.42	4.67	5.99
Potassium	5 - 20 ppm	5.76	4.67	4.88
Sulfur	30 - 90 ppm	59.82	45.09	43.83
Bicarbonate	<120 ppm	58.31	46.07	26.86
Boron	<0.67 ppm	<0.05	>0.05	<0.05
Chloride	<177 ppm	46.98	36.25	72.34

TEES	Acceptable Range For Standard Soil Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18	TEE	Acceptable Range For Saturated Paste Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	3.42	4.26	5.54	Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	14.33	20.66	117.50	Phosphorus	2 - 10 ppm	0.62	0.96	1.06
Mehlich III - Phosphorus	350 lbs/acre	816.66	1210.66	861.00	Potassium	40 - 100 ppm	9.33	12.80	21.26
Calcium	68%	64.03	66.74	62.29	Calcium	60 - 200 ppm	13.40	25.62	33.01
Magnesium	15%	13.87	15.67	12.82	Magnesium	20 - 70 ppm	4.09	8.44	10.08
Potassium	5%	3.62	3.37	2.77	Sodium	0 - 30 ppm	9.10	11.07	12.69
Sodium	<2%	1.83	1.78	2.51	Soluble Salts	<1,920 ppm	95.67	173.33	252.00
Boron	1 - 1.5 ppm	0.55	1.00	0.43	Bicarbonate	<60 ppm	30.10	75.65	75.65
Iron	120 ppm	545.33	599.66	453.00	Chloride	<1,000 ppm	10.33	19.67	24.00
Manganese	50 ppm	5.00	11.00	5.00	SAR	<4%	0.56	0.48	0.50

FAIRWAYS	Acceptable Range For Standard Soil Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18	FAIRWAY	Acceptable Range For Saturated Paste Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	3.78	3.79	4.47	Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	23.00	27.00	30.50	Phosphorus	2 - 10 ppm	0.39	0.88	0.76
Mehlich III - Phosphorus	350 lbs/acre	757.00	1,221.33	943.50	Potassium	40 - 100 ppm	11.21	18.15	20.21
Calcium	68%	74.10	68.69	70.13	Calcium	60 - 200 ppm	33.77	35.45	54.33
Magnesium	15%	13.07	13.16	11.57	Magnesium	20 - 70 ppm	8.66	8.81	11.75
Potassium	5%	3.38	5.12	3.74	Sodium	0 - 30 ppm	11.62	10.38	13.56
Sodium	<2%	1.37	1.69	2.15	Soluble Salts	<1,920 ppm	185.00	207.67	286.00
Boron	1 - 1.5 ppm	0.65	0.97	0.45	Bicarbonate	<60 ppm	69.96	74.84	89.07
Iron	120 ppm	555.33	494.33	394.50	Chloride	<1,000 ppm	14.67	16.67	21.00
Manganese	50 ppm	4.33	8.33	4.00	SAR	<4%	0.45	0.41	0.43

GREENS	Acceptable Range For Standard Soil Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18	GREENS	Acceptable Range For Saturated Paste Sample	Red 1, White 1, Blue 7 (avg) 4/29/16	Red 2, White 2, Blue 2 (avg) 4/26/17	Red 8, Blue 8 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	2.14	2.66	2.83	Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5	<0.5
Sulfur	50 - 100 ppm	42.66	61.66	32.00	Phosphorus	2 - 7 ppm	0.46	0.52	0.52
Mehlich III - Phosphorus	350 lbs/acre	832.00	1,244.33	1,021.50	Potassium	25-40 ppm	17.53	28.74	40.85
Calcium	68%	58.69	63.37	67.21	Calcium	50-75 ppm	39.54	61.12	48.30
Magnesium	15%	11.03	11.88	11.88	Magnesium	15-30 ppm	10.88	16.43	11.75
Potassium	5%	2.48	3.05	3.88	Sodium	0 - 30 ppm	11.82	11.15	13.53
Sodium	<2%	2.09	1.94	2.82	Soluble Salts	<1,000 ppm	249.33	349.67	326.50
Boron	1 - 1.5 ppm	0.56	1.02	0.29	Bicarbonate	<60 ppm	15.45	52.88	34.17
Iron	120 ppm	494.00	672.33	454.50	Chloride	<200 ppm	9.33	10.67	15.00
Manganese	50 ppm	17.33	11.00	8.50	SAR	<4%	0.43	0.32	0.46



	<u>4/28/16</u>	<u>5/10/17</u>	<u>5/8/18</u>
Humidity/Air Temperature	65%/50°	46%/70°	56%/65°
Fairway Temperature	51.5°	62°	(avg)62.75°
Greens Temperature	50.8°	59°	(avg)62.75°

WATER	Acceptable Range For Water Sample	Pond 4/28/16	Pond 5/10/17	Hole 5/8/18
pH	6.0-6.5	6.40	8.98	7.34
EC	<2.25 mmhos/cm	0.31	0.37	0.29
Sodium		17.01	22.03	12.51
Calcium	20 - 60 ppm	29.19	31.91	30.63
Magnesium	10 - 25 ppm	7.66	9.26	7.40
Potassium	5 - 20 ppm	3.90	4.13	3.62
Sulfur	30 - 90 ppm	43.08	46.65	47.16
Bicarbonate	<120 ppm	82.79	63.35	74.78
Boron	<0.67 ppm	0.06	0.07	0.05
Chloride	<177 ppm	21.79	29.96	12.43

TEES	Acceptable Range For Standard Soil Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	2.20	1.55	2.90
Sulfur	50 - 100 ppm	19.50	17.00	135.50
Mehlich III - Phosphorus	350 lbs/acre	673.00	570.00	561.00
Calcium	68%	69.95	64.74	63.81
Magnesium	15%	13.40	16.98	11.97
Potassium	5%	2.75	3.96	3.26
Sodium	<2%	2.30	3.49	3.04
Boron	1 - 1.5 ppm	0.47	0.57	0.54
Iron	120 ppm	583.00	702.50	452.50
Manganese	50 ppm	12.00	13.00	8.50

FAIRWAYS	Acceptable Range For Standard Soil Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	1.90	2.55	2.15
Sulfur	50 - 100 ppm	29.00	117.50	38.00
Mehlich III - Phosphorus	350 lbs/acre	568.00	602.50	520.00
Calcium	68%	63.12	65.35	64.26
Magnesium	15%	14.58	14.62	11.80
Potassium	5%	3.26	3.02	3.80
Sodium	<2%	3.42	3.05	3.77
Boron	1 - 1.5 ppm	0.65	0.76	0.54
Iron	120 ppm	661.50	570.00	603.00
Manganese	50 ppm	9.50	12.00	13.00

GREENS	Acceptable Range For Standard Soil Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Organic Matter (Humus)	2 - 3%	0.34	0.47	0.87
Sulfur	50 - 100 ppm	57.00	21.00	10.50
Mehlich III - Phosphorus	350 lbs/acre	188.00	190.00	217.50
Calcium	68%	60.52	66.33	69.36
Magnesium	15%	14.77	16.30	14.30
Potassium	5%	8.23	5.53	3.02
Sodium	<2%	4.93	5.00	6.15
Boron	1 - 1.5 ppm	<0.20	0.25	<0.20
Iron	120 ppm	94.00	74.00	96.00
Manganese	50 ppm	10.00	9.00	9.50

TEES	Acceptable Range For Saturated Paste Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	1.95
Phosphorus	2 - 10 ppm	0.43	1.04	0.30
Potassium	40 - 100 ppm	11.14	17.11	32.73
Calcium	60 - 200 ppm	39.00	38.92	176.80
Magnesium	20 - 70 ppm	8.67	12.12	35.01
Sodium	0 - 30 ppm	21.75	20.02	32.23
Soluble Salts	<1,920 ppm	238.50	267.00	822.50
Bicarbonate	<60 ppm	59.79	126.90	25.62
Chloride	<1,000 ppm	24.50	36.00	40.50
SAR	<4%	0.82	0.72	0.60

FAIRWAYS	Acceptable Range For Saturated Paste Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	0.90
Phosphorus	2 - 10 ppm	0.26	0.27	0.31
Potassium	40 - 100 ppm	11.35	19.97	20.07
Calcium	60 - 200 ppm	45.66	136.23	56.35
Magnesium	20 - 70 ppm	11.56	32.95	12.18
Sodium	0 - 30 ppm	32.86	46.97	25.79
Soluble Salts	<1,920 ppm	288.50	701.00	375.00
Bicarbonate	<60 ppm	52.47	95.18	21.96
Chloride	<1,000 ppm	32.50	54.50	38.00
SAR	<4%	1.13	0.95	0.82

GREENS	Acceptable Range For Saturated Paste Sample	9,16 (avg) 4/28/16	1,10 (avg) 5/10/17	6,11 (avg) 5/8/18
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 7 ppm	0.85	2.49	1.44
Potassium	25-40 ppm	81.18	44.77	22.50
Calcium	50- 75 ppm	62.04	37.41	21.33
Magnesium	15-30 ppm	14.83	13.56	7.38
Sodium	0 - 30 ppm	13.24	10.89	5.87
Soluble Salts	<1,000 ppm	442.50	292.50	184.50
Bicarbonate	<60 ppm	42.71	120.80	58.57
Chloride	<200 ppm	4.00	23.00	9.50
SAR	<4%	0.39	0.39	0.28



	<u>4/20/16</u>	<u>5/3/17</u>	<u>5/9/18</u>
Humidity/Air Temperature	20%/68°	45%/63°	75%/60°
Fairway Temperature	61.3°	66°	(avg)59.8°
Greens Temperature	67°	65°	(avg)56.85°

WATER	Acceptable Range For Water Sample	Pond 4/20/16	Sprinkler head 5/3/17	Pond Hole #12 5/9/18
pH		6.14	6.51	6.56
EC	<2.25 mmhos/cm	0.06	0.07	0.07
Sodium		2.08	3.33	2.13
Calcium	20 - 60 ppm	5.08	5.67	6.21
Magnesium	10 - 25 ppm	1.64	1.43	1.50
Potassium	5 - 20 ppm	4.47	2.03	2.13
Sulfur	30 - 90 ppm	10.25	11.83	6.35
Bicarbonate	<120 ppm	22.32	21.60	28.31
Boron	<0.67 ppm	<0.05	<0.05	<0.05
Chloride	<177 ppm	<2.00	<2.00	<2.00

TEES	Acceptable Range For Standard Soil Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	0.95	0.90	1.21
Sulfur	50 - 100 ppm	8.00	49.50	11.00
Mehlich III - Phosphorus	350 lbs/acre	460.00	309.00	247.00
Calcium	68%	75.24	65.90	65.64
Magnesium	15%	15.10	12.28	14.01
Potassium	5%	1.75	5.32	4.33
Sodium	<2%	2.76	3.32	5.90
Boron	1 - 1.5 ppm	0.30	0.35	0.42
Iron	120 ppm	215.00	380.00	269.00
Manganese	50 ppm	9.00	2.50	2.50

FAIRWAYS	Acceptable Range For Standard Soil Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	3.49	4.75	5.18
Sulfur	50 - 100 ppm	17.00	65.50	15.50
Mehlich III - Phosphorus	350 lbs/acre	167.00	162.50	240.50
Calcium	68%	66.72	67.38	69.97
Magnesium	15%	17.55	14.51	12.85
Potassium	5%	3.62	5.17	4.12
Sodium	<2%	1.33	1.34	2.28
Boron	1 - 1.5 ppm	0.32	0.48	0.32
Iron	120 ppm	304.00	392.50	280.00
Manganese	50 ppm	6.50	8.00	3.50

GREENS	Acceptable Range For Standard Soil Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Organic Matter (Humus)	2 - 3%	0.75	0.72	1.18
Sulfur	50 - 100 ppm	7.00	8.50	5.00
Mehlich III - Phosphorus	350 lbs/acre	325.50	309.00	293.00
Calcium	68%	65.53	58.37	63.05
Magnesium	15%	16.29	19.37	13.96
Potassium	5%	1.80	3.38	2.59
Sodium	<2%	3.29	3.95	7.07
Boron	1 - 1.5 ppm	0.21	0.44	<0.20
Iron	120 ppm	166.50	200.50	185.00
Manganese	50 ppm	22.50	19.00	17.00

TEES	Acceptable Range For Saturated Paste Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 10 ppm	0.79	0.74	0.76
Potassium	40 - 100 ppm	10.06	64.54	32.06
Calcium	60 - 200 ppm	25.14	58.34	16.95
Magnesium	20 - 70 ppm	8.07	18.58	4.96
Sodium	0 - 30 ppm	5.65	5.51	5.68
Soluble Salts	<1,920 ppm	131.00	417.50	163.50
Bicarbonate	<60 ppm	73.21	63.45	58.57
Chloride	<1,000 ppm	10.00	12.00	10.50
SAR	<4%	0.26	0.16	0.32

FAIRWAYS	Acceptable Range For Saturated Paste Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Nitrate - Bentgrass	5 - 10 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 10 ppm	0.35	0.24	0.48
Potassium	40 - 100 ppm	22.16	38.85	23.90
Calcium	60 - 200 ppm	42.40	63.69	22.32
Magnesium	20 - 70 ppm	15.08	20.68	6.29
Sodium	0 - 30 ppm	6.13	7.75	4.62
Soluble Salts	<1,920 ppm	223.00	381.00	178.00
Bicarbonate	<60 ppm	107.38	70.77	74.43
Chloride	<1,000 ppm	23.50	15.50	16.50
SAR	<4%	0.21	0.22	0.23

GREENS	Acceptable Range For Saturated Paste Sample	9,15 (avg) 4/20/16	1,10 (avg) 5/3/17	6,11 (avg) 5/9/18
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 7 ppm	1.31	2.01	1.08
Potassium	25-40 ppm	4.61	10.09	8.46
Calcium	50- 75 ppm	6.58	8.20	6.93
Magnesium	15-30 ppm	2.49	4.88	2.35
Sodium	0 - 30 ppm	3.43	3.47	4.24
Soluble Salts	<1,000 ppm	46.50	88.50	61.00
Bicarbonate	<60 ppm	21.96	45.15	28.06
Chloride	<200 ppm	3.00	8.00	5.00
SAR	<4%	0.29	0.26	0.35



	<u>4/20/16</u>	<u>4/26/17</u>	<u>5/10/18</u>
Humidity/Air Temperature	24%/70°	90%/59°	75%/75°
Fairway Temperature	55.1°	59°	(avg)60.8°
Greens Temperature	55.3°	59°	(avg)59.1°

WATER	Acceptable Range For Water Sample	Pond 5/2/15	Pond 4/20/16	Hole #9 5/10/18
pH	6.0-6.5	5.29	5.39	4.49
EC	<2.25 mmhos/cm	0.28	0.23	0.21
Sodium		28.29	19.66	10.15
Calcium	20 - 60 ppm	15.35	15.42	17.15
Magnesium	10 - 25 ppm	2.29	2.35	2.20
Potassium	5 - 20 ppm	5.53	6.50	4.43
Sulfur	30 - 90 ppm	33.18	32.19	37.98
Bicarbonate	<120 ppm	26.86	26.64	0.00
Boron	<0.67 ppm	<0.05	<0.05	<0.05
Chloride	<177 ppm	46.64	29.62	17.87

TEES	Acceptable Range For Standard Soil Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	1.63	1.99	2.57
Sulfur	50 - 100 ppm	14.00	16.00	11.50
Mehlich III - Phosphorus	350 lbs/acre	719.00	1053.50	639.00
Calcium	68%	63.97	63.57	60.60
Magnesium	15%	17.57	16.07	17.03
Potassium	5%	2.93	3.50	4.20
Sodium	<2%	2.33	2.89	3.32
Boron	1 - 1.5 ppm	0.53	0.83	<0.23
Iron	120 ppm	443.00	556.50	288.00
Manganese	50 ppm	12.50	10.00	6.00

FAIRWAYS	Acceptable Range For Standard Soil Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	2.35	2.33	3.03
Sulfur	50 - 100 ppm	14.00	16.00	9.50
Mehlich III - Phosphorus	350 lbs/acre	1062.50	959.50	471.50
Calcium	68%	64.65	61.24	59.30
Magnesium	15%	17.48	15.33	18.77
Potassium	5%	3.33	4.00	4.86
Sodium	<2%	1.44	2.23	3.06
Boron	1 - 1.5 ppm	0.75	0.68	<0.21
Iron	120 ppm	468.00	378.00	162.00
Manganese	50 ppm	10.00	7.00	3.50

GREENS	Acceptable Range For Standard Soil Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Organic Matter (Humus)	2 - 3%	2.10	1.85	2.51
Sulfur	50 - 100 ppm	14.50	13.50	9.00
Mehlich III - Phosphorus	350 lbs/acre	834.00	419.00	533.50
Calcium	68%	72.28	66.46	68.60
Magnesium	15%	11.52	10.09	12.13
Potassium	5%	2.30	2.70	2.64
Sodium	<2%	1.54	3.61	4.33
Boron	1 - 1.5 ppm	0.72	0.70	<0.30
Iron	120 ppm	460.00	477.50	354.00
Manganese	50 ppm	15.00	18.00	14.50

TEES	Acceptable Range For Saturated Paste Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 10 ppm	1.35	1.38	0.68
Potassium	40 - 100 ppm	20.32	20.87	15.54
Calcium	60 - 200 ppm	61.22	22.88	21.47
Magnesium	20 - 70 ppm	20.17	9.68	8.62
Sodium	0 - 30 ppm	11.09	8.03	10.83
Soluble Salts	<1,920 ppm	306.00	172.50	166.50
Bicarbonate	<60 ppm	192.80	84.19	63.45
Chloride	<1,000 ppm	21.50	30.50	18.00
SAR	<4%	0.34	0.36	0.50

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 10 ppm	1.28	0.94	0.59
Potassium	40 - 100 ppm	11.62	34.77	12.92
Calcium	60 - 200 ppm	22.22	18.70	15.22
Magnesium	20 - 70 ppm	8.35	8.05	6.40
Sodium	0 - 30 ppm	6.57	6.95	6.62
Soluble Salts	<1,920 ppm	129.50	153.50	124.50
Bicarbonate	<60 ppm	65.89	93.91	64.67
Chloride	<1,000 ppm	12.00	40.50	17.50
SAR	<4%	0.31	0.34	0.36

GREENS	Acceptable Range For Saturated Paste Sample	1,18 (avg) 4/20/16	2,10 (avg) 4/26/17	6,11 (avg) 5/10/18
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5	<0.5
Phosphorus	2 - 7 ppm	0.62	1.50	3.89
Potassium	25-40 ppm	8.43	37.95	47.38
Calcium	50- 75 ppm	13.14	13.90	14.29
Magnesium	15-30 ppm	3.40	3.77	4.29
Sodium	0 - 30 ppm	4.94	11.51	6.83
Soluble Salts	<1,000 ppm	74.00	121.50	248.00
Bicarbonate	<60 ppm	34.17	24.40	53.69
Chloride	<200 ppm	6.50	28.00	52.00
SAR	<4%	0.32	0.71	0.42

Spring Application for Tees:	200 pounds of product/acre (0-0-50)	500 pounds of product/acre (Gypsum)	100 pounds of product/acre (Pro-Mag)
Blue Heron Pines GC	yes	no	yes
Downingtown CC	yes	no	no
Ramblewood CC	yes	no	no
Riverwinds Golf & Tennis Club	yes	no	no
Running Deer GC	yes	yes	yes
Valleybrook CC	yes	no	no

Spring Application for Fairways:	200 pounds of product/acre (0-0-50)	500 pounds of product/acre (Gypsum)	100 pounds of product/acre (Pro-Mag)
Blue Heron Pines GC	yes	no	no
Downingtown CC	no	no	no
Ramblewood CC	yes	no	no
Riverwinds Golf & Tennis Club	yes	no	yes
Running Deer GC	no	no	no
Valleybrook CC	yes	no	no

Monthly Applications for Greens:	2 pounds of product / 1,000 sq. ft. (0-0-50)	10 pounds of product / 1,000 sq. ft. (Gypsum)	3 pounds of product / 1,000 sq.ft. (Pro- Mag)	3 pounds of product / 1,000 sq.ft. (11-55-00)
Blue Heron Pines GC	yes	yes	yes	yes
Downingtown CC	yes	no	no	no
Ramblewood CC	yes	no	yes	no
Riverwinds Golf & Tennis Club	yes	yes	yes	yes
Running Deer GC	yes	yes	yes	no
Valleybrook CC	yes	no	yes	no

GREENS	Tuckahoe Topdressing Sand (2016)	Tuckahoe Topdressing Sand (2018)	USGA Recommendations
Clay	0.70	0.40	<= 3.0%
Silt	0.10	0.10	<= 5.0%
Sand	98.60	99.40	94 - 100%
Gravel	0.60	0.10	
Organic Material	<0.1	<0.1	
<u>Sieve #:</u>			
Fine Gravel 10	0.60	0.10	2.0mm <= 3.0%
Very Coarse Sand 18	9.30	7.60	2.0mm + 1.0mm <= 10%
Coarse Sand 35	27.40	30.50	
Medium Sand 60	45.40	42.30	0.5mm + 0.25mm >= 60%
Fine Sand 100	13.00	15.70	0.15mm <= 20%
Very Fine Sand 140	2.90	3.00	0.106mm + 0.053mm <= 5.0%
Very Fine Sand 270	0.60	0.30	