



SOIL AND WATER CONSULTING

Data Collection Report



2018



	<u>6/7/18</u>
Humidity/Air Temperature	50%/78°
Fairway Temperature	86.4°
Greens Temperature	89.2°

WATER	Acceptable Range For Water Sample	Irrigation Water 6/7/18
pH	6.0-6.5	7.78
EC	<2.25 mmhos/cm	1.01
Sodium		99.12
Calcium	20 - 60 ppm	68.88
Magnesium	10 - 25 ppm	22.97
Potassium	5 - 20 ppm	5.27
Phosphorus	0.1 - 0.4 ppm	<0.20
Nitrate	5 - 50 ppm	0.23
Sulfur	30 - 90 ppm	224.82
Bicarbonate	<120 ppm	164.08
Boron	<0.67 ppm	0.14
Chloride	<177 ppm	94.13

TEES	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	1.05
Sulfur	12 - 16 ppm	64.33
Olsen - Phosphorus	13 - 20 ppm	7.33
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,466.67
Magnesium	>7% base saturation or at least 200 lbs/acre	17.72%/355.33
Potassium - TEC of 0 - 35	100 ppm	55.67
Manganese	>50 ppm	43.67

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	3.09
Sulfur	12 - 16 ppm	287.67
Olsen - Phosphorus	13 - 20 ppm	4.33
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,490.00
Magnesium	>7% base saturation or at least 200 lbs/acre	18.38%/998
Potassium - TEC of 0 - 35	100 ppm	138.67
Manganese	>50 ppm	48.33

GREENS	Acceptable Range For Alkaline Soils Sample	1,9,12,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	0.41
Sulfur	12 - 16 ppm	45.75
Olsen - Phosphorus	13 - 20 ppm	4.75
Calcium - TEC of 6 - 12	1,000 lbs/acre	846.50
Magnesium	>7% base saturation or at least 200 lbs/acre	16.56%/131
Potassium - TEC of 0 - 35	150 ppm	100.25
Manganese	>50 ppm	23.50

TEES	Acceptable Range For Saturated Paste Sample	1 6/7/18
Nitrate - Bermudagrass	10-15 ppm	<0.5
Phosphorus	2 - 10 ppm	1.51
Potassium	40 - 100 ppm	15.42
Calcium	60 - 200 ppm	73.08
Magnesium	20 - 70 ppm	20.37
Sodium	0 - 30 ppm	111.47
Soluble Salts	<1,920 ppm	707.00
Bicarbonate	<60 ppm	239.16
Chloride	<1,000 ppm	101.00
SAR	<4%	2.97

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1 6/7/18
Nitrate - Bermudagrass	10-15 ppm	<0.5
Phosphorus	2 - 10 ppm	0.14
Potassium	40 - 100 ppm	11.15
Calcium	60 - 200 ppm	238.52
Magnesium	20 - 70 ppm	57.68
Sodium	0 - 30 ppm	198.88
Soluble Salts	<1,920 ppm	1,308.00
Bicarbonate	<60 ppm	222.08
Chloride	<1,000 ppm	132.00
SAR	<4%	3.00

GREENS	Acceptable Range For Saturated Paste Sample	1,18(avg) 6/7/18
Nitrate - Bentgrass/Poa	1-3 ppm	<0,5
Phosphorus	2 - 7 ppm	1.79
Potassium	25-40 ppm	31.23
Calcium	50- 75 ppm	50.43
Magnesium	15-30 ppm	13.32
Sodium	0 - 30 ppm	76.04
Soluble Salts	<1,000 ppm	533.50
Bicarbonate	<60 ppm	95.18
Chloride	<200 ppm	56.00
SAR	<4%	3.18



6/8/18

Humidity/Air Temperature 50%/77°

Fairway Temperature 75°

Greens Temperature 68°

WATER	Acceptable Range For Water Sample	Big Well 6/8/18	Irrigation Pond 6/8/18
pH	6.0-6.5	7.24	7.26
EC	<2.25 mmhos/cm	1.03	1.66
Sodium		50.27	181.00
Calcium	20 - 60 ppm	58.44	72.11
Magnesium	10 - 25 ppm	59.35	56.08
Potassium	5 - 20 ppm	1.58	4.06
Phosphorus	0.1 - 0.4 ppm	<0.20	0.52
Nitrate	5 - 50 ppm	1.88	0.52
Sulfur	30 - 90 ppm	116.37	226.77
Bicarbonate	<120 ppm	304.93	378.26
Boron	<0.67 ppm	0.09	0.42
Chloride	<177 ppm	121.36	217.36

TEES	Acceptable Range For Alkaline Soils Sample	1,4,10(avg) 6/8/18
Organic Matter (Humus)	2 - 3%	7.18
Sulfur	12 - 16 ppm	63.33
Olsen - Phosphorus	13 - 20 ppm	120.67
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,156.00
Magnesium	>7% base saturation or at least 200 lbs/acre	38.94%/1,994
Potassium - TEC of 0 - 35	100 ppm	361.00
Manganese	>50 ppm	21.33

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	1,4,10(avg) 6/8/18
Organic Matter (Humus)	2 - 3%	7.51
Sulfur	12 - 16 ppm	833.67
Olsen - Phosphorus	13 - 20 ppm	103.33
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,697.33
Magnesium	>7% base saturation or at least 200 lbs/acre	38.06%/2,992
Potassium - TEC of 0 - 35	100 ppm	515.00
Manganese	>50 ppm	60.67

GREENS	Acceptable Range For Alkaline Soils Sample	1,4,8,10(avg) 6/8/18
Organic Matter (Humus)	2 - 3%	0.93
Sulfur	12 - 16 ppm	92.00
Olsen - Phosphorus	13 - 20 ppm	17.75
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,532.00
Magnesium	>7% base saturation or at least 200 lbs/acre	21.99%/486.5
Potassium - TEC of 0 - 35	150 ppm	33.75
Manganese	>50 ppm	102.50

TEES	Acceptable Range For Saturated Paste Sample	1 6/8/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5
Phosphorus	2 - 10 ppm	7.29
Potassium	40 - 100 ppm	34.47
Calcium	60 - 200 ppm	62.51
Magnesium	20 - 70 ppm	63.33
Sodium	0 - 30 ppm	121.62
Soluble Salts	<1,920 ppm	846.00
Bicarbonate	<60 ppm	246.48
Chloride	<1,000 ppm	189.00
SAR	<4%	2.59

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1 6/8/18
Nitrate - Ryegrass	5 - 10 ppm	7.30
Phosphorus	2 - 10 ppm	2.17
Potassium	40 - 100 ppm	107.38
Calcium	60 - 200 ppm	521.51
Magnesium	20 - 70 ppm	494.93
Sodium	0 - 30 ppm	753.77
Soluble Salts	<1,920 ppm	4,588.00
Bicarbonate	<60 ppm	302.61
Chloride	<1,000 ppm	1,246.00
SAR	<4%	5.67

GREENS	Acceptable Range For Saturated Paste Sample	1,18(avg) 6/8/18
Nitrate - Bentgrass/Poa	1-3 ppm	1.90
Phosphorus	2 - 7 ppm	0.98
Potassium	25-40 ppm	12.57
Calcium	50- 75 ppm	116.15
Magnesium	15-30 ppm	78.40
Sodium	0 - 30 ppm	180.07
Soluble Salts	<1,000 ppm	1,059.50
Bicarbonate	<60 ppm	135.45
Chloride	<200 ppm	225.00
SAR	<4%	3.18



10/1/18

Humidity/Air Temperature 25%/87°

Greens Temperature (avg) 71.45°

Fairway Temperature (avg) 72.1°

WATER	Acceptable Range For Water Sample	Lexington Course Pond 10/1/18	Shop yard Nursery Green 10/1/18
pH	6.0-6.5	7.52	7.88
EC	<2.25 mmhos/cm	1.32	0.99
Sodium		146.10	88.38
Calcium	20 - 60 ppm	74.70	70.54
Magnesium	10 - 25 ppm	21.70	20.20
Potassium	5 - 20 ppm	11.77	6.20
Sulfur	30 - 90 ppm	203.04	188.61
Bicarbonate	<120 ppm	182.86	179.26
Boron	<0.67 ppm	0.17	0.10
Chloride	<177 ppm	170.04	85.61

TEES	Acceptable Range For Alkaline Soils Sample	2,11,2(avg) 10/1/18
Organic Matter (Humus)	2 - 3%	2.76
Sulfur	12 - 16 ppm	41.33
Olsen - Phosphorus	13 - 20 ppm	24.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,881.33
Magnesium	>7% base saturation or at least 200 lbs/acre	13.45%/686
Potassium - TEC of 0 - 35	100 ppm	358.33
Manganese	>50 ppm	24.67

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	2,11,2(avg) 10/1/18
Organic Matter (Humus)	2 - 3%	5.08
Sulfur	12 - 16 ppm	4,405.67
Olsen - Phosphorus	13 - 20 ppm	28.67
Calcium - TEC of 6 - 12	1,000 lbs/acre	17,062.67
Magnesium	>7% base saturation or at least 200 lbs/acre	5.33%/622
Potassium - TEC of 0 - 35	100 ppm	616.67
Manganese	>50 ppm	25.00

GREENS	Acceptable Range For Alkaline Soils Sample	2,11,2(avg) 10/1/18
Organic Matter (Humus)	2 - 3%	1.68
Sulfur	12 - 16 ppm	51.00
Olsen - Phosphorus	13 - 20 ppm	10.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,590.00
Magnesium	>7% base saturation or at least 200 lbs/acre	9.53%/246.6
Potassium - TEC of 0 - 35	150 ppm	699.67
Manganese	>50 ppm	42.33

LEXINGTON TEES	Acceptable Range For Saturated Paste Sample	2,11(avg) 10/1/18
Nitrate - Ryegrass	5 - 10 ppm	1.00
Phosphorus	2 - 10 ppm	3.22
Potassium	40 - 100 ppm	14.70
Calcium	60 - 200 ppm	50.90
Magnesium	20 - 70 ppm	16.75
Sodium	0 - 30 ppm	123.08
Soluble Salts	<1,920 ppm	565.00
Bicarbonate	<60 ppm	207.44
Chloride	<1,000 ppm	89.00
SAR	<4%	3.83

LEXINGTON FAIRWAYS	Acceptable Range For Saturated Paste Sample	2,11(avg) 10/1/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5
Phosphorus	2 - 10 ppm	1.52
Potassium	40 - 100 ppm	42.29
Calcium	60 - 200 ppm	510.32
Magnesium	20 - 70 ppm	93.23
Sodium	0 - 30 ppm	252.97
Soluble Salts	<1,920 ppm	2,023.00
Bicarbonate	<60 ppm	214.76
Chloride	<1,000 ppm	108.50
SAR	<4%	2.71

LEXINGTON GREENS	Acceptable Range For Saturated Paste Sample	2,11(avg) 10/1/18
Nitrate - Bentgrass/Poa	1-3 ppm	<0.5
Phosphorus	2 - 7 ppm	1.52
Potassium	25-40 ppm	42.29
Calcium	50- 75 ppm	510.32
Magnesium	15-30 ppm	93.23
Sodium	0 - 30 ppm	252.97
Soluble Salts	<1,000 ppm	2,023.00
Bicarbonate	<60 ppm	214.76
Chloride	<200 ppm	108.50
SAR	<4%	3.18

SAN RAMON GOLF CLUB

9/10/18

Humidity/Air Temperature 44%/74°

Fairway Temperature 67.1°

Greens Temperature 63.67°

WATER	Acceptable Range For Water Sample	Stream #9 9/10/18	Pond #18 9/10/18
pH	6.0-6.5	7.67	8.71
EC	<2.25 mmhos/cm	1.20	1.08
Sodium		122.20	153.20
Calcium	20 - 60 ppm	76.98	25.04
Magnesium	10 - 25 ppm	31.96	27.46
Potassium	5 - 20 ppm	8.25	8.48
Sulfur	30 - 90 ppm	66.75	47.76
Bicarbonate	<120 ppm	519.06	200.15
Boron	<0.67 ppm	0.35	0.64
Chloride	<177 ppm	109.78	161.36

TEES	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 9/10/18
Organic Matter (Humus)	2 - 3%	4.32
Sulfur	12 - 16 ppm	47.33
Olsen - Phosphorus	13 - 20 ppm	21.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,008.67
Magnesium	>7% base saturation or at least 200 lbs/acre	23.77%/966
Potassium - TEC of 0 - 35	100 ppm	96.33
Manganese	>50 ppm	34.33

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 9/10/18
Organic Matter (Humus)	2 - 3%	6.69
Sulfur	12 - 16 ppm	51.33
Olsen - Phosphorus	13 - 20 ppm	11.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,014.67
Magnesium	>7% base saturation or at least 200 lbs/acre	30.04%/1996.33
Potassium - TEC of 0 - 35	100 ppm	173.33
Manganese	>50 ppm	62.00

GREENS	Acceptable Range For Alkaline Soils Sample	1,9,12,18(avg) 9/10/18
Organic Matter (Humus)	2 - 3%	1.63
Sulfur	12 - 16 ppm	37.00
Olsen - Phosphorus	13 - 20 ppm	10.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,548.50
Magnesium	>7% base saturation or at least 200 lbs/acre	16.68%/350.50
Potassium - TEC of 0 - 35	150 ppm	69.75
Manganese	>50 ppm	38.50

TEES	Acceptable Range For Saturated Paste Sample	1 9/10/18
Nitrate - Ryegrass	5 - 10 ppm	18.20
Phosphorus	2 - 10 ppm	0.18
Potassium	40 - 100 ppm	11.39
Calcium	60 - 200 ppm	39.64
Magnesium	20 - 70 ppm	21.57
Sodium	0 - 30 ppm	256.27
Soluble Salts	<1,920 ppm	950.00
Bicarbonate	<60 ppm	134.22
Chloride	<1,000 ppm	301.00
SAR	<4%	8.13

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1 9/10/18
Nitrate - Ryegrass	5 - 10 ppm	2.50
Phosphorus	2 - 10 ppm	1.09
Potassium	40 - 100 ppm	8.94
Calcium	60 - 200 ppm	59.89
Magnesium	20 - 70 ppm	30.29
Sodium	0 - 30 ppm	235.63
Soluble Salts	<1,920 ppm	936.00
Bicarbonate	<60 ppm	178.15
Chloride	<1,000 ppm	283.00
SAR	<4%	6.19

GREENS	Acceptable Range For Saturated Paste Sample	1,18(avg) 9/10/18
Nitrate - Bentgrass/Poa	1-3 ppm	3.90
Phosphorus	2 - 7 ppm	0.45
Potassium	25-40 ppm	22.64
Calcium	50- 75 ppm	35.09
Magnesium	15-30 ppm	15.94
Sodium	0 - 30 ppm	121.26
Soluble Salts	<1,000 ppm	512.00
Bicarbonate	<60 ppm	93.96
Chloride	<200 ppm	109.50
SAR	<4%	3.18



	<u>6/7/18</u>
Humidity/Air Temperature	55%/85°
Fairway Temperature	72.5°
Greens Temperature	66.9°

WATER	Acceptable Range For Water Sample	Hole#9 6/7/18
pH	6.0-6.5	7.35
EC	<2.25 mmhos/cm	0.73
Sodium		73.51
Calcium	20 - 60 ppm	42.15
Magnesium	10 - 25 ppm	16.50
Potassium	5 - 20 ppm	0.31
Phosphorus	0.1 - 0.4 ppm	0.38
Nitrate	5 - 50 ppm	0.41
Sulfur	30 - 90 ppm	146.49
Bicarbonate	<120 ppm	124.88
Boron	<0.67 ppm	0.18
Chloride	<177 ppm	65.19

TEES	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	2.66
Sulfur	12 - 16 ppm	54.00
Olsen - Phosphorus	13 - 20 ppm	15.67
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,370.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.79%/267.3
Potassium - TEC of 0 - 35	100 ppm	50.00
Manganese	>50 ppm	8.00

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	1,9,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	2.16
Sulfur	12 - 16 ppm	90.33
Olsen - Phosphorus	13 - 20 ppm	9.33
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,202.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.87%/614.66
Potassium - TEC of 0 - 35	100 ppm	74.33
Manganese	>50 ppm	51.00

GREENS	Acceptable Range For Alkaline Soils Sample	1,9,12,18(avg) 6/7/18
Organic Matter (Humus)	2 - 3%	0.95
Sulfur	12 - 16 ppm	38.25
Olsen - Phosphorus	13 - 20 ppm	11.50
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,056.00
Magnesium	>7% base saturation or at least 200 lbs/acre	21.27%/206.5
Potassium - TEC of 0 - 35	150 ppm	38.25
Manganese	>50 ppm	23.00

TEES	Acceptable Range For Saturated Paste Sample	1 6/7/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5
Phosphorus	2 - 10 ppm	1.11
Potassium	40 - 100 ppm	15.26
Calcium	60 - 200 ppm	32.38
Magnesium	20 - 70 ppm	13.53
Sodium	0 - 30 ppm	71.49
Soluble Salts	<1,920 ppm	402.00
Bicarbonate	<60 ppm	95.18
Chloride	<1,000 ppm	61.00
SAR	<4%	2.66

FAIRWAYS	Acceptable Range For Saturated Paste Sample	1 6/7/18
Nitrate - Ryegrass	5 - 10 ppm	<0.5
Phosphorus	2 - 10 ppm	0.31
Potassium	40 - 100 ppm	6.58
Calcium	60 - 200 ppm	61.16
Magnesium	20 - 70 ppm	21.13
Sodium	0 - 30 ppm	132.42
Soluble Salts	<1,920 ppm	661.00
Bicarbonate	<60 ppm	190.35
Chloride	<1,000 ppm	99.00
SAR	<4%	3.72

GREENS	Acceptable Range For Saturated Paste Sample	1,18(avg) 6/7/18
Nitrate - Bentgrass/Poa	1-3 ppm	<0.5
Phosphorus	2 - 7 ppm	0.29
Potassium	25-40 ppm	9.17
Calcium	50- 75 ppm	31.87
Magnesium	15-30 ppm	10.55
Sodium	0 - 30 ppm	64.31
Soluble Salts	<1,000 ppm	362.50
Bicarbonate	<60 ppm	59.79
Chloride	<200 ppm	51.00
SAR	<4%	2.53

Summer Application for Tees:	200 pounds of product/acre (0-0-50)	500 pounds of product/acre (Gypsum)
Birch Hills GC	no	no
Camarillo Springs GC	no	no
Revere GC	no	yes
San Ramon GC	no	no
Yucaipa Valley GC	no	no

Summer Application for Fairways	200 pounds of product/acre (0-0-50)	500 pounds of product/acre (Gypsum)
Birch Hills GC	no	no
Camarillo Springs GC	no	no
Revere GC	no	yes
San Ramon GC	no	no
Yucaipa Valley GC	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)
Birch Hills GC	yes	no	yes	yes
Camarillo Springs GC	yes	no	no	yes
Revere GC	yes	yes	no	no
San Ramon GC	yes	no	no	yes
Yucaipa Valley GC	yes	no	no	yes