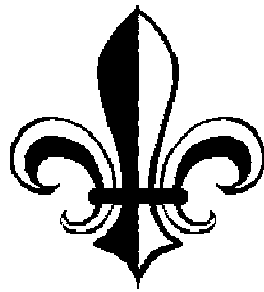


SPRING 2017

Data Collection Report
Soil & Water Consulting



Las Vegas Country Club



SOIL and WATER CONSULTING

Course Name: Las Vegas Country Club

Date of Visit: March 24, 2017

	<u>3/21/16</u>	<u>6/8/16</u>	<u>9/27/16</u>	<u>3/24/17</u>
Humidity/Air Temperature	9%/84°	10%/105°	20%/88°	37%/64°
Greens Temperature	55.6°	83.3°	70°	56°
Fairway Temperature	57.5°	82.6°	72°	59°

	Acceptable Range For Water Sample	Hole #5 <u>3/21/16</u>	Hole #16 <u>6/8/16</u>	Hole #7 <u>9/27/16</u>	Hole #1 <u>3/24/17</u>
EC	<2.25 mmhos/cm	0.79	0.80	0.78	0.82
Sodium		21.07	20.40	17.87	21.37
Calcium	20 - 60 ppm	75.53	80.54	75.22	80.62
Magnesium	10 - 25 ppm	38.77	42.38	40.63	43.78
Potassium	5 - 20 ppm	3.63	4.55	10.48	10.61
Sulfur	30 - 90 ppm	195.45	213.72	182.70	211.56
Bicarbonate	<120 ppm	224.61	222.89	228.93	254.13
Boron	<0.67 ppm	0.10	0.10	0.09	0.12
Chloride	<177 ppm	24.51	20.60	26.38	24.34



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TEE	Acceptable Range For Alkaline Soils Sample	5 3/21/16	6 6/8/16	7 9/27/16	1 3/24/17
Organic Matter (Humus)	2 - 3%	2.93	3.94	2.13	1.41
Sulfur	12 - 16 ppm	913.00	96.00	43.00	80.00
Olsen - Phosphorus	13 - 20 ppm	26.00	22.00	15.00	12.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,134.00	4,422.00	4,022.00	4,188.00
Magnesium	>7% base saturation or at least 200 lbs/acre	16.16%/780	23.45%/928	19.38%/646	17.73%/648
Potassium - TEC of 0 - 35	100 ppm	200.00	269.00	186.00	440.00
Copper	>0.8 ppm	1.25	1.23	2.36	0.81
Manganese	>1 ppm	1.00	1.00	2.00	2.00
Zinc	>1 - 2 ppm	5.51	8.57	5.69	2.66

FAIRWAY	Acceptable Range For Alkaline Soils Sample	5 3/21/16	6 6/8/16	7 9/27/16	1 3/24/17
Organic Matter (Humus)	2 - 3%	3.70	5.12	3.72	5.06
Sulfur	12 - 16 ppm	694.00	894.00	179.00	8,376.00
Olsen - Phosphorus	13 - 20 ppm	21.00	23.00	20.00	34.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,394.00	6,738.00	5,084.00	22,882.00
Magnesium	>7% base saturation or at least 200 lbs/acre	19.18%/1006	20.86%/1190	17.13%/690	6.56%/1020
Potassium - TEC of 0 - 35	100 ppm	214.00	264.00	147.00	244.00
Copper	>0.8 ppm	2.21	1.64	1.38	1.22
Manganese	>1 ppm	2.00	1.00	2.00	2.00
Zinc	>1 - 2 ppm	13.24	11.38	8.72	6.76

GREENS	Acceptable Range For Alkaline Soils Sample	5 3/21/16	6 6/8/16	7 9/27/16	1 3/24/17
Organic Matter (Humus)	2 - 3%	0.53	0.57	0.77	1.00
Sulfur	12 - 16 ppm	60.00	37.00	36.00	126.00
Olsen - Phosphorus	13 - 20 ppm	26.00	45.00	51.00	62.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,936.00	2,514.00	2,754.00	3,446.00
Magnesium	>7% base saturation or at least 200 lbs/acre	12.34%/268	13.03%/242	13.34%/274	14.94%/390
Potassium - TEC of 0 - 35	150 ppm	61.00	41.00	58.00	60.00
Copper	>0.8 ppm	0.95	0.71	0.78	1.66
Manganese	4 ppm or more	2.00	2.00	2.00	2.00
Zinc	>1 - 2 ppm	5.20	3.94	3.66	4.53



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TEE	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/27/16	1,10 (avg) 3/24/17
Nitrate - Ryegrass	5 - 10 ppm	<0.8	<0.5
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	1.53	2.51
Potassium	40 - 100 ppm	17.26	34.02
Calcium	60 - 200 ppm	69.87	205.42
Magnesium	20 - 70 ppm	34.78	97.13
Sodium	0 - 30 ppm	24.39	50.37
Soluble Salts	<1,920 ppm	453.50	1,029.00
Bicarbonate	<60 ppm	234.28	333.12
Chloride	<1,000 ppm	23.50	52.50
SAR	<4%	0.60	0.76

FAIRWAY	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/27/16	1,10 (avg) 3/24/17
Nitrate - Ryegrass	5 - 10 ppm	15.75	14.05
Nitrate - Bermudagrass	10 -15 ppm		
Phosphorus	2 - 10 ppm	1.80	1.47
Potassium	40 - 100 ppm	37.15	82.08
Calcium	60 - 200 ppm	346.13	557.34
Magnesium	20 - 70 ppm	127.47	213.18
Sodium	0 - 30 ppm	54.47	67.22
Soluble Salts	<1,920 ppm	1,502.00	2,195.00
Bicarbonate	<60 ppm	192.79	283.09
Chloride	<1,000 ppm	47.00	84.00
SAR	<4%	0.66	0.61

GREENS	Acceptable Range For Saturated Paste Sample	7,16 (avg) 9/27/16	1,10 (avg) 3/24/17
Nitrate - Bentgrass	1-3 ppm	<0.7	<0.5
Phosphorus	2 - 7 ppm	2.55	3.54
Potassium	25-40 ppm	36.29	19.34
Calcium	50- 75 ppm	71.03	65.24
Magnesium	15-30 ppm	34.29	33.24
Sodium	0 - 30 ppm	17.64	21.44
Soluble Salts	<1,000 ppm	445.00	381.50
Bicarbonate	<60 ppm	142.77	174.49
Chloride	<200 ppm	15.00	18.00
SAR	<4%	0.43	0.54



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TEE	Acceptable Range For Tissue Sample	1,10 (avg) 3/24/17
Nitrogen	3.34%-5.10%	3.91
Phosphorus	0.35% - 0.55%	0.50
Potassium	2.0% - 3.42%	1.53
Calcium	0.25%-0.5%	0.98
Magnesium	0.16%-0.32%	0.41
Sulfur	0.27% - 0.56%	0.42
Boron	5-17 ppm	14.40
Iron	97-934 ppm	994.00
Manganese	30-73 ppm	101.05
Copper	6-38 ppm	10.35
Zinc	16-84ppm	45.05
Aluminum	52-92 ppm	373.00
Sodium	229-1107 ppm	558.00

FAIRWAY	Acceptable Range For Tissue Sample	1,10 (avg) 3/24/17
Nitrogen	3.34%-5.10%	5.60
Phosphorus	0.35% - 0.55%	0.56
Potassium	2.0% - 3.42%	2.42
Calcium	0.25%-0.5%	0.76
Magnesium	0.16%-0.32%	0.39
Sulfur	0.27% - 0.56%	0.51
Boron	5-17 ppm	13.25
Iron	97-934 ppm	475.00
Manganese	30-73 ppm	52.10
Copper	6-38 ppm	11.45
Zinc	16-84ppm	51.20
Aluminum	52-92 ppm	169.00
Sodium	229-1107 ppm	511.50

GREENS	Acceptable Range For Tissue Sample	1,10 (avg) 3/24/17
Nitrogen	3.0%-6.5%	4.53
Phosphorus	0.2%-0.55%	0.47
Potassium	0.86%-2.55%	1.88
Calcium	0.21%-0.50%	0.83
Magnesium	0.09%-0.22%	0.39
Sulfur	0.23%-0.39%	0.48
Boron	5-24 ppm	43.20
Iron	99-500 ppm	566.00
Manganese	30-160 ppm	185.00
Copper	9-40 ppm	20.40
Zinc	5-60 ppm	54.70
Aluminum	63- 408 ppm	299.50
Sodium	506- 2264 ppm	600.50



RECOMMENDATIONS



SOIL and WATER CONSULTING

Thoughts on the course visit

The course was one of the best I have seen this Spring! One thing I think that makes it so, is the overall detail and attention paid to routine maintenance. Many of the programs that you have implemented have been very beneficial to making areas of the course better to play on. That may sound simple but I believe that day to day maintenance practices that cumulate into a good course are often overlooked. We are looking for the one project or the one big renovation that will change things but getting the course ready every day as if there was a tournament matters a great deal. For example, I saw your staff walk-mowing greens and using a cover to turn on the collars in certain areas that you know stress out. Things like verti-cutting fairways monthly and using more routine applications of growth regulators all adds up to better fairways. There is no "Silver bullet"- especially in Las Vegas. Grinding out the daily routine is what counts.

The picture below is of an area where you planted the fescues grasses. I like the look a lot! There are some areas that need more time, for example around #11 green/#12 tee/#19 green, but it gives some interest to the course and more definition. I understand it is a personal preference thing, but if you can get the members to be patient, I am sure it will be a nice addition to the golf course.



Notes from the visit

- Greens mowing height- 0.100"
- Starting a new Helena Foliar spray program on greens as of January 1st.
- Aerification to take place 4/3 and 4/4.
- Fairway mowing height - 0.300"
- Applied 28-3-8 (70% slow release) at a 1 # of N rate to ryegrass.
- Mowing fairways with groomers.
- Verti-cutting fairways every three weeks.
- Draining ponds #7 and #9 approved due to leaks and losing nearly 4,000 gallons per hour!
- Look into need to use Pro-Mag (some leftover)

Fertilizer and Product Recommendations

Tee & Fairways

*** Synthetic acid spray and water in every month.**

Greens (Monthly applications)

Calcium- 5 pounds of product per acre. (Gypsum)

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

*** Synthetic acid spray and water in every month.**