

SPRING 2016
Data Collection Report
Soil & Water Consulting



Coyote Springs Golf Club



SOIL and WATER CONSULTING

Course Name: Coyote Springs Golf Club

Date of Visit: March 24, 2016

	<u>3/17/15</u>	<u>9/30/15</u>	<u>3/24/16</u>
Humidity/Air Temperature	15%/80°	20%/92°	15%/70°
Greens Temperature	64°	78.8°	57.8°
Fairway Temperature	60°	77.4°	57.4°

	Acceptable Range For Water Sample	Sprinkler Head <u>3/17/15</u>	Hole #2 <u>9/30/15</u>	Hole #5 <u>3/24/16</u>
EC	<2.25 mmhos/cm	0.75	0.77	0.79
Sodium		85.04	78.12	84.04
Calcium	20 - 60 ppm	39.68	43.39	48.50
Magnesium	10 - 25 ppm	18.63	19.69	19.93
Potassium	5 - 20 ppm	11.98	11.19	10.68
Sulfur	30 - 90 ppm	84.60	97.56	99.60
Bicarbonate	<120 ppm	344.86	313.01	311.00
Boron	<0.67 ppm	0.35	0.40	0.33
Chloride	<177 ppm	31.83	27.74	31.83



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TEE	Acceptable Range For Alkaline Soils Sample	9 3/17/15	2 9/30/15	5 3/24/16
Organic Matter (Humus)	2 - 3%	1.22	0.44	0.43
Sulfur	12 - 16 ppm	34.00	18.00	19.00
Olsen - Phosphorus	13 - 20 ppm	10.00	17.00	8.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,828.00	4,322.00	4,512.00
Magnesium	>7% base saturation or at least 200 lbs/acre	14.50%/578	14.82%/520	15.59%/586
Potassium - TEC of 0 - 35	100 ppm	433.00	308.00	391.00
Copper	>0.8 ppm	0.40	0.31	0.31
Manganese	>1 ppm	2.00	<1	<1
Zinc	>1 - 2 ppm	0.87	0.63	0.44

FAIRWAY	Acceptable Range For Alkaline Soils Sample	9 3/17/15	2 9/30/15	5 3/24/16
Organic Matter (Humus)	2 - 3%	0.88	0.64	0.33
Sulfur	12 - 16 ppm	30.00	26.00	37.00
Olsen - Phosphorus	13 - 20 ppm	15.00	22.00	16.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,194.00	4,076.00	4,420.00
Magnesium	>7% base saturation or at least 200 lbs/acre	15.54%/540	17.38%/618	17.08%/662
Potassium - TEC of 0 - 35	100 ppm	345.00	383.00	496.00
Copper	>0.8 ppm	<0.2	<0.2	<0.2
Manganese	>1 ppm	2.00	<1	<1
Zinc	>1 - 2 ppm	0.47	0.44	0.90

GREEN	Acceptable Range For Alkaline Soils Sample	9 3/17/15	2 9/30/15	5 3/24/16
Organic Matter (Humus)	2 - 3%	0.97	0.50	0.27
Sulfur	12 - 16 ppm	28.00	31.00	25.00
Olsen - Phosphorus	13 - 20 ppm	22.00	24.00	19.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,232.00	2,956.00	3,228.00
Magnesium	>7% base saturation or at least 200 lbs/acre	10.84%/266	12.61%/288	12.45%/320
Potassium - TEC of 0 - 35	150 ppm	173.00	150.00	233.00
Copper	>0.8 ppm	0.51	0.53	0.74
Manganese	4 ppm or more	3.00	1.00	1.00
Zinc	>1 - 2 ppm	3.15	1.69	2.03



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TEE	Acceptable Range For Saturated Paste Sample	2,11 (avg) 9/30/15	5,14 (avg) 3/24/16
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5
Phosphorus	2 - 10 ppm	5.69	2.96
Potassium	40 - 100 ppm	46.79	26.44
Calcium	60 - 200 ppm	31.08	39.08
Magnesium	20 - 70 ppm	18.56	18.77
Sodium	0 - 30 ppm	149.70	83.29
Soluble Salts	<1,920 ppm	698.00	442.00
Bicarbonate	<60 ppm	363.62	247.70
Chloride	<1,000 ppm	50.50	26.50
SAR	<4%	5.27	2.74

FAIRWAY	Acceptable Range For Saturated Paste Sample	2,11 (avg) 9/30/15	5,14 (avg) 3/24/16
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5
Phosphorus	2 - 10 ppm	3.14	3.27
Potassium	40 - 100 ppm	43.52	41.20
Calcium	60 - 200 ppm	74.91	42.78
Magnesium	20 - 70 ppm	27.35	24.76
Sodium	0 - 30 ppm	84.88	119.25
Soluble Salts	<1,920 ppm	639.50	554.00
Bicarbonate	<60 ppm	212.31	301.39
Chloride	<1,000 ppm	40.50	28.50
SAR	<4%	2.25	3.59

GREEN	Acceptable Range For Saturated Paste Sample	2,11 (avg) 9/30/15	5,14 (avg) 3/24/16
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5
Phosphorus	2 - 7 ppm	5.24	3.66
Potassium	25-40 ppm	37.23	31.29
Calcium	50- 75 ppm	39.43	34.84
Magnesium	15-30 ppm	20.09	13.45
Sodium	0 - 30 ppm	116.44	68.96
Soluble Salts	<1,000 ppm	574.50	371.00
Bicarbonate	<60 ppm	236.90	225.74
Chloride	<200 ppm	43.50	17.50



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TEE	Acceptable Range For Tissue Sample	5,14 (avg) 3/24/16
Nitrogen	3.34%-5.10%	3.86
Phosphorus	0.35% - 0.55%	0.48
Potassium	2.0% - 3.42%	2.52
Calcium	0.25%-0.5%	0.56
Magnesium	0.16%-0.32%	0.25
Sulfur	0.27% - 0.56%	0.48
Boron	5-17 ppm	60.40
Iron	97-934 ppm	155.50
Manganese	30-73 ppm	28.30
Copper	6-38 ppm	11.75
Zinc	16-84ppm	30.40
Aluminum	52-92 ppm	125.00
Sodium	229-1107 ppm	933.50

FAIRWAY	Acceptable Range For Tissue Sample	5,14 (avg) 3/24/16
Nitrogen	3.34%-5.10%	3.81
Phosphorus	0.35% - 0.55%	0.50
Potassium	2.0% - 3.42%	2.60
Calcium	0.25%-0.5%	0.51
Magnesium	0.16%-0.32%	0.25
Sulfur	0.27% - 0.56%	0.45
Boron	5-17 ppm	66.05
Iron	97-934 ppm	163.00
Manganese	30-73 ppm	33.25
Copper	6-38 ppm	11.65
Zinc	16-84ppm	33.60
Aluminum	52-92 ppm	135.50
Sodium	229-1107 ppm	1,225.00

GREEN	Acceptable Range For Tissue Sample	5,14 (avg) 3/24/16
Nitrogen	3.0%-6.5%	3.22
Phosphorus	0.2%-0.55%	0.38
Potassium	0.86%-2.55%	2.01
Calcium	0.21%-0.50%	0.79
Magnesium	0.09%-0.22%	0.29
Sulfur	0.23%-0.39%	0.38
Boron	5-24 ppm	82.50
Iron	99-500 ppm	157.00
Manganese	30-160 ppm	120.50
Copper	9-40 ppm	17.45
Zinc	5-60 ppm	41.60
Aluminum	63- 408 ppm	137.00



RECOMMENDATIONS



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Thoughts on the course visit

The course looked healthy but maybe a little less vibrant than in 2015 at the same time of year. I think many courses in the area went in to Winter a little quicker than expected and even though you don't overseed like many of them do, the same "off-color" was seen in Las Vegas this year. The soil temperatures were still cold and as they increase so should the color on the ryegrass. Overall, the density was good and that is something you didn't have as high 3-4 years ago.

The greens were particularly fast the day I was there as it had been very windy and colder at night. The color and density was good. With aerification coming up, you will have the opportunity to amend the greens to help offset the high bicarbonate levels in the water and boost the potassium levels heading into the warmer weather season. We did briefly discuss adding routine verti-cutting and topdressing to your greens program. This variety of bentgrass begs for it. Even if the greens are fast enough for the golfers that you cater to, this grass is a much healthier plant when verti-cut, groomed, topdressed and mowed at .125" or less.

Focus of This Report

This Spring, every client that I visited I took a profile section out of one of their greens. Because I work with all ages of golf courses I have seen anything from a new sod layer to the typical 4-5" pan layer where it was a USGA recommended/constructed green. The picture of your profile (above) is not unusual but it does pose some problems. If you remember from school, the video that showed water moving through a soil profile. Even if there was coarse material layered over finer material, (which is the good rule of thumb when selecting topdressing sands) whenever the water hit a layer, it had to fill the first layer before it drained into the next layer and so on through the soil. It seems like simple physics and gravity, but it does matter to you with regards to moving water in and out of your greens. I see much more dead grass from too much water that from not enough and when you have 2 or more perched water tables in a 12-14" soil profile, that can wreak havoc on the turf. Then add the traffic from machines and people to that, it is reasonable to get disease and worn areas on the greens. So, how can you fix it? Nothing will be quick but you can work on it and improve drainage as time goes on. Cultivate in every layer. Verti-cutting and topdressing works on the thatch, 3-5" core aerification will help the current root zone and most of all below 5"! It is the layer least worked on and the area can show the most dramatic results.



Notes from the visit

- Applied Wonder Soil and sand on fairways and rough in late February.
- Iron and 7-7-7 applied.
- 0.5 pounds of Nitrogen per 1,000 sq. ft. applied to ryegrass.
- Jake was named Superintendent.

Fertilizer and Product Recommendations

Tee & Fairways

Phosphorus- 150 pounds of product per acre. (11-55-00)
TEES ONLY!

Calcium- 500 pounds of product per acre. (Gypsum) to combat bicarbonates.

Potassium- 150 pounds of product per acre. (0-0-50)

*** The Bicarbonate level in the irrigation water is high.**
Continue to use 7-7-7 and any other acidification products on ryegrass areas.

Greens (Monthly applications)

Calcium- 10 pounds of product per 1,000 square feet. (Gypsum)

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

Manganese- 3 ounces per 1,000 square feet rate of techmngum. (Manganese Sulfate)