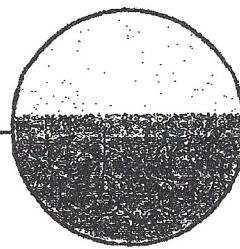


SOIL HORIZONS, INC.



November 7, 2005

Eric Foerster
Iron Bridge Golf Club
430 Ironbridge Drive
Glenwood Springs, CO 81601

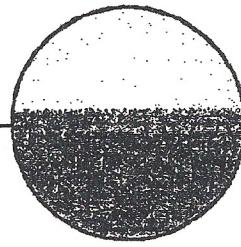
Eric,

Enclosed are the soil samples that Patrick and I took from the selected greens, tees and fairways we discussed and the water sample taken from the wash bay. We sampled some of the same areas as last fall so there will be some comparisons made with those results.

Greens

- Calcium levels have increased and the magnesium and potassium levels have decreased. There are no further recommendations for calcium at this time.
- Even though magnesium levels have decreased levels are still above the desired values, so there are no recommendations for magnesium at this time.
- Potassium levels were marginal last year and have declined further this year. Recommendations are to apply 3 supplemental applications of potassium sulfate (0-0-50) at 2 lbs./M of product and apply monthly during the summer. Also include potassium with the maintenance fertilizer as well, maintaining a 1:1 to 1:2, N:K. The supplemental applications of potassium are in addition to the potassium that is included with the maintenance fertilizer.
- Potassium is easily leached so until organic matter levels increase, potassium levels will fluctuate throughout the season.
- Phosphorus levels are also marginal. Apply an application of monoammonium phosphate (11-55-0) in the spring and fall to correct deficiencies and provide plant available phosphorus.
- If preferred, to minimize applications, phosphorus and potassium can be blended together and applied as a 1:2:2, N:P:K.
- As a nitrogen source apply ammonium sulfate at 0.25 to 0.35 lbs. N/M in the spring and fall, natural organic at 1.0 lbs. N/M after aeration, spring and fall and foliar apply at 0.1 to 0.15 lbs. N/M every 10 to 14 days or as needed throughout the season.
- The natural organic nitrogen will provide a protein source for the microbes, but we'll also need a carbon source. Apply humates after aeration at 5 lbs./M and include humic acid, kelp or blackstrap molasses with the foliar program. Apply monthly.

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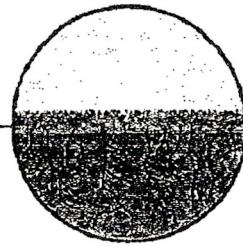


- There have only been a couple of Junction applications and there was going to be a couple more applied yet this fall. At this time there was no evidence of copper toxicity. We should monitor levels next spring as increasing copper will decrease other minor nutrient availability.
- Iron and manganese levels are low. Foliar apply iron sulfate (31%) and manganese sulfate (32%) at 2 to 4 ozs./M of product and apply every 3 to 4 weeks to enhance availability and provide excellent color. This will minimize nitrogen applications.
- As far as cultural practices, conventional hollow tine in the spring and fall, grinding up the plugs and mixing with a compatible topdressing. After this is done in the spring, deep verticut with a Graden or Sisis to remove the unwanted organic layer that exists. This will firm the greens and improve water infiltration, thus not only improving the turf agronomically, but the playability as well.
- During the season verticut and topdress lightly every 2 to 3 weeks and also either deep slice or star tine every 4 to 6 weeks during the summer. This will relieve carbon dioxide buildup in the rootzone and increase oxygen intake.

Tees

- Results are similar to last years, high calcium and low magnesium and potassium.
- Recommendations are to apply at least 3 supplemental applications of Sul Po Mag (0-0-22 w/11% Mg) at 5 lbs./M of product and 3 applications of potassium sulfate (0-0-50) at 2 lbs./M of product. Alternate these applications every 4 to 6 weeks during the season. Water in immediately after application. Minimize applications during stress conditions of the summer. Applying these applications prior to stress will be much more beneficial to the plant.
- As a nitrogen source, apply ammonium sulfate in the spring and fall at 0.25 to 0.5 lbs. N/M and natural organic at 0.75 lbs. N/M after aeration spring and fall and then during the summer months apply a combination of ammonium sulfate (25%) and slow release nitrogen (75%) at 0.5 lbs. N/M every 4 to 6 weeks or as needed.
- The use of the ammonium sulfate will temporarily acidify the soil solution and this in turn will release nutrients that have been tied up because of the excessive calcium.
- Apply 5 lbs./M of humates after aeration to provide a carbon source for the microbes.
- As a maintenance fertilizer apply a 1:2 or 1:3, N:K w/Fe.
- There is quite an organic layer that exists on the tees. This has been caused from excessive nitrogen applications during the grow-in, excessive watering and the shallow and uneven depth and of sand that exists on the tees. Deep aeration is recommended to help alleviate this layer and improve water infiltration and percolation.
- Also deep verticut and topdress with the Graden and Sisis as well. These practices must be intensified to improve agronomic and playing conditions.

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Fairways

- No improvements have been made in correcting the soil deficiencies that exist in magnesium and potassium. Based on the calcareous nature of the native soil, we will not be able to decrease calcium and increase magnesium and potassium to the desired levels, but we can include supplemental applications of Sul Po Mag, potassium sulfate, ammonium sulfate and sulfur coated urea to acidify the soil solution, which in turn will enhance nutrient availability.
- Per our discussion, it was mentioned that it would be very difficult to apply supplemental applications of any soil amendment because of the limited manpower and the length of time it takes to apply the material, so be sure and include magnesium and potassium with the maintenance fertilizer. We need to increase potassium in the maintenance fertilizer to a 1:2 rather than the 3:1 that was used this year. Talk with a local supplier about blending in Sul Po Mag as the potassium source, rather than potassium sulfate of chloride.
- Another option to consider would be to have a couple of custom applications of Sul Po Mag applied. Apply in the spring and fall at 200 to 250 lbs./A. Apply only to the fairways. This will minimize cost and expedite the application.
- Phosphorus levels are also marginal. Apply monoammonium phosphate (11-55-0) at 100 lbs./A in the spring and fall. Potassium sulfate could be blended with the phosphate and the final analysis would be a 7-25-26. Apply at 175 lbs./A.
- Dormant apply ammonium sulfate at 250 to 300 lbs./A in the fall. Best to water in after the application; so maybe apply right prior to blowing out the irrigation system.
- Apply slow release nitrogen late spring and late summer at 0.75 to 1.25 lbs. N/M. Be sure the ratio of N:K is 1:2 to 1:3.

Water

- Based on the pHc of 7.45, this water is classified as a depositor. This means that calcium and magnesium will precipitate and form insoluble precipitates, unavailable to the plant. Water infiltration and percolation will be inhibited. When this occurs sodium will take the place on the soil colloid. Fortunately, sodium levels are low, so this shouldn't pose much of a problem. The bicarbonates will have the most influence of restricting not only infiltration and percolation but also affect nutrient availability.
- We should do some further sampling to monitor water quality during the spring, summer and fall before there any decisions made on water treatment.

Any questions give me a call or email.

Sincerely,

Rusty Oetker
Agronomist
865 Catalpa Place • Marysville, OH 43040 • 937-642-5501 • 888-933-5501 • Fax 937-642-3422

Soil Horizons, Inc.

Soil Audit and Inventory Report

Account of : Ironbridge Golf Club
 City: Glenwood Springs
 State: CO

ID#: 42629
 Date: 10/27/05

Field:	GREEN	3	10	16
Sample:				
Lab # :		728	729	730
Total Exchange Capacity (M.E./100g):		5.33	5.10	6.58
pH: (H ₂ O 1:1)		7.7	7.7	7.7
Organic Matter (humus) %:		0.81	0.84	1.08
Estimated Nitrogen Release (lbs/acre)		32	34	42
A Soluble Sulfur (p.p.m.)		15	16	17
N Phosphates: *Desired Value	Easily Extractable	100	100	100
I Value Found		183	298	353
O Deficit				
N as P ₂ O ₅	BRAY II *Desired Value	350	350	350
S lbs/acre Value Found		124	238	256
OLSEN Deficit		-226	-112	-94
E Calcium: *Desired Value	1450	1387	1790	
X lbs/acre Value Found		1590	1470	1972
C Deficit				
H Magnesium: *Desired Value	192	184	237	
C lbs/acre Value Found		230	242	276
A Deficit				
N Potassium: *Desired Value	187	179	231	
T lbs/acre Value Found		100	118	142
G Deficit		-87	-61	-89
I Sodium: *Desired Value	74	70	91	
O lbs/acre Value Found		32	34	36
A Excess				
B BASE SATURATION PERCENT *IDEAL				
S Calcium % 68		74.58	72.06	74.92
M Magnesium % 15		17.98	19.77	17.48
P Potassium % 4.5		2.41	2.97	2.77
S Sodium % < 3		1.31	1.45	1.19
O Other Bases % 4 - 8		3.70	3.70	3.70
H Hydrogen % 5 - 10		0.00	0.00	0.00
EXTRACTABLE MINORS: *DESIRED				
B Boron (p.p.m.) 1.2 - 1.4		0.52	0.55	0.66
I Iron (p.p.m.) 100 - 300		67	72	64
M Manganese (p.p.m.) 25 - 80		20	16	23
C Copper (p.p.m.) 0.5 - 3.0		1.13	0.77	0.96
Z Zinc (p.p.m.) 5 - 17		6.95	5.46	4.91
A Aluminum (p.p.m.) < 900		73	75	75
M Molybdenum (p.p.m.)				
O T Soluble Salts (mmhos/cm)				
T E Chloride (p.p.m.)				
H S NO ₃ -N (p.p.m.)				
E T NH ₃ -N (p.p.m.)				
R S				

Analysis provided by: Brookside Laboratories Inc.

Rusty Oetker
Agronomist

SOIL HORIZONS, INC.

865 Catawba Place
Marysville, OH 43040-2702
800-333-5601
937-842-3422 fax
soilhorizons@earthlink.net

Date : 11/7/05

Corrective treatment for: Iron Bridge Golf Club

Greens : lbs/ha

Sampled Area	3	10	16											
Calcium	OK	OK	OK											
High Calcium														
Gypsum														
Magnesium	OK	OK	OK											
Dolomitic														
Sul Po Mag	2 1/2	2 1/2	2 1/2											
Potassium Sulfate	X 3	X 3	X 3											
Phosphorus (11-55-0)	X 2	2 1/2	2 1/2											
Nitrogen	Amonium Sulfate at 0.25 to 0.35 lbs N/M	Sulfur + 1 lb natural organic LST												
Organic Matter	1/2 cu M after aeration + 5# N/M every 10 to 14 days or as needed	Feed at 0.1 N/M after aeration												
Minor Nutrients	Foliar apply Iron Sulfate (31%) at 2 to 4 lbs/M product mixed w/	water												
Remarks:	Maintenance Fertilizer													
	1:1 or 1:2 Nit. & Fe. + Mn													

Soil Horizons, Inc.

Soil Audit and Inventory Report

Account of : Ironbridge Golf Club
 City: Glenwood Springs
 State: CO

ID#: 42629
 Date: 10/27/05

Field:	TEE		3	10	18
Sample:					
Lab #:		731	732	733	
Total Exchange Capacity (M.E./100g):		13.11	13.25	14.56	
pH: (H ₂ O 1:1)		7.8	7.8	8.0	
Organic Matter (humus) %:		0.79	0.84	0.91	
A	Estimated Nitrogen Release (lbs/acre)	32	34	36	
N	Soluble Sulfur (p.p.m.)	44	26	30	
I	Easily Extractable *Desired Value	100	100	100	
O	Phosphates: Value Found	907	760	687	
N	as P ₂ O ₅ Deficit				
S	lbs/acre BRAY II *Desired Value	350	350	350	
E	Value Found	682	724	650	
X	Deficit				
C	OLSEN				
H	Calcium: *Desired Value	3566	3604	3960	
C	lbs/acre Value Found	4398	4460	5002	
A	Deficit				
A	Magnesium: *Desired Value	472	477	524	
A	lbs/acre Value Found	294	302	290	
N	Deficit	-178	-175	-234	
T	Potassium: *Desired Value	460	465	511	
G	lbs/acre Value Found	234	210	204	
I	Deficit	-226	-255	-307	
E	Sodium: *Desired Value	181	183	201	
O	lbs/acre Value Found	54	46	42	
A	Excess				
N	BASE SATURATION PERCENT *IDEAL				
B	Calcium % 68	83.87	84.15	85.89	
S	Magnesium % 15	9.34	9.50	8.30	
P	Potassium % 4.5	2.29	2.03	1.80	
O	Sodium % < 3	0.90	0.75	0.63	
T	Other Bases % 4 - 8	3.60	3.60	3.40	
E	Hydrogen % 5 - 10	0.00	0.00	0.00	
H	EXTRACTABLE MINORS: *DESIRED				
S	Boron (p.p.m.) 1.2 - 1.4	0.44	0.50	0.38	
Z	Iron (p.p.m.) 100 - 300	164	87	73	
M	Manganese (p.p.m.) 25 - 80	55	53	48	
C	Copper (p.p.m.) 0.5 - 3.0	1.38	1.23	0.93	
Z	Zinc (p.p.m.) 5 - 17	6.46	7.52	5.61	
A	Aluminum (p.p.m.) < 900	14	25	10	
M	Molybdenum (p.p.m.)				
O	Soluble Salts (mmhos/cm)				
T	Chloride (p.p.m.)				
H	NO ₃ ·N (p.p.m.)				
E	NH ₃ ·N (p.p.m.)				
R	S				

Analysis provided by: Brookside Laboratories Inc.

Rusty Oetker
Agronomist

SOIL HORIZONS, INC.

865 Catalpa Place
Marysville, OH 43040-2102
888-933-5501
937-642-3422 fax
soilhorizons@earthlink.net

Date: 11/7/05

Corrective treatment for: Trenbridge Gulf Clay

Tees: lbs/M

File #: 42029

Sampled Area	3	10	18					
Calcium	OK	OK	OK					
High Calcium								
Gypsum								
Magnesium								
Dolomitic CaCO ₃ 22-31% Mg	5 ⁺ 2 ⁺	5 ⁺ 2 ⁺	5 ⁺ 2 ⁺	} Alternating applications every 4 ft. 6 weeks				
SuPo Mag (Ca-SO ₄)	3 ⁺	3 ⁺	3 ⁺					
Potassium Sulfate								
Phosphorus	OK	OK	OK					
Nitrogen	4 ⁺ at 0.5 lb/100 ft ²	4 ⁺ at 0.5 lb/100 ft ²	4 ⁺ at 0.25 lb/100 ft ²					
Organic Matter								
Miner Nutrients	Tin Rock lime sulfate and manure twice a year Tin Rock lime sulfate and manure twice a year							
Remarks:	Maintenance Fert. litter 1:2. Wink wife							

Soil Horizons, Inc.

Soil Audit and Inventory Report

Account of : Ironbridge Golf Club
 City: Glenwood Springs
 State: CO

ID#: 42629
 Date: 10/27/05

Field:	FAIRWAY	2	12	17
Sample:				
Lab #:		734	735	736
Total Exchange Capacity (M.E./100g):		38.00	55.03	74.73
pH: (H ₂ O 1:1)		7.6	7.9	7.5
Organic Matter (humus) %:		2.64	1.84	2.10
A N I O N S	Estimated Nitrogen Release (lbs/acre)	73	57	62
Soluble Sulfur (p.p.m.)		118	147	1165
Phosphates: as P ₂ O ₅ lbs/acre	Easily Extractable	*Desired Value	100	100
		Value Found	431	270
		Deficit		
	BRAY II	*Desired Value	350	350
		Value Found	362	82
		Deficit		-268
	OLSEN			-304
E X C H A N T G I E O A N B S L E	Calcium: lbs/acre	*Desired Value	10336	14968
		Value Found	12648	18836
		Deficit		
H C A A N T	Magnesium: lbs/acre	*Desired Value	1368	1981
		Value Found	866	1214
		Deficit		-767
G I E O A N	Potassium: lbs/acre	*Desired Value	1334	1932
		Value Found	910	618
		Deficit		-1314
B S L E	Sodium: lbs/acre	*Desired Value	524	759
		Value Found	74	74
		Excess		54
BASE SATURATION PERCENT		*IDEAL		
Calcium	%	68	83.21	85.57
Magnesium	%	15	9.50	9.19
Potassium	%	4.5	3.07	1.44
Sodium	%	< 3	0.42	0.29
Other Bases	%	4 - 8	3.80	3.50
Hydrogen	%	5 - 10	0.00	0.00
EXTRACTABLE MINORS:		*DESIRED		
Boron (p.p.m.)		1.2 - 1.4	0.88	0.81
Iron (p.p.m.)		100 - 300	148	60
Manganese (p.p.m.)		25 - 80	56	51
Copper (p.p.m.)		0.5 - 3.0	3.52	2.64
Zinc (p.p.m.)		5 - 17	18.38	4.86
Aluminum (p.p.m.)		< 900	14	53
Molybdenum (p.p.m.)				34
O T	Soluble Salts (mmhos/cm)			
T E	Chloride (p.p.m.)			
H S	NO ₃ -N (p.p.m.)			
E T	NH ₃ -N (p.p.m.)			
R S				

Analysis provided by: Brookside Laboratories Inc.

Rusty Oetker
Agronomist

SOIL HORIZONS, INC.

865 Catalpa Place
Marysville, OH 43040-2102
888-933-5601
937-642-3422 fax
solhorizons@earthlink.net

Date : 11/7/05

Corrective treatment for: Tenn Bridge Golf Club

Fairways : Ihs/A

File #: 42629

Sampled Area	2	12	17	
Calcium	OK	OK	OK	
High Calcium				
Gypsum				
Magnesium				
Dolomitic SulfPo Mag (10-0-22 w/ 1% Mg)	206 K3	206 K3	Analyzing Spring + Fall + Blend in w/ fairway fertilizer	
Potassium Sulfate	Included w/ minor grade fertilizer			
Phosphorus (11-55-6)	OK K4	100 K4	Analyzing Spring + Fall blend w/ potassium sulfate	
Nitrogen	100 ppm late Spring + late summer at 0.75 lb Organic Matter	100 ppm late Spring + late summer at 0.75 lb OK	250 lb SODIUM SULFATE 1.25 lb NPK/M	1.25 lb NPK/M
Minor Nutrients	Included in the sulfate blend in late Fall, 1.25			

Remarks :

Maintain Fair, linear

1.2 or 1.3. Nitrogen fertilizing

BROOKSIDE LABORATORIES, INC.

** WATER ANALYSIS REPORT **

Ironbridge Golf Club
1007 Westbank Road
Glenwood Springs, CO 81601

File Number: 42629
Date Received: 10/24/2005
Date Reported: 10/25/2005

Submitted By: Soil Horizons, Inc.

Lab Number	2948
Sample Location	WASH BAY
Sample Description	

pH	7.84
Hardness (ppm)	266.86
Hardness (grains/gal)	15.61
Conductivity (mmhos/cm)	0.55
Sodium Adsorp. Ratio	0.38
Adjusted SAR	0.75
pHC	7.45
Residual Sodium Carbonate (RSC)	-2.18

		(ppm)	meq/l	lbs/ac in
Calcium	(Ca)	77.84	3.88	17.65
Magnesium	(Mg)	17.36	1.43	3.94
Potassium	(K)	2.52	0.06	0.57
Sodium	(Na)	14.31	0.62	3.25
Iron	(Fe)	0.58		0.13
Total Alkalinity	(CaCO ₃)	156.75		35.55
Carbonate	(CO ₃)	0.00		
Bicarbonate	(HCO ₃)	191.27	3.13	43.38
Hydroxide	(OH)	0.00		
Chloride	(Cl)	8.85	0.25	2.01
Sulfur as	(SO ₄)	151.02	3.14	34.25
Salt Concentration (TDS)		348.80		79.11
Boron	(B)	0.05		0.01
Cation/Anion Ratio			0.92	

Reviewed by: