



July 20, 2011

Doris Wee  
Wendell Trading Company  
Blk 9 Marsiling Industrial Estate Road 3  
#01-27  
Singapore 739253

RE: Saigon Golf and Country Club - File #11070041

Dear Ms. Wee:

Enclosed are the results of the zeolite sample received by our laboratory on July 18, 2011, and the subsequently prepared laboratory mixes. These samples were tested according to the USGA protocols. These results are being compared to the 2004 USGA recommendations for putting green construction.

As requested the laboratory prepared a 90/10 mix by volume with the previously received 7 Sand sample and the Castle Mountain Zeolites FM 8/30 sample. This lab-made mix was then tested according to the USGA performance evaluation protocol at a 30 cm tension.

The performance results indicate the Lab-made 90/10 w 7 Sand & Castle Mountain Zeolites FM 8/30 sample has a capillary porosity that is lower than the USGA recommended range. This mix meets all other USGA performance recommendations. The infiltration rate of this mix is 93.7 cm/hr at a bulk density of 1.57 g/cc. This mix was made using an equivalent of approximately 97 Kg of zeolite per 1000 Kg of sand at the stated moisture contents.

Results of nutrient testing of the Castle Mountain Zeolites FM 8/30 sample are included as an attachment to this document.

If you have any questions or are in need of further assistance, please call. Samples are generally kept on the premises for 45 days after report date. Thank you for using Turf Diagnostics and Design, Inc.

Sincerely,

Sam Ferro  
President

File: Saigon Golf & Country Club (Greg Norman HCM)  
Page 1 of 3



Wendell Trading Company  
 Doris Wee  
 Blk 9 Marsiling Industrial Estate Rd 3  
 #01-27 Singapore 739253  
 PHONE: 65-67937185

**Date received** Jul-05-2011  
**Account Number** 07116560  
**Date Reported** Jul-20-2011  
**Facility** Saigon Golf & Country Club



**Particle Size Evaluation\***

Lab ID#	Sample Name	% Sand 2.0 - 0.05 mm	% Silt 0.05-0.002mm	% Clay < 0.002mm	Gravel 2.0 (10)	% Retained mm (US sieve)				
						V. Coarse 1.0 (18)	Coarse 0.5 (35)	Medium 0.25 (60)	Fine 0.15 (100)	V. Fine 0.05 (270)
11070013-1	7 Sand	99.5	< 1.0	< 1.0	0.0	0.7	27.1	54.4	15.8	1.4
USGA Recommendations for Greens		> 92%	< 5%	< 3%	< 3%	< 7%**	> 60% Combined		< 20%	< 5%

Lab ID#	Sample Name	Uniformity Coefficient Cu	D15 mm	D50 mm	D85 mm	Shape Angularity	Shape Sphericity	Acid Reaction	pH <sup>†</sup> 1:1	% Organic Matter Dry Wt.***
11070013-1	7 Sand	2.2	0.23	0.38	0.69	Sub-Rounded to Sub-Angular	Medium	None		

A2LA Testing Certificate Number 797-01     \*ASTM F1632 Method B & Determination of Size Factors SOP     †ASTM D4972 w/ CaCl<sub>2</sub>     \*\*\*ASTM F1647 Method A

\*\*Maximum of 10% combined on Gravel (2.0 mm) and Very Coarse (1.0 mm) fractions.  
 Samples were tested as received and comments pertain only to the samples shown.  
 This report may not be reproduced in part, but only in full.  
 Sample condition upon receipt was normal.  
 Samples were received without a transmittal letter.

Reviewed by Sam Ferro



Wendell Trading Company  
Doris Wee  
Blk 9 Marsiling Industrial Estate Rd 3  
#01-27 Singapore 739253  
PHONE: 65-67937185

Date received Jul-18-2011  
Account Number 07116560  
Date Reported Jul-20-2011  
Facility Saigon Golf & Country Club



**30 cm USGA Physical Evaluation\***

Lab ID#	Sample Name	Infiltration Rate* in/hr	Infiltration Rate* cm/hr	Particle Density** g/cc	Bulk Density g/cc	Total %	Porosity Water-filled %	Air-filled %	Degree of Saturation %
11070041-2	Lab-made 90/10 w 7 Sand & Castle Mountain Zeolites FM 8/30	36.9	93.7	2.66	1.57	40.8	13.2	27.7	32
USGA Recommendations		> 6	> 15	-	-	35 - 55	15 - 25	15 - 30	-

\* Saturated Hydraulic Conductivity (K-SAT)

Air-filled - noncapillary. Water-filled - capillary

Lab ID#	Sample Name	Sand Parameters		Zeolite Parameters		pH <sup>‡</sup> 1:1	Elec. Cond. mS / cm 1:1	Organic Matter % Dry Wt. <sup>‡‡</sup>
		Bulk Weight LBS / FT <sup>3</sup>	Moisture % Dry Wt.	Bulk Weight LBS / FT <sup>3</sup>	Moisture % Dry Wt.			
11070041-2	Lab-made 90/10 w 7 Sand & Castle Mountain Zeolites FM 8/30	79.7	2.3	69.7	4.8			

A2LA Testing Certificate Number 797-01

\*ASTM F1815

\*\*SSSA, Methods of Soil Analysis

‡ ASTM D4972 w/ CaCl<sub>2</sub>

‡‡ ASTM F1647 Method A

The lab-made mix was prepared using the 7 Sand sample (Lab ID #11070013-1) and Castle Mountain Zeolites FM 8/30 sample (Lab ID #11070041-1).

This report may not be reproduced in part, but only in full.

Sample condition upon receipt was normal.

Samples were received without a transmittal letter.

Reviewed by Sam Ferro