Pittsburgh
Mineral &
Environmental
Technology, Inc.

July 28, 2010

Mr. Patrick A. Wick
Wicktek Inc.
P.O. Box 59
Farmington, PA 15437

Dear Mr. Wick:

This report summarizes the x-ray diffraction analysis of the mineralization of treated cut rhododendron branches received at PMET's laboratories on July 13 and July 16, 2010.

Ten treated branches ranging from one to two centimeters in diameter were marked with a white tape indicating the treated end. The first piece of rhododendron received on July 13 was sliced with a diamond saw to obtain an approximately two-millimeter thick disc of treated material. This was placed in a special holder and then analyzed using an x-ray diffractometer. The diffractometer is a Siemens D500 operated at 45kv and 35ma. The sample was scanned from 6° to 55° two-theta. The diffraction pattern is shown in Figure 1 on Page 3.

This pattern indicates that the material is overwhelmingly amorphous cellulose. No crystalline phase can be identified. Since a previous analysis was reported to have identified cristobalite in a similar pattern, the diffractogram shown in Figure 1 includes the peak markers for cristobalite. It does not appear that cristobalite can be identified in this pattern.

It was decided to concentrate the possible mineralization of the treated rhododendron cut ends by dissolving the cellulose in sulfuric acid. Since the original request for analysis indicated that calcium silicate was expected, the use of sulfuric acid was not expected to alter the mineralization while dissolving the cellulose interference.

The remaining indicated treated ends were shaved with a scalpel into a petri dish. The material was then immersed in a solution of fifty percent sulfuric acid for approximately twelve hours with occasional stirring. The solids were then washed and filtered with distilled water.

Most of the cellulose appeared to have been dissolved in the acid. However a considerable amount of dark fibrous material remained. The sample was then gently ground in a mortar and pestle. The ground material was then passed through a 200-mesh sieve that retained most of the fibrous material. The material that passed through the sieve was observed to be white to light tan to brown crystals. This material was sifted onto a greased glass slide then analyzed using an x-ray diffractometer. The sample was scanned from 4.5° to 66° two-theta. The main part of the diffraction pattern containing all of the peaks and the identified phases is shown in Figure 2 on Page 4.

700 Fifth Avenue
New Brighton, PA 15066-1837
(724) 843-5000
FAX: (724) 843-5353
www.pmet-inc.com

This pattern was well crystallized with a small amorphous hump around 22° caused by the remaining cellulose. The phases were identified using Bruker AXS proprietary search/match software with the JCPDS database and an element screen based on an SEM-EDX analysis of elemental composition of the material. The SEM-EDX elemental analysis is shown in Table 1 below. The pattern was analyzed for concentration of the phases using the Rietveld refinement technique and the ICSD crystal structure database. The results are shown in Table 2 below.

Based on the ambient temperature reaction $CaCO_3 + H_2SO_4 \rightarrow CaSO_4 + CO_2 + H_2O$, we can assume that the hydrated calcium sulfate in the final sample material is a product of the reaction of calcium carbonate present in the treated cellulose with the sulfuric acid bath. This implies that calcite is about 50% of the mineralization at the treated end of the rhododendron. The silica phase is not cristobalite but the more common quartz.

Table 1
Results of SEM-EDX Elemental Analysis
(Approximate Wt.%)

| Element | Wt. % |
|---|---|
| Na | 6.5 |
| Mg | 1.6 |
| Al | 2.7 |
| Si | 18.2 |
| S | 10.8 |
| Cl | 29.0 |
| K | 3.1 |
| Ca | 26.5 |
| Fe | 1.5 |

Table 2
Results of XRD Analysis
(Wt.%)

| Mineral | Atomic Formula | Wt. % |
|---|---|---|
| Halite | NaCl | 40.6 |
| Calcite | $CaCO_3$ | 15.0 |
| Quartz | $SiO_2$ | 7.3 |
| Gypsum | $CaSO_4 \bullet 2H_2O$ | 19.7 |
| Bassanite | $CaSO_4 \bullet 0.5H_2O$ | 17.4 |

Mr. Wick, please contact me if you would like to discuss these results. Thank you for using PMET's laboratory services on this project.

Sincerely,

Randolph W. Shannon
Laboratory Manager

RFA 5610

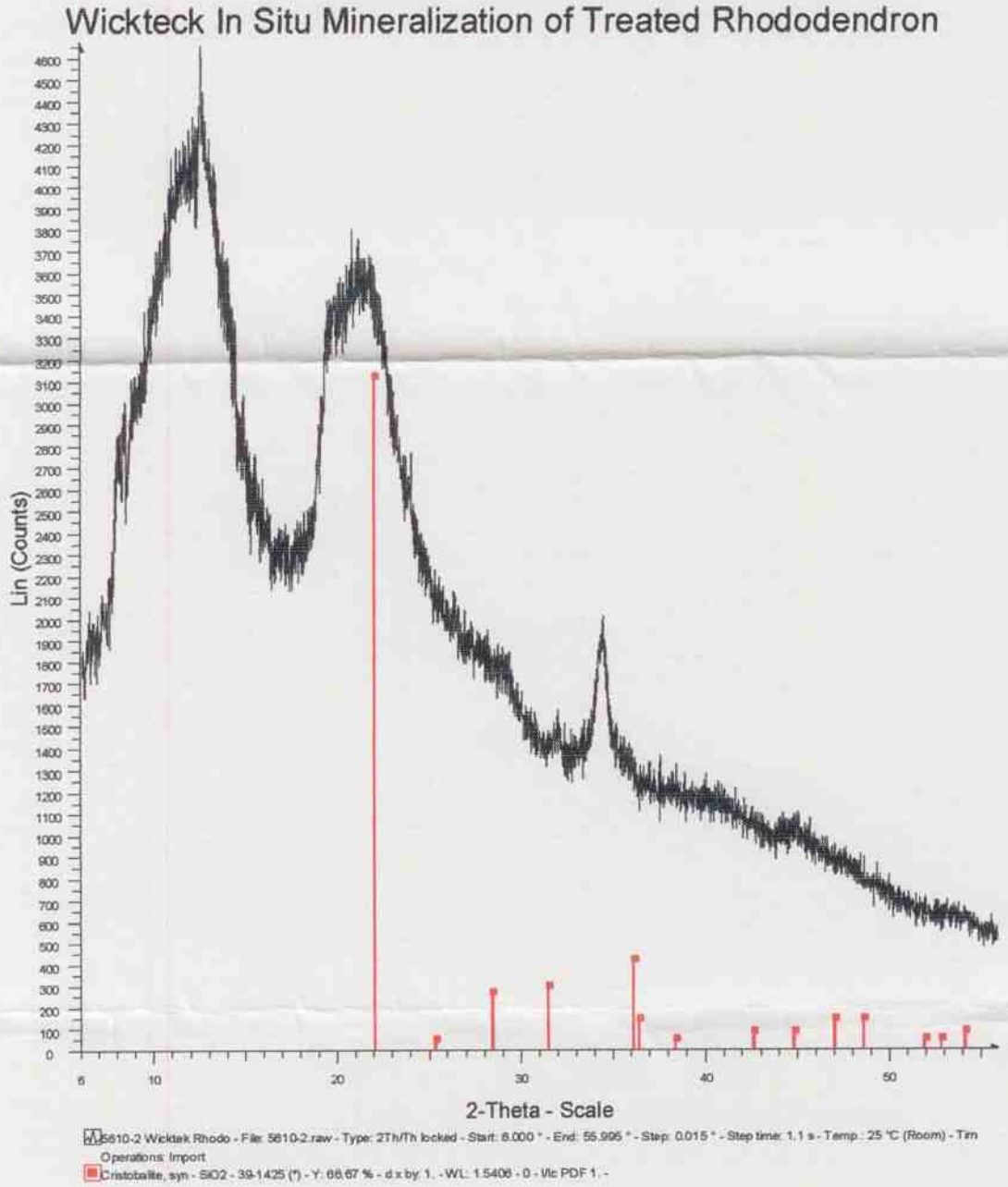


Figure 1
XRD Pattern of In-Situ Mineralization of Treated Rhododendron

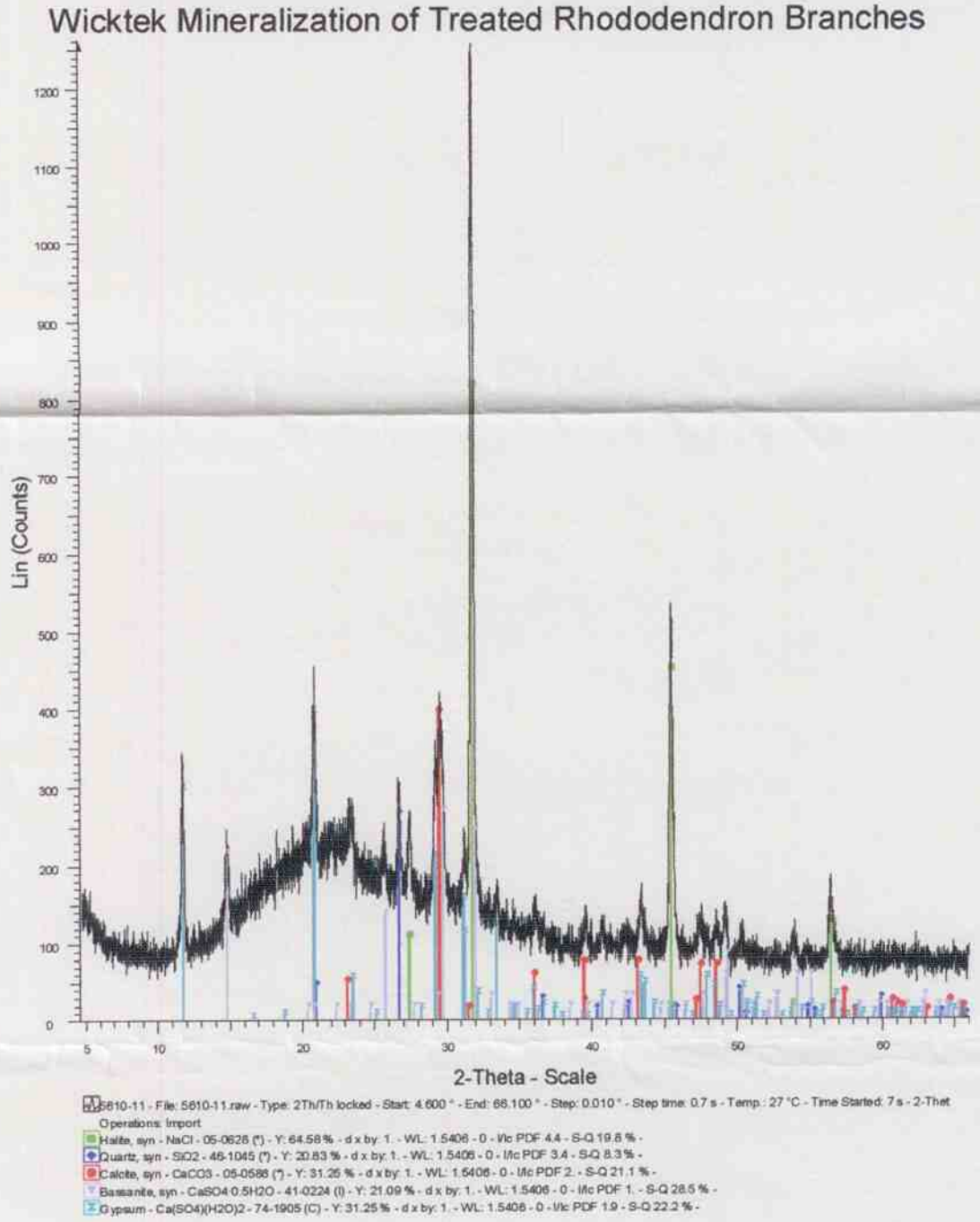


Figure 2
XRD Pattern of Mineralization of Treated Rhododendron after Acid Dissolution of Cellulose