

CHRISTOPHER MILLS CONSERVATION SERVICES, LLC

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Sand Characterization for Sand-Paint  
Second-floor South west Chamber Mantel  
Gunston Hall  
Mason Neck, Virginia

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To: Caroline Riley  
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The purpose of this preliminary investigation is an attempt to get a general understanding of the physical character of the sand used in the historic paint layer found on the second floor mantel in the south east chamber room at Gunston Hall. The information gathered will be used to recreate similar texture and color used in the original finish.

### **Procedure**

Chris Mills met with Caroline Riley, Curator of Collections, on October 22, 2010 on the second floor, south west chamber at Gunston Hall. The purpose of this visit was to generate a proposal for reinstating the sand paint found on the mantel in the 2010 *Cross-section Paint Microscopy Report/The Chinese Room and Second-floor Chamber Paints* by Susan Buck. Two photomicrographs (samples #2 and #3) in the report identify granules of sand imbedded in a gray paint layer. These particles appear to be smooth and moderately irregular in size and shape. The color varies from mostly clear, tan and white.

Five sand samples were gathered from local and commercial sources for comparison. These samples were washed in water, dried and viewed under halogen light source with 20X magnification *Nikon* Field microscope to review general form and color. Small amounts of each sample were then cast into polyester resin cubes, ground and polished and sent to Colonial Williamsburg graduate intern Kirsten Travers who took photomicrographs to compare with the photomicrographs in Susan Buck's report.

Sample origin, commercial brand and visual characterization:

1. Potomac River sand /Dry (surface). Taken 10/22/2010 at the historic dock location on bank. Mostly uniform in size, shape. Tan, clear, gray-white.
2. Potomac River sand /Wet (subterranean). Taken 10/22/2010 at the historic dock location at waterline. Samples taken approximately 5" under coarser light sand. Uniform (very small) Gray-tightly packed. Silt-like.
3. White Play Sand from *Colorscape*. Uniform large, smooth and clear to white
4. Masons Sand from *Sakrete*. Very irregular in size, shape and color
5. Texture Aggregate for paint additive from *Zinnzer*. Uniform (small) in size. White.

The two photomicrographs below are by Susan Buck from *Cross-section Paint Microscopy Report/The Chinese Room and Second-floor Chamber Paints* (pg. 29, and 32), and are used to compare size, shape and color of sand particles in the following photomicrographs.

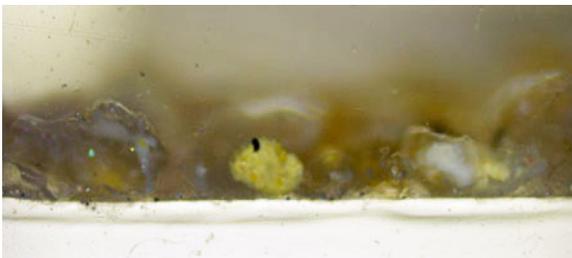


Sample #2 Mantel/From architrave, edge right below curved molding

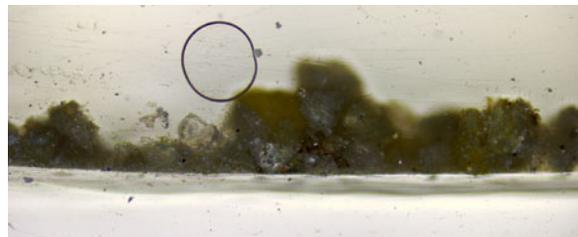


Sample #3 Mantel/From right lower edge of keystone

### **Sand Samples** Photomicrographs by Kirsten Travers



Sample #1 Potomac river sand



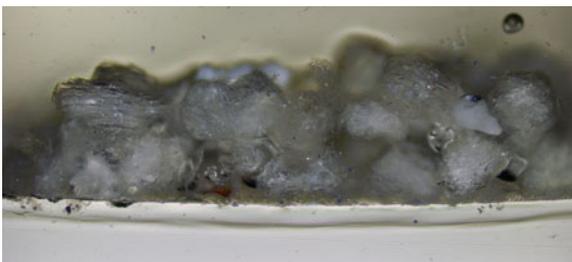
Sample #2 Potomac river sand (subterranean)



Sample #3 Play sand



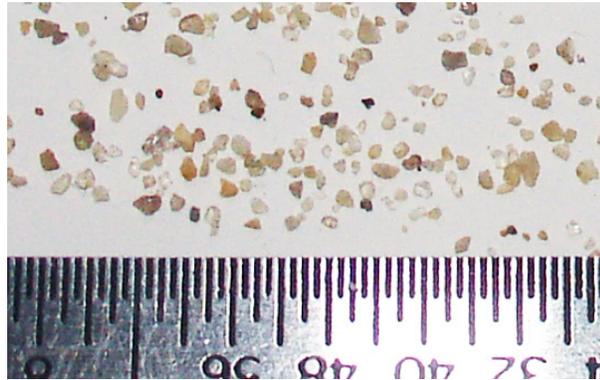
Sample #4 Mortar sand



Sample #5 Paint aggregate

### Observations and Recommendations

Of the five samples examined Sample #1- Potomac surface sand and Sample #4 Masons sand most resemble the approximate size, form and color found in the samples from the mantel. It should be noted that the amber appearance seen in samples #1 and #4 are, in part, the foreground clear granules reflecting the tan granules in the background. Although granule color will effect the color of the paint, translucent granules will reflect the pigment color that they are imbedded. (See Mount Vernon exterior).



Sample #1 Potomac river sand



Mount Vernon exterior, clear sand on white ground

Samples #2 and #5 are too small and uniform and Sample #3 appears to be far more sharp and jagged than the granules found in the sample from the mantel.

Although it is impossible to determine the origin of the sand with visual examination of photomicrographs only, it stands to reason that the Potomac sand, with its close proximity to the structure, was the likely the source for construction materials. This is not to say that sample #1 has the same characteristics as 18th Century river sand at the same location. The physical properties may have changed as a result of upriver population and industry, dredging, heavy construction causing unnatural erosions, or more drastically, imported to the site for fill.

What is evident from the photomicrographs from the mantel is that some of the sand particles appear to be on or very near the surface suggesting that, like Mount Vernon and Monticello, the sand was, in part, presenting on the surface and not solely imbedded in the paint. This would suggest that the sand was thrown, or blown on during the drying process.

Sand painting was generally used as an aesthetic treatment on exterior elements to give the impression of masonry. Mixed with or blown on painted surfaces could convincingly simulate different types of masonry or stone as well as preserve the finish. The gray color in which the sand was imbedded/applied to the mantel at Gunston Hall simulates gray masonry.

For the purposes of recreating a reasonable facsimile of the materials and processes used on the mantel originally, the local Potomac sand or Masons sand, should be stirred into the paint then blown on during the drying process. Samples should be made using various amounts of sand in and on the paint, with multiple applications, for review and compared to other 18th century sand painting examples before on-site application.