Petition for the Approval
of an Appellation of Origin
For the proposed "Warren Hills"
Viticultural Region

February 12, 1986

Submitted By:
Daniel Campanelli of Rieglesville, N.J.
Walter and Shelly Hnot, Marble Mountain Vineyards, Harmony, N.J.
Rudolf Marchesi, Alba Vineyard, Finesville, N.J.
Robert and Lauri Matarazzo, Four Sisters Winery, Belvidere, N.J.
Paul and Susan Tamuzza, Tamuzza Vineyards, Hope, N.J.
The following is a petition for the approval of an Appellation of Origin for the "Warren Hills" Viticultural Region, located in Northwestern New Jersey, submitted by the following:

Daniel Campanelli, Rieglesville N.J.
Walter and Shelly Hnot, Marble Mountain Vineyards, Harmony, N.J.
Rudolf Marchesi, Alba Vineyard, Finesville, N.J.
Robert and Lauri Matarazzo, Four Sisters Winery, Belvidere, N.J.
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As grape growers and winemakers in this region, we feel that the proposed Viticultural Region has unique geographical and climatological characteristics that distinguish it from the surrounding regions.

This petition is based on extensive research into the climate and soils of the proposed Region as well as historical agricultural significance and our own viticultural experience.

Enclosed are U.S.G.S. maps with colored areas defining the proposed "Warren Hills" Viticultural Region.

1. Origin of the name "Warren Hills"

The name "Warren", which is used throughout the area originated from a local resident, Joseph Warren, who became a local Patriot hero after his death at the battle of Bunker Hill. In 1824, when the county of Warren, in which the proposed viticultural region is located, was incorporated, the people of the area thought it appropriate to name the county after this famous local hero.

The name "Warren Hills" is a logical extension of the county name because "Hills" is an accurate description of the topography of the area. The name "Warren Hills" has been used by many groups in the area e.g. Warren Hills Regional High School, Washington, N.J. and Warren Hills Family Health Center, Washington N.J.
The boundaries of the proposed Warren Hills Viticultural Region are based on the physical characteristics of the regional watershed draining to the Delaware River and the resulting climatic conditions. The region is generally triangular in shape with the base of the triangle being the Northern border. The Delaware River constitutes the Western boundary. This is a clear physical and geological boundary as evidenced by the dramatic changes in geography and geological characteristics when crossing the river into Pennsylvania. The Musconetcong River forms the Southeastern boundary of the region. The Musconetcong Valley is the southernmost valley in the "Upland Valley" geological region of Northern New Jersey, constituting a division between two major geological regions. The Northern boundary is formed by the Paulins Kill (a small stream) extending northeasterly from the Delaware River to the county line, dividing Warren and Sussex Counties, which extends in a southeasterly direction to meet the Musconetcong River at a point 5 miles northeast of Hackettstown N.J. and 2.5 miles northwest of the closest shore of Budd Lake.

The proposed Warren Hills Region is characterized by a series of narrow parallel valleys running in a northeast to southwest direction. This topography is distinctly different from the rolling hills of the "Piedmont" region to the south and east, the mountainous highlands to the north and the plateaus above the Delaware River in Pennsylvania. Due to the topography of the Region, climatic conditions are also unique in the area. Typical of many valley regions, in the morning hours, air currents flow downstream to the Delaware River. However, due to the funnelling effect of the mouths of these small valleys at the Delaware, prevailing winds blow up the valleys in a northeastern direction reducing relative humidity and cooling crops in the early evening hours. In addition, due to the orientation of these valleys, there are many sites with a south to southeastern exposure creating many microclimates with warmer than average temperatures, especially in the winter.
The combination of soils and topography of the proposed Warren Hills Region are unique to the area. The soils of the proposed Warren Hills Region were predominantly formed by glacial till, alluvium and material weathered from bedrock. The limestone bedrock is cavernous and "sink holes" dot the landscape. The predominant soil types are Washington and Hazen loams which are deep, fertile, well-drained soils of a fine texture and of a relatively higher PH than the surrounding areas due to the nature of the bedrock.

North and northeast of the proposed Warren Hills Region, northeast of Hackettstown, a glacial advance known as the Wisconsin, left a distinct mass of transportal materials, terminal moraine. The area south-west of this point was not covered by these glacial deposits from the north and has been described by Peter Wacker of Rutgers University as follows: "The limestone valley floor of the Musconetcong south of the terminal moraine is characterized by gently undulating topography and by soils that, even today, are among the most fertile in the Northeastern United States."

As previously mentioned, due to prevailing winds and physical characteristics of the proposed region, the growing season tends to experience warm days and cool nights, as compared to the surrounding areas. The typical growing season for the region averages 175 frost-free days, but is often longer on selected sites. During this period the average number of growing "degree days", based on the U.C. Davis Degree Day Scale for Viticulture is 2,680. The average annual rainfall during this growing season is 24 inches, although in two out of ten years the rainfall is less than 19 inches. The average mid-afternoon relative humidity is 55 percent and the prevailing winds are from the west to the southwest during the growing season. These prevailing winds and the previously mentioned cool air drainage assist in the control of mold and mildew on the vines.
The description below includes the agricultural and viticultural areas within the proposed Warren Hills Viticultural region. This proposed region is of an approximate area of 226 square miles (144,640 acres) and includes 77 acres of vineyards and three licensed wineries; Alba Vineyard, Four Sisters Winery and Tamuzzza Vineyards. This verbal description directly corresponds to the following U.S.G.S. 7.5 minute topographic quadrangle maps which we have enclosed:

<table>
<thead>
<tr>
<th>Quadrangle #</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>N4030-W7507.5/7.5</td>
<td>Reigelsville PA - NJ</td>
</tr>
<tr>
<td>N4037.5-W7507.5/7.5</td>
<td>Easton PA - NJ</td>
</tr>
<tr>
<td>N4045-W7507.5/7.5</td>
<td>Bangor PA - NJ</td>
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<tr>
<td>N4037.5-W7500/7.5</td>
<td>Bloomsbury NJ</td>
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<tr>
<td>40075-G1-TF-024</td>
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<td>N4045-W7452.5/7.5</td>
<td>Washington NJ</td>
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<td>Blairstown NJ</td>
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<tr>
<td>N4045-W7445/7.5</td>
<td>Hackettstown NJ</td>
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<tr>
<td>N4052.5-W7445/7.5</td>
<td>Tranquility NJ</td>
</tr>
<tr>
<td>N4100-W7452.5/7.5</td>
<td>Flatbrookville NJ - PA</td>
</tr>
<tr>
<td>1942-54-(71PR)</td>
<td>Newton West NJ</td>
</tr>
</tbody>
</table>

The south east boundary of the region originates at the intersection of the Delaware River and the Musconetcong River and proceeds in a northeasterly direction along the center line of the Musconetcong River for a distance of approximately 32 miles through the towns of Bloomsbury, Hampton, Butler Park, Stephansburg, Beattystown, and Hackettstown to a point approximately five miles northeast of Hackettstown and one mile southwest of Waterloo Lakes, where the county line separating Warren and Sussex counties intersects the Musconetcong River. At this point, the boundary proceeds in a northwesterly direction along the Warren and Sussex County line, approximately ten miles to a point where the Paulins Kill intersects the County line. At this point the boundary turns in a south, southwesterly direction and proceeds along center line of the Paulins Kill for approximately two miles, at which point the boundary follows the Paulins Kill in a west by southwest direction, flowing into the Delaware River at the town of Columbia. The boundary at this point intersects the center line of the Delaware River and proceeds in a southerly direction following the center line of the Delaware River. This north–western boundary continues along the center line of the Delaware River approximately 24 miles until it reaches the intersection of the center line of the Musconetcong River at Reigelsville NJ - PA, thereby closing the boundaries of the proposed region.
Department of the Treasury  
Department of Alcohol, Tobacco  
and Firearms  
Washington, D.C. 20226  
Attn: Richard A. Mascolo

January 27, 1987

Dear Mr. Mascolo:

In your letter of May 15, 1986 you raised five questions regarding our petition to establish the Warren Hills Viticulture Region. In this letter I will attempt to clarify these points in the same order as presented in your aforementioned letter.

1) Regarding the Delaware River as the Western Boundary:
As stated in our petition, the Warren Hills Region is typified by a series of valleys running northeast to southwest starting at the Musconetcong Valley and continuing in a series of small parallel valleys northward throughout the region until reaching the Paulins Kill.

On the Pennsylvania side of the Delaware River, conditions vary greatly. Across the Delaware River from the southern and central section of our proposed region is the convergence of the Lehigh and Delaware rivers and the resulting Lehigh Valley. The Lehigh Valley, formed by the Lehigh River, is fairly broad - up to 10 miles in width at some points. In contrast, the upland valleys of the Warren Hills Region have been formed by small rivers and streams and are narrow by comparison.

Across the Delaware from the northern section of our region, are high plateaus relative to the Delaware that are predominantly shale and slate forming the foothills of the Blue Mountains, part of the Pocono Mountain chain. Again this contrasts with the upland valleys of our region.

As stated in our petition, the soils of these valleys were predominantly formed from the Dolomitic Limestone which underlies them. While this "Limestone Belt" does continue across the Delaware into portions of the Lehigh Valley, the hills south of the Lehigh Valley are predominantly of a red shale base, while north of the valley, into the Blue Mountain foothills, there is a greater occurrence of gray shale and slate. Soils from both these regions vary greatly from our own in texture, mineral content, and ph.
In relation to the Delaware Valley south of the Warren Hills Region, it is important to understand that the Musconetcong Valley forms a boundary between two major, and very different geographic regions in New Jersey; the Upland Valleys of the northwest and the Piedmont.

The Piedmont region consists primarily of the rolling hills of Hunterdon, Somerset and Mercer counties, not very different from conditions in Bucks County, Pennsylvania across the Delaware. Therefore, it is conceivable that in this region, a viticultural region with continuity of geology and geography could be on both sides of the Delaware. As stated, this is not the case north of the Musconetcong Valley.

(2) Regarding the Southern Boundary, the Musconetcong River:
In our previous petition for the "Musconetcong Valley" viticultural region, the southeastern rim of the Musconetcong Valley was used as a boundary. Since that time, it has been our experience that the best vineyard sites are on the south, south eastern and south western facing slopes as is the case in many cool climate viticultural regions, i.e. the German Rhine Valley. In light of this information, the portions of the Musconetcong Valley south of the Musconetcong River become viticulturally insignificant. Therefore, it seemed prudent to change the south boundary to the Musconetcong River, which is a much more easily recognized and defined geographic boundary. The fact that the Musconetcong River is the boundary separating Hunterdon and Warren counties is, in this case, insignificant.

(3) Regarding ph of soils in the Warren Hills Region relative to surrounding areas:
The vineyard soils of the Warren Hills Region are formed from Dolomitic Limestone which has a high concentration of calcium and magnesium. This contributes to higher soil pH relative to the soils of the surrounding areas which are formed from shale and other sources. The primary vineyard soils of the Warren Hills region are as follows listed with pH range (see footnote 1).

Hazen Loam 5.6-7.8
Annandale Gravelly Loam 5.1-6.5
Washington Loam 5.6-6.3

Typical soils of the areas of Warren county north of the Paulins Kill are as follows (footnote 1).
Bath soils 4.5-6.5
Nassau soils 4.5-5.5
Swartswood soils 3.6-5.5

Typical vineyard soils of the Central Delaware Valley Viticultural Region are Penn Shaley Silt Loam and Klinesville Loam. Penn series soils have been described as "Natural reaction is strongly acid" (footnote 2) and the Klineville series as "Natural reaction ranges from medium acid to strongly acid" (see footnote 3).

(4) Regarding location of terminal moraine relative to the Northeast Boundary:
As one might imagine, glaciers were not very consistent in the way they carried moraine over existing soils. In the case of the Paulins Kill, we have a clearly defined narrow strip of Pope soils formed by glacial till running with the Paulins Kill almost the entire distance from the Delaware River to the Sussex county line and extending only three miles into Sussex county. Likewise, there is a strip of similar soils along the Musconetcong River extending northeast and ending at the Sussex county line. Between these two points, along the Warren/Sussex county lines, for approximately 10 miles the soils vary (footnote 4). However, it is in this approximate location that the average length of the growing season drops below 150 frost free days to the northeast, which is inconsistent with the average growing season length in the Warren Hills region (see attached map "Figure 3, Average Length of the Growing Season in Days(Base 32°F)"). The significance of the Pope soils vs. typical vineyard soils of the region is predominantly in the mineral content reflected in ph. Ph of Pope soils ranges from 3.6 –5.5 (footnote 1). Therefore, this 10 mile section of the Warren/Sussex county line, when viewed in light of the geological and climatological factors forms a viticulturally appropriate boundary that can be easily defined.

(5) Regarding location of the Piedmont Region relative to the Warren Hills Region:
In our petition we state that our area is "Distinctly different from the rolling hills of the Piedmont region to the south and east". This should read "Is distinctly different from the rolling hills of the Piedmont region to the southeast". The areas of Sussex and Morris counties are different from our region in the increased incidents of glacial till effecting soil makeup and decreased length of growing season (see attached map "Figure 3").
I trust these explanations are sufficient to answer all questions regarding our petition to establish the Warren Hills Viticultural Region. If you are in need of any additional information please feel free to call me at (201)995-7800.

Yours truly,

[Signature]

Rudolf C. Marchesi


Figure 3. Average length of the growing season in days (base 32°)

(from K. Arnesen, Meteorology
Cook College)