

Petition to Establish the

Goose Gap American Viticultural Area Washington State

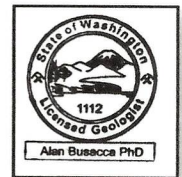
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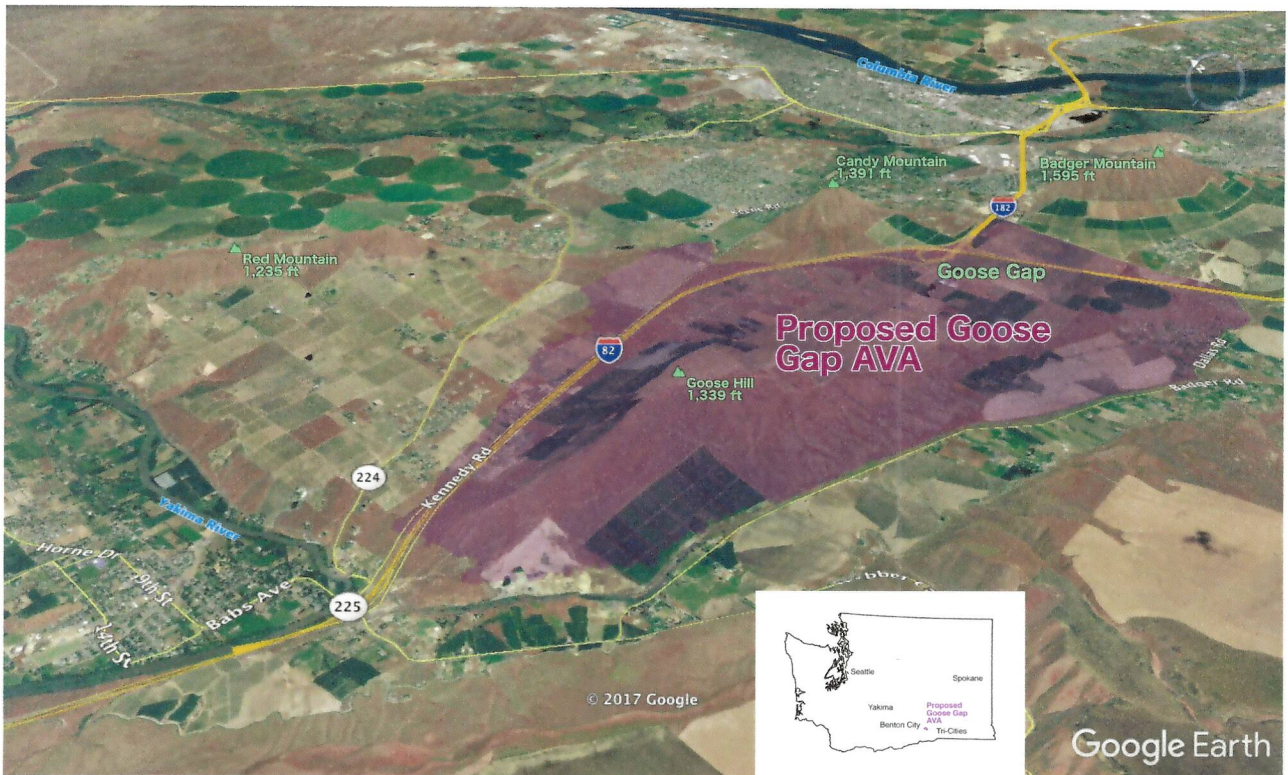
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LETTER OF INTRODUCTION:

This is a petition submitted to the United States Department of the Treasury, Alcohol and Tobacco Tax and Trade Bureau (TTB) that proposes to establish a new American Viticultural Area (AVA), the **Goose Gap AVA**, in eastern Washington State. The proposed AVA nests fully within the existing Yakima Valley AVA that in turn nests fully within the Columbia Valley AVA. The proposed AVA adjoins (shares part of a boundary with) but does not overlap with the existing Red Mountain AVA and it would adjoin (share part of a boundary with) but not overlap with the proposed Candy Mountain AVA (Pogue, 2017).

This petition has been developed and is being submitted by Alan Busacca, Ph.D., Vinitas Consultants, LLC, PO Box 274, Bingen WA 98605; telephone: [REDACTED] email: [REDACTED] in collaboration with Ian-Huei Yau, M.S. who performed the data mining and data reduction for the tables and prepared the maps for the petition. Alan will be responsible for providing timely and complete responses to TTB requests for additional information to support the petition.

This petition has been developed on behalf of the Goose Gap Wine Grower's Association (GGWGA). Contact person for the GGWGA is attn: Bill Monson, [REDACTED], Benton City WA 99320; telephone: [REDACTED]; email: billmonson@monsonranches.com.

The exact name of the proposed AVA is the 'Goose Gap American Viticultural Area'. The proposed Goose Gap AVA is in southeastern Washington State. The town of Benton City is located just outside the northwest corner of the proposed AVA and Interstate Highway 82 (I-82) traverses it from east to west. More than 1,800 acres of wine grapes and one bonded winery are within its borders.

The petition is being delivered to TTB by a private delivery service and consists of two packages. Package 1 includes two complete, signed copies of the petition, all of its exhibits, figures, and tables. Package 2 is a map tube containing two sets of U.S.G.S. topographic quadrangle maps marked with the boundary of the AVA.

Signed

[REDACTED]

Alan Busacca, Ph.D.
Vinitas Consultants, LLC

Dated

January 19, 2018

January 19, 2018

OVERVIEW

This petition has been prepared in support of a new AVA to be designated in Washington State. The proposed name is **Goose Gap American Viticultural Area** or **Goose Gap AVA (GGAVA)**. The proposed AVA is contained entirely within the Yakima Valley AVA, which nests entirely within the very large 'master' AVA, the Columbia Valley AVA, in eastern Washington State (Figure 1). *Note:* Except for the perspective view of the proposed AVA area on the first page, all other figures along with data tables and the exhibits in support of the petition are gathered together at the end of the petition narrative.

The proposed viticultural area is comprised primarily of gentle *northeast-facing slopes and a slightly rolling 'saddle' or 'gap' of land* situated among three local prominent hills: Goose Hill to the west and Candy and Badger mountains to the east (Figures 2a, 2b). The saddle of lands that form the central part of the proposed AVA has been known for about one-hundred years and perhaps was referred to by the *first peoples* from time immemorial as '*Goose Gap*' because it was and is a prominent flyway for migrating waterfowl between nesting and resting grounds of the Columbia River to the east of the AVA and the Yakima River to the west of it (Figures 2a-2c).

The name 'Goose Gap' has been in common usage for the area of the proposed AVA for more than 110 years in histories of Benton County, Washington, in newspaper and other accounts, and, increasingly since the 2000s, wine grapes and wine; and 'Goose Gap' has been printed on USGS topographic maps (see, for example, Figure 2c) of various scales since at least the 1960s to indicate the area of the proposed AVA.

The elevation of the proposed AVA ranges from a low of 577 feet at point 10 along the southern boundary to a high of 1,339 feet on the top of the backbone ridge of Goose Hill. The total acreage of the proposed AVA is 8,129 acres (12.7 sq. mi.).

More than 1,800 acres of wine grapes were in production within the boundary of the proposed AVA as of the end of 2017 (Table 1) producing a harvest of more than 7,000 *tons* of wine grapes. There is one bonded winery within the proposed AVA area that in 2017 produced about *50,000 cases of wine from grapes grown inside the proposed AVA* and another 250,000 cases of wine from grapes grown in the surrounding Columbia Valley AVA (Figure 1).

In addition to the Letter of Introduction above and this Overview, the petition to create the Goose Gap AVA (GGAVA) consists of 4 formal sections followed by a set of exhibits plus hard copies of 4 U.S.G.S. 1:24,000-scale (7.5-minute 2017 series) topographic maps, in clockwise order from the northwestern part of the proposed AVA: the Benton City, Richland, Badger Mountain, and Webber Canyon topographic maps.

The four formal sections are:

1. **Name evidence:** We provide evidence that the name identified for the proposed GGAVA is currently and directly associated with the area in which viticulture exists AND that the area is nationally and locally known by the name Goose Gap.
2. **Boundary Evidence:** We provide evidence that supports setting the boundary of the proposed GGAVA in its proposed location, specifically the uniformity of features and unique characteristics of lands within the boundary and how those features and characteristics are different from those in adjacent lands outside that boundary.
3. **Distinguishing Features:** First we use measurement data and observations on general landforms, bedrock geology, Ice-Age geologic history, general climate in the rainshadow of the Cascade Mountain Range, general viticultural practices and more to demonstrate that the proposed GGAVA is similar in broad outline to the Yakima Valley AVA and Columbia Valley AVAs within which it nests and therefore is deserving to remain a part of both larger AVAs.

We then document the commonalities and special characteristics especially of landform, geology and climate that unify the areas *within* the proposed GGAVA that make it distinctive compared to localities *just outside of the AVA*.

Then we use measurement data and observations on cultural and physical geography, physical features, geology, plantable slopes that are on the opposite, northerly and northeasterly, aspects compared to the adjoining and nearby AVAs, and to the enclosing Yakima Valley AVA, climate including solar radiation, soils, and other attributes that affect viticulture and that differentiate the area from adjacent and adjoining AVAs and from the enclosing Yakima Valley and Columbia Valley AVAs, such that it should have its own AVA designation.

4. **Written Boundary Description and Marked Map:** Our petition includes a detailed written description of the boundary of the proposed GGAVA that is keyed to easily discernible markings and reference points printed on the published U.S. Geological Survey topographic maps. The exact boundary line is prominently and clearly drawn on the topographic maps without obscuring the underlying features.

Exhibits: Included as part of this petition are exhibits that support the four sections of the petition, that is, hard copies of name, scientific, and other evidence and documentation of the petition. Exhibits are cross-referenced in the appropriate narrative sections. We have marked the exhibits for Section 1, for example 'Exhibit 1.1', 'Exhibit 1.2', etc., those for Section 2 as 'Exhibit 2.1', 'Exhibit 2.2', and so on.

PETITION

As permitted in the Federal American Viticultural Areas regulations, 27 CFR, Part 9, as amended in the Federal Register, Vol. 76, No. 13, Thursday, January 20, 2011, pp. 3500-3502, the members of the Goose Gap Wine Grower's Association (GGWGA) offer the following as evidence that a new American Viticultural Area named **Goose Gap** should be established in the state of Washington:

SECTION 1. Name Evidence

First in this section, we explain the name usage, that is, the manner in which the name is used for the area covered by the proposed AVA and provide evidence that the name Goose Gap is currently and directly associated with viticulture. Second in this section we provide evidence that the area within the proposed AVA is known by the name Goose Gap.

(i) The Manner in Which the Name is Used for the Area Covered by the Proposed AVA and Proof That the Name is Associated With Viticulture

The geographic feature or landform that is the basis for the proposed AVA is a gently rolling 'gap' or saddle of land between three local hills and it also is elevated as a kind of plateau above a dry valley called 'Badger Coulee'. This gap or saddle has been referred to as 'Goose Gap' in magazine and newspaper articles and other historical sources since at least 1904. We detail and document these historical references of the use of the name Goose Gap for the area indicated in the petition in *Section 1.(ii)* below and provide copies of the sources in the Exhibits.

Goose Gap occupies a large (approximately 3 mile by 2 mile) saddle-like area between three local hills (two of which are called 'mountains' on the topographic maps): Goose Hill, Candy Mountain, and Badger Mountain (Figure 2c). Goose Gap also is elevated above a large dry valley or 'coulee' that bounds it on the south. The first use of the name on printed maps that we have located are the 1965 editions of the U.S. Geological Survey 7.5' Series, 1:24,000-scale and the 15' Series, 1:62,500-scale topographic maps, both of which are titled 'Badger Mtn. Quadrangle'. We offer reproductions of these two quadrangle maps as Exhibits 1.1 and 1.2, respectively. In 1978, the U.S. Geological Survey 1:100,000-scale topographic series Richland Quadrangle, Washington was published with the name Goose Gap printed on the map in the location of the proposed AVA (Exhibit 1.3). We include an enlargement of the central part of the map as Exhibit 1.3.a. for readability.

Please note that the **Exhibits** for this petition are grouped *following the narrative section and the figures and tables.*

The manner in which the name Goose Gap is used for the area covered by the AVA is even more clearly understood by referring to Exhibit 1.4 and 1.5, which are titled 'Attachment 1 - Determined Future Development Plan and Supporting Documentation - DNR [Washington State Department of Natural Resources] Red Mountain Goose Gap Project' and 'Attachment 1-1 - 'Red Mountain/Goose Gap Complex History'', respectively.

Both are part of a package of documentation dated from 2015 outlining the history of a large and complex project to develop water rights, then drill deep irrigation wells on WA DNR lands at Red Mountain (AVA approved 2001) and the nearby Goose Gap area, which tally to more than 3,000 acres, and then to enter into long-term leases with area grape growers and orchardists to develop and farm these lands, starting in the 1990s.

Exhibits 1.4 and 1.5 demonstrate that the entire area of the proposed AVA was called 'Goose Gap' by the state of Washington DNR when developing a vineyard-centric leasing and development plan in the 1990s and that the use of the name for the area covered by the proposed AVA has persisted to the present day.

The clearest proof of the manner in which the name is used for the area covered by the proposed AVA is found on 'Page 6 of 32' in Exhibit 1.5. On that page, the "GGRM MAP" shows an area titled 'Goose Gap Parcels' in gray shading. By comparing landmarks such as the interstate highway near the northern and northeastern boundary of the proposed AVA and the railroad tracks along its southern boundary, one can see that the Goose Gap vineyard-centric irrigated agriculture development plan area occupies basically the entire footprint of the proposed AVA, including both the saddle area as well as the farmable slopes of the adjoining Goose Hill (Figure 2c).

A map that was also in the originating documents that we excerpted as Exhibits 1.4 and 1.5 shows water rights permit status labeled to the locations of deep irrigation wells in the Red Mountain Goose Gap area. We present this map as Exhibit 1.6 and place an arrow on the largest-volume and deepest well that supplies irrigation water to the Goose Gap part of the project. That well is titled '*Goose Gap 28833P*'.

The last thing we demonstrate in this Section 1(i) is proof that the name Goose Gap is associated with viticulture:

First, reading the development plans and maps in Exhibits 1.4, 1.5, and 1.6, the express purpose is "... to develop and lease over 3,000 acres of mainly vineyard with some orchard mix in the RMGG area ..." (Exhibit 1.4 second page). Table 1 shows that from 1998 to the present day, more than 1,800 acres of high-quality wine grapes and a winery producing about fifty thousand cases of finished wine from estate grapes *grown within the proposed AVA*

area (and 250,000 cases of additional wine from other Columbia Valley grapes) have been established in the Goose Gap area.

Two examples in the popular press that demonstrate that the Goose Gap name and area are associated with viticulture are found in Exhibits 1.7 and 1.8.

Exhibit 1.7 is from a supplement to the October 20, 2016 edition of the Tri-City Herald Newspaper titled 'The State of Ag 2016 - A Look at Washington's Most Important Ag Commodities - Apples-Grapes-Wheat-Hops' (Exhibit 1.7). The section titled "Wine Grapes Continue to Thrive" includes the following paragraph. "The Tri-Cities' biggest vineyard does happen to be locally owned. The Monson family started out in cattle and fruit before developing Goose Ridge Vineyards, and has turned a unique property in *Goose Gap* [emphasis added here] into 2,200 acres of wine grapes. Goose Gap is a saddle-shaped piece of land between Red Mountain, Candy Mountain, and the Horse Heaven Hills, southwest of West Richland."

And Exhibit 1.8 is a wine rating from 2017 of a 2016-vintage Estate Rosé wine from Goose Ridge Vineyards. The review begins "*Goose Gap* [emphasis added here] winemaker Andrew Wilson pulled hand harvested Grenache and Mourvèdre from the Monson estate near Richland, fermented the juice to dryness then..."

(ii) Name Evidence That the Area Specified in This Petition is Locally and Nationally Known as Goose Gap

Documented in this section are numerous regional and national, mainly historic, sources of information that refer to the Goose Gap as a recognized geographic area in the location of the proposed AVA, and also [as a source of business and other names](#).

As detailed above, the oldest known USGS topographic maps that are printed with the name 'Goose Gap' in the location of the proposed AVA are the 7.5'- and 15-minute series maps dated 1965. Both are named the Badger Mtn. Quadrangle.

Also, a query of 'Goose Gap, WA' on the the internationally available internet site '[topozone.com](#)' brings up a shaded relief map of the area of the proposed AVA with topographic elevation lines, roads, and more and has the name 'Goose Gap' printed on the map in the proper location (Exhibit 1.9).

Local newspapers as well as national magazines wrote about 'Goose Gap' in the area specified in this petition as early as 1904.

The national weekly journal 'Forest and Stream' carried a story on page 26 of their January 9, 1904 edition about a group of five men who shot 65 geese in a single outing (Exhibit 1.10):

"...They shot at *Goose Gap* [emphasis added here], through which the geese fly in reaching the Horse Heaven feeding grounds, after they leave the sand bars of the Columbia River. ...All of them left the train at Kiona, where they were met by teams and driven 9 miles to the hunting grounds. [Note that today from the town of Kiona, the distance to the area where 'Goose Gap' is printed on the topographic maps (for example Figure 2c) via Badger Road in the Badger Coulee along the southern boundary of the proposed AVA and then north on Dallas Road along the east side of the proposed AVA is 9 miles]...To reach the fields, ... the geese must pass through what is known as Goose Gap, and here it was that Smith, Wooding, Lund, Potsky, and Mess caught them coming. Magnificent is the word that describes the sport they had..."

Similarly, the 'Yakima Herald' newspaper in their edition of December 4, 1907, carried a story reprinted from the 'Kiona Enterprise' newspaper of another goose hunt in the same area, but in this case the named geographic feature was Goose Hill (Exhibit 1.11):

"... Time was when the geese flew back and forth over the valley from their roosting places on the river. They flew low on windy mornings and came over "Goose Hill' just east of town [Kiona] ..."

And the 'Kennewick Courier' newspaper of Kennewick, Washington (one of Washington's three 'Tri-Cities' about 10 miles ESE of Goose Gap) in their edition of November 28, 1913 carried this paragraph in a local news section (Exhibit 1.12):

"... Mr. and Mrs. Shirley, of Spokane, were visitors and the Craver home for the weekend. Mr. Shirley joined Messrs. Hess, Craver, White, Kenyon, Ward, E.O. and L.M. Keene in a goose hunt at "Goose Gap" last Sunday. ..."

Local businesses today use the *Goose Gap* name, as shown in a brochure for the local company "Goose Gap Pawpaws" (Exhibit 1.13) located in the AVA area. And their marketing phrase is 'Grown in Badger Canyon in the shadow of the Benton County's wine country.'

"Goose Gap Road" is an official named and signed Benton County, WA road (Exhibit 1.14.a) that is located partly within the proposed AVA area. It crosses Dallas Road, which forms part of the southern and southeastern boundary of the AVA (Exhibit 1.14.b).

And returning to historical works that document both the use of the name Goose Gap *and* speak on grape cultivation in the early history of this part of Benton County, Washington, we cite two parts of the 'History of Benton City, Washington 1853-1959', published by the History Committee of the Community Development Program of Benton City in 1959 (excerpts of this book form Exhibit 1.15).

On page 6, a discussion of arrowheads from the First Peoples that were found by early Anglo settlers in the area, the paragraph continues:

"No one knows how long these [arrowheads] have been buried under the sands since they were in constant use. Around the lower [Yakima] valley at **Goose Gap** [emphasis added here] up the canyon...the wild geese come in to feed in great flocks at certain seasons of the year. One can wager a guess nothing would live long that one of those arrows hit..."

And in this same book on pages 8 and 9 (Exhibit 1.15) there are references to local farmers who grew grapes in the late 1800s and early 1900s at the town of Kiona less than a mile west of the proposed AVA and to a 'Dr. Hedgers' who even bred a new grape named *Hedgers Keepers*. And on page 10 there is a wonderful photograph of a lush vineyard (Exhibit 1.15, p 10) with the caption "Grapes from this vineyard at Benton [now Benton City, just a mile or so northwest of the proposed AVA] took first prize at Washington State Fair in 1910, and won first prize at Spokane same year."

We located an additional name reference to Goose Gap that shows recognition of this place at the level of state and federal highway authorities. The 'Draft Environmental Statement INTERSTATE 82/182 PROSSER, WASHINGTON TO INTERSTATE 80N IN OREGON' published in 1972 by the Federal Highway Administration (excerpts form Exhibit 1.16) on page 1-8 states "... Corridor 5 begins at East Prosser and follows a passage ... to **Goose Gap** [emphasis added here] at the Northwest end of Badger Mountain. At **Goose Gap** the corridor swings northeasterly through the gap where deep cuts are expected."

The exact place name 'Goose Gap' is in use *in only two other places in the United States* in addition to the area of the proposed AVA in Benton County, Washington. This is attested to in the results of a search we conducted in the U.S. Board on Geographic Names 'Geographic Names Information System' (Exhibit 1.17).

Both of these other places in the U.S. called Goose Gap, one in Tennessee and the other in California, are in dense forested and non agricultural areas of those states and neither is near any places associated with viticulture. In fact, the Goose Gap in California is on a logging road at almost 2500' elevation in Shasta National Forest (Exhibit 1.18) and will never be the locus of vineyard development. And in Tennessee 'Goose Gap Road' is in a

mountainous, rural, forested part of the state with horse pastures or hay fields as the only visible form of agriculture (Exhibit 1.19).

SECTION 2. Boundary Evidence

In *Section 2*, we explain in detail the four lines of reasoning or evidence for defining the boundary of the proposed Goose Gap AVA as it is described in *Section 4* of this petition.

(i) Goose Gap and Goose Hill has a Unique Geologic Structure; (ii) It Has a Unique Hill Shape Compared to All Other Grape-Growing Districts in the Area of the Yakima Fold Belt; (iii) It Has a Special History of Vineyard Development Different from All Other Nearby Vineyard Areas; and (iv) Matching Two Boundaries With Adjoining AVAs and Drawing Another Boundary to Exclude an Adjoining Cold Valley Fills in the Developing Vineyard-scape in a Geographical and Viticultural Manner That Is Efficient and Logical.

All four of these factors, which we describe next, form the basis for defining the boundary of the proposed AVA as set forth in Section 4.

(i) The Proposed AVA Area Has a Unique Geologic Structure

As documented in Section 1 of this petition, the proposed name Goose Gap AVA is derived from the geographic feature of that name, Goose Gap, which is the saddle of rolling lands between the three adjoining hills (Figure 2c). But Goose Gap and the adjoining Goose Hill together form part of a single folded and faulted block of the underlying Columbia River Basalt and here we describe how it differs fundamentally from all the lands around it:

The geography and geology of the proposed Goose Gap AVA area is unique in all of the Yakima Fold Belt. The Yakima Fold Belt is a huge area that encompasses the major part of the Columbia Valley AVA that is actually planted to wine grapes (see map in Exhibit 2.2).

Meinert and Busacca (2002) in their paper on the *Terroir of the Red Mountain AVA* (excerpted pages from this article are Exhibit 2.1) described the Red Mountain *anticline* (up-folded arch in the basaltic bedrock) that forms the ridge and the *dominating southwest-facing, gentle, plantable slopes* of the Red Mountain AVA.

The same authors, in the same refereed professional journal article spoke of but did not elaborate on the Goose Gap *syncline* (down-folded arch in the bedrock that forms the saddle that is Goose Gap) and the Goose Hill *anticline* (that forms the ridge and slopes of Goose Hill). *It is the syncline and anticline combined landform of Goose Gap and Goose Hill that*

has been the focus of intense vineyard development within a single terroir, explained below and in Section 3, that creates the area that we propose as the GGAVA.

Dr. Steve Reidel who is perhaps *the foremost expert in the world on the bedrock geology of the Columbia River basalts in eastern Washington* (see for example, Reidel and others, 2013; or Camp, Reidel, and others, 2017) wrote a lengthy email reply to a question we asked him about why the Goose Hill-Goose Gap landform is so different from all the other hills and slopes in Yakima Fold Belt in having the plantable slopes on the *north and northeast sides* *instead of on the south and southwest sides* as is the case for virtually all other planted areas in the region such as Red Mountain. His full email can be found as Exhibit 2.2.

Dr. Reidel said '*Goose Hill is an odd ridge*' (Reidel's own choice of words, Exhibit 2.2). To summarize the crux of his email to us, it's an anomaly because *it's crest runs East-West, whereas all the other ridges and hills in the local area (Red Mountain, Candy Mountain, Rattlesnake Ridge, etc.) follow the N50°W trend of the Olympic-Wallowa Lineament (OWL)*, which is some kind of fundamental crustal boundary in the Pacific Northwest (PNW). To see this, compare on the inset map in Figure 4a the NW-SE orientation of the backbone ridges of Red Mountain and Candy Mountain to the E-W orientation of the backbone ridge of Goose Hill.

And right at Goose Hill, the backbone of the much taller master ridge of the Horse Heaven Hills (HHH) turns abruptly from a trend of N50°W to a trend of S70°W (a swing of 60°, see Figure 4a), and this change in effective crustal stresses right at this point apparently controls the East-West orientation *and* reverse slope angles of the Goose Gap-Goose Hill fault block.

Dr. Reidel went on to say that whereas the faults that bound the OWL and the Horse Heaven Hills are deep-seated crustal faults, geologists think the faults that bound the Goose Gap-Goose Hill block are detached from the main structures of the OWL as well as the HHH. This means that the faults that bound the proposed AVA area thus are 'rootless', meaning that they don't go very deep and may just die out close to the surface (Stephen P. Reidel, Washington State University, written communication, September 9, 2016; Exhibit 2.2).

OK, but how does this make the proposed AVA area unique compared to adjoining areas as far as growing wine grapes? We explain that next.

(ii) The Proposed AVA Area Has a Unique Hill Shape Compared to All Other Grape-Growing Districts in the Area of the Yakima Fold Belt and That Puts the Planting Zones on the North and Northeast Slopes!

The Goose Gap-Goose Hill area is an anomaly compared to all other hills, small mountains, or ridges where grapes are grown in the entire Yakima Fold Belt (the area comprising the central, south central, and southwestern parts of the Columbia Valley AVA) because its hill-shape cross section has the opposite symmetry or shape from the others: Red Mountain, Rattlesnake Ridge (part of the Yakima Valley), and the Horse Heaven Hills, for example have virtually all of their vineyard development on classic, gentle southwest-facing slopes, whereas their northeast slopes are too steep to farm (see Figures 4a and 4b, and end-on hill view of Red Mountain in Figure 5b).

Just the reverse is the case for the 'odd ridge' of the Goose Hill-Goose Gap fault block hill. It is steep on the south- and southwest-facing slopes, too steep in fact to farm, and smoothly sloping on the north- and northeast-facing sides that descend smoothly to the nearly flat but still north- and northeast-facing major vineyard area on Goose Gap (see Goose Gap topographic cross section in Figures 4a and 4b and the end-on view of Goose Hill and Goose Gap in Figure 5a). It forms an amazing contrast to compare the producing vineyard zones of Goose Gap-Goose Hill versus Red Mountain (Figure 5a versus 5b).

The Goose Hill-Goose Gap landscape system is the only large vineyard development in the lower Yakima Valley-Red Mountain-Candy Mountain-Horse Heaven Hills area to be planted dominantly on north and northeast slopes (Figure 5a). This alone makes it unique and worthy of AVA recognition.

(iii) The Proposed AVA Area Has a Special History of Vineyard Development Different from All Other Nearby Vineyard Areas

The Goose Gap and Goose Hill area together form one of the larger *if not the largest contiguous vineyard and orchard complex in Washington State* in the nearly 2500-acre Goose Ridge Estate Vineyard of the Arvid Monson Family. Goose Ridge Estate Vineyard has more than 1700 acres of wine grapes (Table 1), plus about 750 acres of apples, cherries, and alfalfa (Figure 3). Planting of the vineyards began in 1998 and continued apace until the vineyard-orchard complex reached substantially its present size and configuration by 2015.

The development of this huge complex of irrigated permanent crops is a story of vision and hard work of the Monson Family and grazers and farmers who came before them. Up until the 1980s, areas such as this saw meager dryland sheep and cattle grazing, meager because the natural rainfall is a scant 8 inches or so per year (Table 3). In the 1980s, the first wells were drilled and by 1984 a few hundred acres of orchards were planted in the northwestern part of the proposed AVA area.

In 1991 and 1992 an additional 300-400 acres of orchards were planted in the southwestern part of the proposed AVA area facing Badger Coulee. This area continues to be farmed as orchard today.

The land that is now the Goose Ridge Estate Vineyard was owned by the state Department of Natural Resources (DNR), who began in the early 1980s to develop water rights, drill wells, and to lease the land for irrigated agriculture, with the income benefitting state programs. By 1985 a hundred acres or so of alfalfa fields can be seen on Google Earth images, irrigated by hand lines or wheel lines, farmed by Corrin Rathbun (personal communication, Bill Monson, 2017). By 1996 about 1,000 acres of large center pivot irrigated alfalfa fields were in production. But about this time, with the Washington wine industry growing quickly, the DNR began to develop additional water rights, drill more wells, and put a plan in place to offer more than 2,000 acres for long-term high income leases for vineyard development with subsidiary orchards.

Arvid Monson's roots and life were based in the cattle industry in the Yakima Valley and eastern Washington, but he was very forward thinking and took a huge leap to begin to plan to lease this huge area and go into grape and orchard farming in addition to cattle. He did the best thing he possibly could by asking Dr. Walter Clore, 'The Father of Washington Wine' (Exhibit 2.3) for help in assessing the Goose Gap-Goose Hill area for growing high-quality wine grapes. Dr. Clore told Arvid Monson that this land with irrigation water would be superior for grapes (two letters from Dr. Clore written to Arvid Monson in 2002 at age 90 and near the end of his life are reproduced as Exhibits 2.4 and 2.5; several others letters written earlier by Dr. Clore to Arvid Monson about the high suitability of the Goose Gap area for wine grapes are not included here).

In part because of Dr. Clore's strong belief in the suitability of the area for wine grapes and in part because of Arvid Monson's growing excitement to become part of the expanding success of the emerging Washington wine industry, by 1997 Arvid Monson had gone all-in on leasing the ground, arranging financing, hiring talented vineyard managers and a huge cadre of farm workers, and set about planting the vineyards and orchards that today total more than 2400 acres!

In just about 20 years now from the planting of the first grape vines at Goose Gap, the truth of Dr. Clore's prophesy shows in the successful cultivation of nine varieties of red wine grapes and seven varieties of whites (Table 1)!

Arvid Monson and his family immediately built a small winery to make estate wines from their grapes, producing their first wines in 2000 (Exhibit 2.6). Pioneering Washington cattleman and vineyardist Arvid Monson passed away in 2014 (Exhibit 2.7). Arvid's son Bill Monson and daughters Molly Stutesman and Valerie Monson have continued to shepherd

the vineyards and winery with a goal to grow fruit that expresses the *terroir* of their Goose Gap-Goose Hill property and to make wines that reflect that commitment to excellence. Today, their Goose Ridge Estate Vineyard sells fruit to more than 20 Washington wineries and their Goose Ridge Winery in the center of Goose Ridge Vineyard makes more than 50,000 cases of wine per year from estate fruit and more than 250,000 cases of other wines for the Washington wine industry (Table 1).

The proposed Goose Gap AVA area also is home to more than 100 acres of wine-grape vineyards of Aquilini Brands that were planted in 2014 (Table 1). In addition, there are about 700 acres of tree fruit orchards on the west end of the proposed AVA that were planted from the mid 1980s to the early 1990s and are owned by other companies. These orchards and other lands within the proposed boundary not yet planted (the total land area within the boundary is 8,129 acres) have high to very high vineyard quality potential, which will be described in the soils and climate sections below.

The unique history of the Monson family who pioneered the Goose Gap area for wine grapes and created perhaps the largest contiguous vineyard planting in the state with successful cultivation of 16 varieties of *Vitis vinifera* within the proposed AVA boundary since 1998 supports the establishment of a Goose Gap AVA. The recent acquisition of land in the proposed AVA by Aquilini Brands and their planting of more than 100 acres of Cabernet Sauvignon on that land (Table 1) is proof of the continued expansion of wine grape production here. And, with several other land owners having large parcels in the proposed AVA that currently have orchards or are in native sagebrush, it is likely that the next few years will see several hundred acres or more of new vineyards planted by one or more different owners.

(iv) Matching Two Sides of the Proposed AVA Boundary Exactly With Adjoining AVAs and the Third Side to Exclude an Adjoining Cold Valley Fills in the Developing Vineyard-scape in a Geographical and Viticultural Manner That Is Efficient and Logical

The Red Mountain AVA was approved in 2001 (BATF, 2001) and has become a premier AVA in the United States. It lies immediately to the NNW of the proposed GGAVA.

A petition to establish a Candy Mountain AVA was submitted in early 2017 (Pogue, 2017) for a fledgling viticultural area that is also adjacent to the proposed GGAVA (Figure 2b).

In the case of both AVAs, the boundaries were both *geographically correct to delimit each AVA area as well as using marks, features, and reference points that are printed on U.S.G.S. topographic maps* such as topographic contour lines, survey section lines, county roads, and drainages.

This being the case, we propose that the boundary of the Goose Gap AVA share a joint boundary with the Red Mountain AVA, with neither overlap nor underlap, from point 1 to point 4 of the GGAVA boundary description (Section 4 and accompanying marked USGS topographic quadrangle maps). And further, we propose that the boundary of Goose Gap AVA share a joint boundary with the Candy Mountain AVA, with neither overlap nor underlap, from point 7 to point 9 of the GGAVA boundary description.

Because each of the Red Mountain, Candy Mountain, and Goose Gap areas are distinct geographically, geologically, and historically from one another, having the boundaries adjoin exactly along common boundary lines is efficient and logical.

What then of the remaining parts of the proposed AVA boundary? What could be called the eastern boundary between points 9 and 11 of the boundary description (Section 4 and accompanying marked USGS topographic quadrangle maps) uses road alignments that follow drainage lines to separate Badger Mountain from Goose Gap and Goose Hill (Figure 2c).

Finally, what could be called the southern and very short western boundaries of the proposed AVA follow the railroad tracks that run along the northern edge of the Badger Coulee (dry valley) and then follow the 600-foot topographic contour back to the origin point. Placing the southern and western boundaries along these lines serve to separate the Goose Gap AVA, with it's sloping lands, well drained soils and excellent air drainage for wine grapes, from the Badger Coulee that is unsuited to wine grapes because it is a concave to flat valley floor that is a trap for cold air and would develop damaging high water tables under irrigation.

Thus in this subsection (iv), the final justification and proof that the proposed AVA boundary is the correct and best boundary is based on having almost half of that boundary adjoin but neither underlap nor overlap neighboring AVAs and then is based on the other half of the boundary of the AVA being placed to exclude the unrelated Badger Mountain and the cold valley of Badger Coulee.

SECTION 3. Distinguishing Features

In this *Section 3* we offer a three-part discussion because this petition proposes to establish a new AVA entirely within boundaries of the existing Yakima Valley AVA that in turn lies within the boundaries of the existing Columbia Valley AVA.

First, we will provide a brief *subsection (i)* in which we summarize the recent geologic history of the Columbia Plateau area that creates the foundations of the different terroirs or AVAs within the Columbia Valley.

Then in *subsection (ii)* we present information that identifies attributes of the proposed AVA *that are consistent with* the existing, larger and older Yakima Valley and Columbia Valley AVAs, such that grapes grown in the new AVA, if approved, should continue to be entitled to use either of the older appellations on their labels.

Then in *subsection (iii)* we explain how the proposed AVA is yet also distinctly different *from areas just outside of it* as well as uniquely different *from existing nearby AVAs* such that it deserves, actually it *requires*, separate recognition as a new AVA.

(i) Brief Background of the Geography and Geology of Eastern Washington's Winegrowing Areas, Including the Area of the Proposed AVA

About 96 percent of the vineyards in Washington State are situated on the Columbia Plateau in eastern Washington, the area of relatively low relief that is bordered on the north and east by the Rocky Mountains and on the west by the Cascade Mountains (Figure 1). The Cascade Range runs north to south through the state and forms the boundary between western and eastern Washington. Since the predominant source of rainfall is cyclonic storms formed over the Pacific Ocean off of the Washington coast that are carried eastward across the state by mid-latitude westerly winds, the Cascade Range also creates a rain shadow to the east on the Columbia Plateau, reducing annual rainfall there to less than about 10 to 20 inches annually.

The Columbia Plateau is an area partially coincident with but much larger than the Columbia Valley AVA shown on Figure 1. The plateau is underlain by hard black basaltic lava bedrock that was erupted mostly between 17 and 15 million years ago. The basalts are thousands of feet thick over this vast area. Subsequent to their eruption they were folded over a period from about 15 to 2 million years ago by tectonics forces into a series of approximately east-west trending ridges or mountains (*anticlines* in geologic parlance) that are separated from one another by valleys. For example, the Yakima Valley AVA is bounded

by Yakima Ridge on the north and by the the Horse Heaven Hills backbone ridge on the south (Figure 4a).

The entire area of east-west folded hills and valleys from the Beezley Hills to the north of the Ancient Lakes AVA, to the Frenchman Hills (site of the pending Royal Slope AVA petition: Busacca, 2017), to the Saddle Mountains that bound the Wahluke slope AVA (Busacca, 2004) and south to the Yakima Ridge and Horse Heaven Hills AVA (Busacca assisting Corliss, 2002) are collectively known as the 'Yakima Fold Belt' described earlier in the petition (see Figure 1 and the map on page 2 of Exhibit 2.2).

The different areas of wine production in eastern Washington and thus most of its AVAs are created by the different and unique locations of each within the east-west trending valley-and-ridge systems. That's because the different locations lead to differences in dominant elevation, slope, and aspect, etc. of the different AVAs and in turn differences in heat accumulation, winds, air flow and more.

Different places in the Columbia Valley also have differences in soil types based on their location within the ice-age megaflood system of the Pacific Northwest and location relative to regional post-glacial wind patterns that re-deposited sand and silt from the floods.

Ice-age megafloods have been hugely important in the history of the Columbia Plateau. They both eroded the Columbia River Basalts into unique landforms in eastern Washington and deposited millions of tons of exotic gravel, sand, and silt on the plateau and these sediments form the dominant parent materials of the soils of Washington's vineyards.

For reference, different parts of the geologic system on the Columbia Plateau during the Ice Ages (Pleistocene Epoch) are described in varying detail in Meinert and Busacca (2000, 2002), Busacca (1989, 1991), McDonald and Busacca (1988), Sweeney, Busacca, and Gaylord (2005), and Busacca and McDonald (1994). Popular books by Allen and others (2009) and Alt (2001) describe the entire geologic system of Lake Missoula and the Channeled Scabland.

To summarize here in a brief sketch: A lobe of the western Canadian ice sheet moving southward in its N-S-trending valley blocked a major side drainage, the Clark Fork River, in northern Idaho during the height of the last Ice Age about 18,000 years ago. This damming created a huge temporary lake in western Montana dubbed by geologists "glacial Lake Missoula". This lake at its largest size held about 500 mi³ of water (an amount that is about 100 mi³ greater than that of Lake Ontario) behind an ice dam almost 2,000 feet high! The lake behind the dam of glacial ice filled up and the dam failed repeatedly about every 50 to 200 years over about a 5,000-year period. The continued southward movement of the glacier re-formed the ice dam after each flood until the end of the ice ages. The largest of

the more than 100 floods during this time were truly cataclysmic, creating some of the larger and perhaps the largest floods of water ever documented in earth history.

These floods overwhelmed the Columbia River drainage system and flowed to the southwest through today's Spokane Valley in NE Washington and out across the gently southwest-sloping platform of the basalt. The power of the repeated megafloods was so great that thousands of square miles of land between Spokane and the proposed AVA were stripped nearly bare of any loose rock or soil. The floods also gouged hundreds of huge, long, winding channels up to hundreds of feet deep into the basalt bedrock that extend for tens of miles across the Columbia Plateau. Today these are rocky, unfarmable dry valleys called 'coulees' (after the French '*couloir*'). This fantasy landscape was named the 'Channeled Scabland' by the geologist J Harlen Bretz, who rocked the profession of geology to its core in the 1920s when he proposed the prophetic and ultimately correct theory that the scablands had been formed by vast floods of water.

The floods deposited immense gravel bars where flow slowed along the high-energy paths of the floods to the Pacific Ocean (the 20-mi long gravel bar that is today the Wahluke Slope AVA is one example!) and deposited untold millions of tons of gravel, sand, and silt in the main valleys and along the course of the Columbia River all the way to the Pacific Ocean. Where the waters forced their way *upstream* into side valleys like Walla Walla and Yakima that were not in the direct path of the floods, quiet backflooding waters swelled up to heights of almost a thousand feet above the valley floors (Norman, Busacca, and Tessiere, 2004). In the slowly swirling and briefly standing waters in these side valleys, huge deposits of stratified sands and silts were laid down, filling the valleys with sediments up to a hundred feet and more in thickness. Today these areas of 'slackwater' sediments form terrace-like landforms raised above the modern river floodplains and they form the viticultural heart of the classic parts of the Walla Walla and Yakima Valley AVAs.

Strong prevailing winds eroded and transported the sands and silts in the flood deposits both during and *just* after the last ice age to form sand dune fields just down wind (to the east and northeast) of the main valleys, and further down wind they formed deposits of *loess*, the silty sediment from dust storms (Busacca and Others, 2003). Wind-formed sand dunes and loess cover the glacial sediments and even bare basalt bedrock to depths ranging from tens of inches to tens of feet in many of the areas where grapes are grown in eastern Washington. As a result, soils in which most vineyards are planted in eastern Washington have rooting zones that consist of either 1) deep, uniform windblown sand or silt; 2) windblown sand or silt over glacial sediments that themselves can be silty, sandy, or gravelly; or 3) glacial sediments. Basalt bedrock only rarely occurs within the rooting zone of vineyard soils.

(ii) Essential Attributes of the Proposed Goose Gap AVA Are Consistent With the Existing, Larger Yakima Valley and Columbia Valley AVAs

The climate, geology, soils, physical character and elevation range of the proposed Goose Gap AVA are fully consistent with the older and larger AVAs, such that the new AVA should remain a part of the existing Yakima Valley and Columbia Valley AVAs.

The entire Columbia Valley including the nested Yakima Valley AVA and the further nested proposed Goose Gap AVA lies in the rain shadow of the Cascade Mountains. This strongly limits rain and snow falling across the nearly 11 million acres of the Washington State part of the AVA. The Yakima Valley and Columbia Valley AVAs area, including the proposed AVA, thus all share an arid and semi-arid climate with cool to cold, wet winters and warm to hot, dry summers. All parts of the Yakima Valley and Columbia Valley AVAs receive less than about 20 inches of annual precipitation and average about 8 inches. With an average annual precipitation of about 7 inches, the proposed GGAVA is virtually the same as that of the enclosing Yakima Valley AVA as well as the nearby Horse Heaven Hills and Red Mountain AVAs (Table 2).

The Columbia Valley AVA ranges in elevation from about 150' to 2000' (and a little higher in a few places), whereas the proposed AVA ranges from 677' to 1339', so the elevation range, also, of the proposed AVA is consistent with the larger, enclosing AVAs.

Because of the warm dry summers with almost no rain for up to six months each year, virtually all of the vineyards in the Yakima Valley and Columbia Valley AVAs as well as the proposed GGAVA must be and are irrigated using drip irrigation systems. Careful application of irrigation water from drip irrigation systems in all three areas gives growers close control of all growth stages of grapevines. The result is that grape and wine quality is very consistent vintage to vintage in the Yakima Valley and Columbia Valley AVAs and also in the proposed GGAVA. The ubiquitous use of drip irrigation and the resulting consistent high quality of grapes are shared characteristic that indicate that the proposed AVA remain a part of the existing AVA areas.

Throughout the Yakima Valley and Columbia Valley AVAs, dry summers with bright sun and low relative humidity and moderate to strong winds through the vine canopy reduce pest pressure and reduce the need for pesticides. This is true also for the nested, proposed GGAVA and is another shared characteristic.

Hard winter freezes that can damage buds or even kill the above-ground part of grape vines are the major hazard to grape production in the Yakima Valley and Columbia Valley AVAs and this is also true of the proposed AVA. In the enclosing AVAs and the proposed

AVA; however, most vines are grown on their own roots rather than rootstocks and therefore can be trained back from the ground up in cases of severe damage.

Turning back to climatic data that we assembled in Table 2 and to the comparison group of the Yakima Valley, Horse Heaven Hills, and Red Mountain AVAs that either enclose or are adjacent to the proposed GGAVA, we see that elevation, mean annual air temperature, mean wintertime minimum temperature, and growing degree days all fall within relatively narrow ranges that are representative of the Columbia Valley as a whole.

Two commonly cited measures of suitability for *Vitis vinifera* are growing degree days (GDD) and cool-climate viticulture suitability index (CCVSI). Growing degree days (also called 'heat units') are calculated by subtracting a 'base temperature' of 50°F (grape vines are not photosynthetically active at temperatures below about 50°F) from the mean air temperature for each day, summed over the growing season from April 1 to October 31 (Winkler and others, 1974). Air temperature during the growing season is the primary driver of the rate of photosynthesis between temperatures of about 50°F and 95°F (Keller, 2015). For example, a day with a mean temperature of 80°F would tally 30 GDD for that day. Different varieties of *vinifera* have different optimal climatic planting zones as expressed through averages of GDD for different locations.

CCVSI was developed by research viticulturists at Cornell University and is the number of days from the last occurrence of temperatures of 29°F or lower in the Spring until the first occurrence of temperatures of 29°F or lower in the Fall. It can be thought of as a kind of 'extended growing season' measured between the last hard freeze (temps <29°F) in spring and the first hard freeze in fall. Larger numbers of total days in this case correlate with better sites to fully mature and ripen *vinifera*, although no absolute minimum or maximum cutoff in CCVSI value is specified.

In the case of GDD, the stations in the comparison group in Table 2: Yakima Valley, Horse Heaven Hills, and Red Mountain AVAs fall in the range of Winkler Region III (Winkler and others, 1974), that is from 3,001 to 3,500 GDD [Note: we rounded the 2009-2017 average of 2959 GDD up to 3,000 for the station representing the Yakima Valley AVA]

Winkler described Region III with phrases such as "...The moderate warm climate favors the production of grapes of favorable sugar content Excellent red wines of later maturing premium quality varieties are the rule here. White wines of fine quality may be produced in limited areas..." (Winkler and others, 1974, p. 67). The planting mix in Table 1 for the proposed AVA is dominated by the late ripening Cabernet Sauvignon and others such as Mourvedre and Petit verdot. The viticulturists and winemakers for the Goose Ridge Winery reported to us that these varieties consistently ripen fully and produce excellent wines. Similar spectacular success with these late-ripening varieties is known also

from the Yakima Valley, Red Mountain, and Horse Heaven Hills AVAs, attesting to the conclusion that the proposed GGAVA has growing conditions *that are consistent with* the existing, larger and older Yakima Valley and Columbia Valley AVAs.

Similarly, the CCVSI values for the Goose Gap/Red Mountain, Horse Heaven Hills and Yakima Valley AVAs all range closely from 220 to 262 days (Table 2) , or more than seven months to about 8.5 months of growing season between hard freezes. By this index as well, the proposed GGAVA has growing conditions *that are consistent with* the existing, larger and older Yakima Valley and Columbia Valley AVAs.

The bedrock underlying *the entire area of the Yakima Valley and Columbia Valley AVAs AND the proposed GGAVA* is Miocene-age Columbia River Basalt. Moreover, virtually every part of the Columbia Valley AVA including the Goose Gap area was shaped by Ice-Age megafloods. The effects included massive erosional sculpting of the basaltic bedrock throughout the Columbia Valley into unique ‘scabland’ landscapes and also the importation of millions and millions of tons of exotic sediment into the Columbia Valley that profoundly changed and improved the soils that grapes are grown in today. The sediments are ‘exotic’ because they were derived from granitic and metamorphic bedrock terrains of the Rocky Mountains and thus have entirely different mineralogy and character than sediments from the native basalt.

Referencing Table 3 and considering especially those soil types that make up *more than about 5 percent* of any of the comparison group of the Yakima Valley, Horse Heaven Hills, and Red Mountain AVAs and including the proposed Goose Gap AVA are formed either from sediments from the floods (Scootene Series); from dune sand (Quincy Series) or loess (Shano Series, Ritzville Series); dune sand in the upper part of the profile with flood sediments in the lower part of the profile (Hezel Series); loess in the upper part of the profile with flood sediments in the lower part of the profile (Warden Series); or have basalt or fractured basalt at some depth beneath the surface or forming rubble layers within the soil profile (Kiona Series, Prosser Series, Starbuck Series)).

This commonality of glacial-flood / wind-borne soil materials alone should be sufficient, along with the common rainshadow effects and other commonalities of climatic conditions and viticultural suitability indices, to conclude that the proposed GGAVA has features *that are consistent with the existing, larger and older Yakima Valley and Columbia Valley AVAs*, such that grapes grown in the new AVA, if approved, should continue to be entitled to use either of the older appellations on their labels.

In all important ways, then, the key attributes of the proposed Goose Gap AVA: physiographic, climatic, geologic, soils, and viticultural conditions are entirely consistent with those of the larger, enclosing Yakima Valley and Columbia Valley AVAs, so when the

new AVA is approved, grapes grown within it should be entitled to use the existing Columbia Valley appellation as well as the new one.

(iii) Attributes of the Proposed Goose Gap AVA That Are Sufficiently Distinct from Existing AVAs and From Areas Just Outside of the Proposed AVA that it Requires Recognition as a New AVA

The Washington State part of the Columbia Valley AVA is nearly 11 million acres; a much smaller area is in Oregon. At present, ten AVAs nest within the Columbia Valley: Lake Chelan, Ancient Lakes, Wahluke Slope, Naches Heights, Yakima Valley, Rattlesnake Hills, Snipes Mountain, Red Mountain, Horse Heaven Hills, and Walla Walla Valley (see Figure 1).

In this subsection we document the significant and unique characteristics of the proposed AVA that show that it is deserving of AVA designation, but to do this, we compare it not to broad generalizations of the entire Columbia Valley. Instead, first for physical and cultural geography and geology we draw specific contrasts with the Yakima Valley AVA within which it will nest, with the Red Mountain AVA with which it shares a boundary, and with the Horse Heaven Hills AVA that closely adjoins it (see Figure 4a and inset map).

Then for climate and general geography we compare it with the nearest locations where there are WSU AgWeatherNet weather stations just outside of the proposed AVA to the west, southwest, southeast, and northeast.

Then finally, for soils we draw specific contrasts with the Yakima Valley AVA within which it will nest, with the Red Mountain AVA with which it shares a boundary, and with the Horse Heaven Hills AVA that closely adjoins it.

Physical and Cultural Geography Require Recognition of the Goose Gap Area as a New AVA. The Yakima Valley is huge and uniquely shaped like an inverted funnel (Figure 2d) and as such it narrows dramatically *downstream* to a narrow bedrock channel before the proposed AVA; moreover, it's path turns abruptly north and *away from the proposed GGAVA* at Benton City (Figures 2d, 4a). These two factors together separate the Goose Gap area from any real cultural or geographic connection or identity as being part of the Yakima Valley.

Let us explain: Although technically the proposed AVA area is part of the Yakima Valley watershed, it is not easily recognized as such. As stated, the Yakima Valley is huge: it is more than 60 miles long from west-northwest to east-southeast and almost 15 miles wide at its widest point. In Figure 2d we outline the area of irrigated lands to make these estimates of the size of the 'valley'. And unlike most river valleys it is widest at its *upper end* and

narrows dramatically downstream Norman, Busacca, and Tessiere, 2004), especially in the last 20 miles or so from the town of Grandview to Benton City (Figure 2d). The unusual shape is the result of the complex tectonic history of folding and faulting of the basaltic bedrock.

In terms of cultural identity and practical geography, vineyard areas in the Yakima Valley near towns like Buena, Zillah, Sunnyside, Grandview, Sunnyside, and Prosser universally would be thought of as being 'in the Yakima Valley'. However, travelling east on Interstate-82, the valley narrows so much from Prosser to Benton City that *for all practical purposes the valley ends at Benton City*.

The impact of this is that continuing eastward on I-82 from Benton City to the Tri Cities takes one through the proposed AVA area, but there is no practical identity or recognition culturally or geographically that this area is part of the Yakima Valley.

And this second factor completes the geographic as well as cultural separation of the proposed AVA area from the Yakima Valley: at Benton City the Yakima River turns 90 degrees to the north and *flows away from the AVA area and out of sight of it and the remainder of the nearly 25 miles of the course of the river before it joins the Columbia is completely hidden from view from anywhere in the proposed AVA!* (Figure 4a). The reality of this disconnect comes into focus when looking at Figure 2d to see where the proposed AVA lies relative to the 'Yakima Valley'.

Unique Geology Requires Recognition of the Goose Gap Area as a New AVA. On pages 10-12 in Section 2 above of this petition we explained several aspects of the geology that make the proposed AVA area of the combined Goose Gap-Goose Hill landscape truly unique in all of the Yakima Fold Belt AND that make the optimal planting zone for wine grapes exactly to opposite of all other viticultural areas in the enclosing and nearby AVAs. Here we slightly revise and restate the same essential, factual information that support and effectively require its recognition as a new and separate AVA. We highlight the revised and restated text below in green.

The geography and geology of the proposed Goose Gap AVA area is unique in all of the Yakima Fold Belt. Dr. Steve Reidel who is perhaps *the foremost expert in the world on the bedrock geology of the Columbia River basalts in eastern Washington* (see for example, Reidel and others, 2013; or Camp, Reidel, and others, 2017) wrote a lengthy email reply to a question we asked him about why the Goose Hill-Goose Gap landform is so different from all the other hills and slopes in Yakima Fold Belt in having the plantable slopes on the *north and northeast sides instead of on the south and southwest sides* as is the case for virtually all other planted areas in the region such as Red Mountain. His full email can be found as Exhibit 2.2.

Dr. Reidel said 'Goose Hill is an odd ridge' (Reidel's own choice of words, Exhibit 2.2). To summarize the crux of his email to us, it's an anomaly because *it's crest runs East-West, whereas all the other ridges and hills in the local area (Red Mountain, Candy Mountain, Rattlesnake Ridge, etc.) follow the N50°W trend of the Olympic-Wallowa Lineament (OWL)*, which is some kind of fundamental crustal boundary in the Pacific Northwest (PNW). To see this, compare on the inset map in Figure 4a the NW-SE orientation of the backbone ridges of Red Mountain and Candy Mountain to the E-W orientation of the backbone ridge of Goose Hill.

And just as important as the one-of-a-kind east-west orientation of the backbone ridge of the proposed AVA area is that it's a different kind of a tipped or rotated fault block from all others in the Yakima Fold Belt in that it's gentle slopes, and as such the prime grape-planting zones are its north and northeast slopes rather than its southwest slopes!

Whereas the faults that bound the OWL and the Horse Heaven Hills are deep-seated crustal faults, geologists think the faults that bound the Goose Gap-Goose Hill block are detached from the main structures of the OWL as well as the HHH. This means that the faults that bound the proposed GGAVA area thus are 'rootless', meaning that they don't go very deep and may just die out close to the surface (Stephen P. Reidel, Washington State University, written communication, September 9, 2016; Exhibit 2.2). And this special fault history is responsible for the reverse slope steepness pattern.

To restate this critically important and truly unique characteristic of the Goose Gap-Goose Hill area, it is an anomaly compared to all other hills, small mountains, or ridges where grapes are grown in the entire Yakima Fold Belt because its hill-shape cross section has the *opposite symmetry or shape* from the others: Red Mountain, Rattlesnake Ridge (part of the Yakima Valley), and the Horse Heaven Hills, for example have virtually all of their vineyard development on classic, gentle southwest-facing slopes, whereas their northeast slopes are too steep to farm (see Figures 4a and 4b, and Figure 5b).

Just the reverse is the case for the 'odd ridge' of the Goose Hill-Goose Gap fault block hill. It is steep on the south- and southwest-facing slopes, too steep in fact to farm except on the very low-elevation toe slopes where there are some apple orchards. In contrast, it is slopes moderately on the north- and northeast-facing sides that descend smoothly to the nearly flat but still north- and northeast-facing major vineyard area on Goose Gap (see Goose Gap topographic cross section in Figures 4a and 4b and the end-on view of Goose Hill and Goose Gap in Figure 5a). It forms an amazing contrast when one compares the producing vineyard zones of Goose Gap-Goose Hill versus Red Mountain (Figure 5a versus 5b).

The Goose Hill-Goose Gap landscape system is the only large vineyard development in the lower Yakima Valley-Red Mountain-Candy Mountain-Horse Heaven Hills area to be planted dominantly on north and northeast slopes (Figure 5a). This key characteristic makes the proposed Goose Gap AVA unique and worthy of AVA recognition.

Climate and General Geography of the Areas Just Outside of the Proposed AVA to the West, Southwest, Southeast, and Northeast Support Goose Gap as a New AVA. In Table 2 we have compiled weather data for 2009-2017 from eight of the approximately 180 fully instrumented, recording weather stations in the AgWeatherNet (AWN) system of Washington State University (Table 2; source data <http://weather.wsu.edu>).

We organized the station data in Table 2 to highlight several measures of climate suitability for wine grapes. We did this for the AWN station closest to the proposed AVA area to serve as a proxy for AVA climate in the blue-shaded row; compiled the same information for the most pertinent AWN stations just outside of the area to the west, southwest, southeast, and northeast in the yellow rows; and for the enclosing Yakima Valley AVA, the the nearby Horse Heaven Hills AVA, and for the Walla Walla Valley AVA in the green rows. The locations of all of the AWN stations in Table 2 can be found Figure 4a in white script.

Note here at the outset that the nearest, best AWN weather station to serve as a proxy for the proposed AVA area is the Benton City Station. This station is in the Red Mountain AVA but is less than a mile from the nearest point of the GGAVA (Figure 4a, inset map). We consider in most macro-climatic measures, such as those we have compiled in Table 2, the climate of the proposed AVA is well represented by the data in Table 2 for the Benton City station, *with the exception of solar radiation discussed later in this subsection.*

Several measures of climate in Table 2 serve to distinguish clearly the proposed Goose Gap AVA from four neighboring locations just outside of the AVA boundaries. The nearest AWN stations are 'WSU Headquarters' 13 miles to the west; 'Triple-S' 3 miles to the southwest; 'Badger Canyon' 4 miles to the southeast; and 'North Pasco' 10 miles to the northeast.

Each also is in a highly contrasting landscape position or geographic location compared to the proposed GGAVA: We have written earlier in this petition about the proposed AVA area to describe that it has generally convex upland landscape positions with dominant vineyard slopes that fall to the north and northeast and that all enjoy substantial elevation above cold-trapping concave areas outside of the AVA that give from 250 feet to 700 feet of 'fall' for cold air to drain off of the vineyards of the proposed AVA.

In contrast: 1) The WSU-HQ location, although it's in the Yakima Valley AVA, is in the trough of the Yakima Valley near the Yakima River itself at almost the lowest local elevation in that part of the valley. And also it's located just where the Yakima Valley is at its

narrowest and most constricted so that cold air draining down valley from more than 40 miles to the west gets trapped in winter. Looking at the climate data in Table 2, the contrast between the unfavorable HQ site and the favorable AVA area shows up in *570 GDD fewer at HQ*, fewer days hotter than 95 degrees in summer, and more days below freezing in winter, as well as an 11-day shorter CCVSI growing season than in the AVA area. This is clear differentiation that shows that the proposed AVA has a viticultural climate quite different from other parts of the enclosing Yakima Valley AVA.

2) The Triple-S weather station is in the Horse Heaven Hills AVA and is up and over the backbone ridge of the Horse Heavens from the proposed AVA area (Figure 4a). It's at a high elevation of 1,491 feet where, despite its southwesterly aspect, it is too cold to ripen any of the desirable late-season ripening red grapes like Cabernet Sauvignon that are the signature grapes grown in huge quantities in the GGAVA (Table 1). And another contrast is that the area of the Triple-S weather station, despite being only 3 miles to the southwest lacks deeded water rights. Turning to Table 2: in contrast to the GGAVA area, *the Triple-S station has 616 GDD fewer*, 16 fewer days hotter than 95 degrees in summer and 22 more days below freezing in winter, as well as a 25-day shorter CCVSI growing season than the AVA area. And with an annual wind run of 70,000 miles, it is more than one-third more windy than the AVA area ,making it potentially a site where wind would damage tender grapevines.

3) The Badger Canyon weather station is in the bottom of Badger Coulee to the southeast of the proposed AVA . It is within the Columbia Valley AVA. Because it is located only 4 miles southeast of the proposed AVA and at similar elevation (yet is on the floor of Badger Coulee), it has similar climatic indices to the proxy station we use to represent the AVA area (Table 2). Its valley-bottom position, however, absolutely eliminates it from vineyard development because of pooling of cold air in winter that increases the risk of winter kill of vines to unacceptable levels, and other concerns such as an induced high water table if put under irrigation.

4) The North Pasco location is about 10 miles to the northeast of the proposed AVA. It is only about one-half mile from and a couple of hundred feet in elevation above the Columbia River and is in the Columbia Valley AVA. It is located in a very large area of deep wind blown sand-dune derived soils and has vineyard development potential (in fact there are established vineyards within one-quarter mile of it). Thus it's landscape position, deep sand soils, and its location so close to the trunk river of the whole Northwest, the Columbia, make it totally different from the area of the proposed AVA.

Referring to Table 2, North Pasco records similar annual tallies of GDD (3,302 for NP versus 3,359 for GGAVA); however, it's proximity to the 'lake effect' created by the huge volume of the Columbia River leads to some predictable but nonetheless surprising contrasts with the

proposed AVA area: because of the heat reservoir of the river's water the site is warmer in winter, more moderated in summer, and have a longer growing season than the GGAVA. And indeed, Table 2 shows that even though it is at about the same elevation as the proposed AVA, it has 23 fewer freezing winter days (66 versus 89) than the AVA, has only 11 compared to 28 days hotter than 95 degrees in summer, and its CCSVI (again, days between last hard freeze in spring and first one in fall) is a huge 29 days longer than in the AVA area (256 versus 229).

So in conclusion, in all compass directions just outside the proposed AVA area, multiple climatic parameters as well as a host of geographic landscape attributes totally separate the area of the proposed AVA from its surroundings.

Climate and General Geography of the Enclosing Yakima Valley AVA, and of the Adjoining Horse Heaven Hills AVA and Walla Walla Valley AVAs That Also Represent the Columbia Valley AVA Are Sufficiently Different to Support Goose Gap as a New AVA. In Table 2 we also compiled data for the Buena, Canoe Ridge, and Walla Walla Awn stations to represent, respectively, the main viticultural areas of the enclosing Yakima Valley AVA, the Horse Heaven Hills AVA, and the Walla Walla Valley AVA.

Comparing the GGAVA proxy station with the Buena station in the heart of the mid Yakima Valley grape production area, Buena has 400 GDD fewer per year, enough to require a shift of grapes grown to earlier-ripening varieties, it has a similar CCSVI but has one-third fewer very hot days in summer, has on average 16 more days below freezing per winter, and is almost 5 degrees cooler at night during grape ripening than the proposed AVA. Clearly the proposed AVA has a measurably warmer viticultural climate than the index station for the Yakima Valley.

The Canoe Ridge station is in the most well established grape growing section of the Horse Heaven Hills AVA in the famed Canoe Ridge Vineyard of Chateau Ste. Michelle.

Comparing the GGAVA proxy station with Canoe Ridge, GDD are similar at around 3,300 but the Canoe Ridge location is very close to the Columbia River so shows a profound 'lake effects' climate with a CCSVI that is 35 days longer than the GGAVA, has twelve fewer very hot days in summer and twenty-four fewer days below freezing in winter than the GGAVA.

The last comparison we make is to the Walla Walla station in the Walla Walla Valley AVA. It is one of the higher-elevation parts of the greater Columbia Valley AVA at almost 1,200 feet. Perhaps the most striking contrast with the GGAVA is that it receives more than twice the annual precipitation at 17 inches as a result of its windward position at the foot of the Blue Mountains. The higher elevation results in a viticultural climate with about 400 GDD fewer than the proposed AVA (Table 2). It has fewer very hot days in summer but, perhaps

surprisingly it has a slightly *greater* CCSVI, *fewer* freezing days in winter, and a *slightly warmer* mean winter minimum temperature than the proposed AVA.

Differences in Slope Aspect of Planting Areas of the Proposed Goose Gap AVA Compared to Those of the Adjoining Red Mountain AVA Create Differences in Solar Radiation and Result in Differences in Maturation and Harvest Date of Grapes. The viticulturists and winemaker at Goose Ridge Estate Vineyard and Winery told us that harvest dates commonly are as much as a week later for main varieties such as Cabernet Sauvignon at Goose Gap compared to Red Mountain (the winery takes in grapes and makes wine from both areas every year). The winemaker further told us that he tasted and measures subtle but consistent differences in the character of finished wines made from the same grape varieties from the two areas.

Differences in dominant soil types, discussed next, may play a role, but we suspected that slope *aspect*, the direction the dominant planted slopes face, might be the major factor, so we made calculations of the annual solar radiation (amount of sun's energy available to drive photosynthesis) at three representative locations in the main planted areas of Red Mountain and three representative locations in the main planted areas of Goose Gap-Goose Hill (Figure 6) and present the results in Table 4.

What we found was that aspect does in fact influence the energy available for grape growth and ripening. With its dominant north and northeast-facing vineyards, the proposed AVA receives on average 980,500 Wh/m²yr⁻¹ (watt-hours per square meter per year) whereas the dominant south and southwest-facing vineyards at Red Mountain receive on average 1,025,867 Wh/m²yr⁻¹. This is a difference of about 5%, which sounds small, but a difference of 5% less energy over a 6-month growing season can equate to a difference of as many as 9 days in ripening date. The longer ripening period for GGAVA grapes, in turn, could be responsible for the observed *sensory differences* in finished wines from the same varieties from the two adjacent areas!

The differences in viticultural climate indices demonstrated in the preceding subsections between the proposed GGAVA relative to these enclosing and nearby AVAs are fundamental to the recognition that both the Yakima Valley and Columbia Valley AVAs are complex and that the Goose Gap area has its own climatic identity deserving of AVA status.

Soils as Distinguishing Features of the Proposed AVA. The contrasts in geology and physical features of the proposed AVA documented above are striking when considered in comparison to, for example, the ultra high-energy megaflood landscape of the mega-alluvial fan that forms the Wahluke Slope AVA or the quiet-water backflood sediment deposition zones of the main part of the Yakima Valley and Walla Walla Valley AVAs, or even the scabland coulees like Badger Coulee that surround parts of the proposed AVA.

It follows then that the major soil types and their abundance in the proposed AVA also stand in clear contrast to the surrounding areas and AVAs and add weight to the case that the proposed area should be granted AVA status. In Figure 7 we have simplified the very complex patterns of soils in the proposed AVA as mapped in the USDA NRCS (former SCS) soil survey of Benton County, Washington to fashion a general map for discussion.

In Table 3 we have tabulated the acreage and percent of the AVA area of each of the soil series in the proposed AVA area along with the percentages of a larger set totaling 33 soil series that represent also the main soils in the Red Mountain, Yakima Valley, and Horse Heaven Hills AVAs. The georeferenced vector digital data we used to create Figure 7 and tabular digital data we used to compile Table 3 were extracted from the Soil Survey Geographic database using Soil Data Viewer 5.2 (USDA NRCS, Lincoln, NE).

We have highlighted nine of the soils in graduated blue tones across the Table 3 to bring out some key differences in abundance of different soil types among the 4 areas. In aggregate these nine soil series make up between 53% and 97% of the area of these AVAs. Official soil series descriptions for these soil series are included as Exhibits 3.1 through 3.12, taken from the USDA-NRCS website (<https://soilseries.sc.egov.usda.gov/osdname.aspx> accessed on November 4, 2017).

There are 11 different soil map units in Figure 7 in part because the Warden and Shano series soils each have two soil texture phases that we mapped separately. Conversely we combined the mapped area of two similar soils, Hezel and Quincy, into one map unit that makes up about 8% of the AVA area. And we also combined the mapped area of two other, very minor soils, Burke and Koehler, into a single map unit that makes up just about 1.5% of the AVA area in Figure 7. Just five soil series: Warden, Shano, Kiona, Hezel, and Prosser make up almost 95% of the AVA area (Table 3). What's more, nearly 85 percent of the area planted to vineyards is on just two of the soils: Warden and Shano.

The most abundant soil in the AVA area is the Warden that makes up 65% of the AVA area. Warden soils have about 20 inches of wind blown loess in the upper part overlying layered or stratified silts and fine sands from Missoula Floods in the lower part. The effective rooting depth of the Warden soil in all cases is 6 feet and in much of the area is much deeper. Warden soils have no hardpans or other root restrictive layers and are very highly prized for grapes such as Cabernet Sauvignon (Dr. Wade Wolfe, personal communication, 2006).

How were the parent materials of the Warden soils laid down? Missoula-Flood floodwaters repeatedly filled the Pasco Basin (Tri Cities area) and Yakima and Walla Walla Valleys during the late Pleistocene when floods slowed, ponded, and backflooded into

these areas behind the tall narrow canyon opening at Wallula Gap (see WG in Figure 4a). This caused at least the largest of the outburst floods to create a temporary lakes that filled the area of the proposed AVA to depths of 1,000 feet and more. Huge quantities of silt and sand in layers were deposited out of the slow moving or standing water. After the end of the last floods about 12,000 years ago, loess dust from massive dust storms accumulated in the post-glacial period (the Holocene Epoch) over the top of the flood sediments to form the 'loess cap' on the soil.

Shano soils make up about 7% of the AVA area and are also highly prized for vineyards along with the Warden soils. Shano soils are formed in deep wind-blown post-glacial loess throughout their entire rooting depth to many feet. They tend to occur at elevations above the highest ponding of floodwaters (pink area on top of Goose Hill, Figure 7) where the quiet water or 'slackwater' sediments did not reach.

Warden and Shano soils are classified as *Aridisols* in the U.S. Soil Taxonomy (Soil Survey Staff, 1999). By definition, Aridisols occur in an *Aridic* (desert-like) soil-moisture regime and have undergone enough weathering and soil formation to have formed subsoil horizons such as cambic, calcic, or duripan horizons (Bw, Bk, and Bkqm, respectively, in the profile descriptions in Exhibit 3). The "*id*" taken from the word "*arid*" is used as a formative word element in building the somewhat daunting full taxonomic name of an Aridisol such as the Warden series: "Coarse-silty, mixed, superactive, mesic Xeric Haplocambic*ids*", helping to recognize the soil order in the longer name.

Aridisols are widespread in the Columbia Valley (Boling, Frazier, and Busacca, 1998) including at Goose Gap. Aridisols in this area are excellent for viticulture because with their silt loam to sandy loam textures they are always well drained. In addition they have very low amounts of humified organic matter (naturally occurring form of soil nitrogen) so natural vine vigor is low, which contributes to an excellent balance of leaf area to grape crop load for high fruit quality. Aridisol soils are excellent for viticulture also because they have low natural soil moisture due to the aridic regime, so that winegrape growers can control vine development almost completely via the timing and amounts of drip irrigation water applied during the growing season.

Another Aridisol, Kiona Series, makes up about 9% of the proposed AVA and is formed in loess and rubble from fractured basalt generally on the south-facing slopes that are in most cases too steep to farm (Figure 7). Still another Aridisol is the Prosser series that formed in loess mixed with flood sediments that total only about 30 inches of soil thickness over basaltic bedrock. In Prosser soils, the underlying basalt is fractured and is not plugged by a hardpan, so the soils remain well drained, are excellent for wine grapes, and can provide a different character to the grapes grown in them compared to very deep soils like the Shano.

The largest area of Prosser soils is in the Goose Gap proper to the east of I-82 and has been fully planted to vineyards.

Hezel and Quincy series soils form a complex of two soils together in selected landscape areas that all together make up about 8% of the AVA area. Quincy is formed in deep wind blown sand (think sand dunes) reworked from flood deposits in post glacial times and Hezel has a 2-part soil profile with wind-blown sand in the upper 18 inches over stratified silts and sands from the floods extending from 18 inches to many feet. Because of the transient, wind-erodible nature of these kinds of soils and their lack of developed soil horizons, they are classified as *Entisols* (think recent).

Huge differences are apparent in soil abundance among AVAs that add weight to the case for AVA designation for the Goose Gap area.

For example, Warden soils make up a larger percentage of the proposed AVA (65.3%) than in any of the other comparison group of AVAs in Table 3. In contrast, they make up 46% of the Red Mountain AVA soils and less than 25% of the Yakima Valley and Horse Heaven Hills AVAs (Table 3). Given that Warden soils are arguably the best suited soils for Cabernet Sauvignon and that grape's primacy in demand for different grape varieties, this gives the proposed AVA area the potential to make the best wines from the grape.

For further example, Hezel and Kiona soils make up about 7% and 9%, respectively, of the proposed AVA, whereas those two soils make up almost 33% of the soils in the Red Mountain AVA, yet only about 5% in the huge Yakima Valley AVA (Table 3).

In opposite contrast, Scootenev and Starbuck series soils make up about 11% and 7%, respectively, of the Red Mountain AVA, yet in the proposed AVA with which it shares a boundary, *the Scootenev soil is absent* and Starbuck makes up only about 1% of the soils.

Another striking difference in abundance of soil types from AVA to AVA is the Ritzville soil, which also is a deep soil formed in loess like Shano, yet Ritzville is a *Mollisol*, a true prairie soil formed in a wetter climatic zone under perennial grasses and as a result the topsoil is blackened by humified organic matter. Ritzville soils constitute almost 30% of the area in the Horse Heaven Hills AVA, yet are totally absent from the proposed AVA and Red Mountain and are only 3.5% fo the Yakima Valley soils (Table 3).

In summary, a distinctive set of geologic, geographic, climatic and soils attributes set apart the proposed Goose Gap Viticultural Area from the comparison group of other AVAs nested near it or enclosing it in the Columbia Valley AVA, making it worthy of recognition as a new and separate viticultural area.

The unusual shape of the Yakima Valley and the abrupt turn the Yakima River makes at Benton City mean that culturally and geographically the proposed Goose Gap AVA area is simply not thought of as being part of the Yakima Valley.

Important differences also have been documented in the Goose Gap AVA area having east-west orientation of its backbone ridge in contrast to the N50°W backbone ridge orientation of all other AVA-bounding ridges in the Yakima Fold Belt.

Perhaps the single most important geologi-viticultural feature that sets the proposed AVA area apart is the fault block tilt direction that is opposite to Yakima Ridge, the Horse Heaven Hills Ridge, and the Red Mountain and Candy Mountain ridges leading to the plantable slopes of the GGAVA being on the *north and northeast sides* in stark contrast to ALL other AVA areas in the Yakima Fold Belt where the planting zones are on the *south and southwest*. And this difference leads to measurable differences in solar radiation that lead to differences in harvest dates and wine characteristics compared even to the nearby Red Mountain.

Climatic factors important to viticulture such as growing degree days, Cool Climate Viticultural Suitability Index, and frequency of very hot summer days and especially in slope aspect-driven solar radiation set it apart.

And finally, there are major differences in the percentages of major soil types in the proposed AVA area when compared even to the Red Mountain AVA with which it shares a boundary and these differences in soil abundance serve to differentiate the area from surrounding areas in all directions, both other existing AVAs and non-AVA areas.

In summary, multiple lines of evidence have been presented to demonstrate that the proposed Goose Gap AVA area *is sufficiently and distinctly different from surrounding areas that it deserves recognition as a new AVA*.

At the same time, an abundance of evidence has been presented to show that the proposed area *is similar in broad and important ways to the Yakima Valley and Columbia Valley AVAs* within which it nests, such that it should remain a part of the existing Yakima Valley and Columbia Valley AVAs and grapes grown in the proposed AVA area be permitted to be named as originating in any of the three AVAs.

SECTION 4. Maps and Boundary Description

(i) Maps - The exact boundary of the AVA is prominently and clearly drawn on the four maps in a light purple transparent color so as to not obscure the underlying features that define the boundary. The maps are U.S.G.S. 1:24,000-scale (7.5-minute series) topographic maps, in clockwise order from the northwestern part of the proposed AVA: the Benton City, Richland, Badger Mountain, and Webber Canyon topographic maps.

(ii) Boundary Description

Note that all legal descriptions of Section, Township, and Range are in reference to the Willamette Base and Meridian (WBM).

The following description is marked on the following U.S. Geological Survey topographic quadrangle maps, 7.5 minute series, 1:24,000-scale: Badger Mountain, Benton City, Richland, and Weber Canyon, all 2017.

1. Starting on the Benton City map, the proposed Goose Gap AVA (GGAVA) boundary begins in the NE $\frac{1}{4}$, Section 20, T9N, R27E. The northwest corner of the proposed GGAVA is Point 1 at the intersection of the 600-ft contour with an unnamed intermittent stream. Note that this Point 1 of the GGAVA is near the southwest corner of the established Red Mountain AVA (RMAVA), which is at the intersection of the 560-ft contour with the same unnamed intermittent stream. From Point 1 to Point 3 the GGAVA boundary is coincident with the southern boundary of the RMAVA.
2. From this starting Point 1, the boundary of the GGAVA follows the intermittent stream east until it intersects the 700-foot contour line at Point 2 in Section 16, T9N, R27E.
3. The boundary then is a straight line segment that trends ENE for approximately 0.67 mile until it intersects a 700' contour line at Point 3.
4. From Point 3 the boundary follows the 700-foot contour line east until the contour reaches the closest point of approach to the northeast corner of Section 15, and then it extends on a straight line for approximately 250 feet to the northeast until it intersects Point 4 at the northeast corner of Section 15, T9N, R27E. From this Point 4 the boundary of the GGAVA diverges from the boundary of the existing RMAVA.
5. From Point 4 the boundary then proceeds to the east on the northern section line of Sections 14 and 13, T9N, R27E until the boundary intersects the 600-foot contour at Point 5.

6. From Point 5 the boundary follows the 600-foot contour in a southeasterly then southwesterly direction until it intersects the centerline of the prominent intermittent stream in the NW $\frac{1}{4}$, Section 13, T9N, R27E at Point 6.

7. From Point 6 the boundary follows the centerline of that intermittent stream to the southwest for approximately 650 feet to Point 7 where the drainage is crossed by E Kennedy Road NE.

Note that Point 7 is coincident with the northwestern corner of the boundary of the proposed Candy Mountain AVA (CMAVA) and that from this Point 7 to Point 9 of this GGAVA boundary description, the boundary of the proposed GGAVA is coincident with the southwestern boundary of the proposed CMAVA.

8. From Point 7 the boundary of the proposed GGAVA continues to follow the centerline of the intermittent stream to the south-southeast until the drainage meets the northern edge of Interstate 82 (I-82) at in the SW $\frac{1}{4}$, Section 13, T9N, R27E at Point 8.

9. From Point 8 the GGAVA boundary continues to the southeast in Section 24, T9N, R27E following the northern edge of I-82 and passes onto the Richland map and then still following the northern edge of I-82 and onto the Badger Mountain map in Section 19, T9N, R28E.

The boundary continues along the northern edge of of I-82 and then along northern edge of the westbound on-ramp of Interstate 182 (I-182) in the SW $\frac{1}{4}$, Section 19, T9N, R28E until it intersects the centerline of Dallas Road at Point 9 in the SW $\frac{1}{4}$, Section 20, T9N, R28E. At Point 9 the proposed GGAVA boundary diverges from the boundary of the proposed CMAVA.

10. From Point 9 the GGAVA boundary follows the centerline of Dallas Road in a southerly direction for approximately 2 miles where it passes under I-82 and then the boundary continues west along the centerline of Dallas Road to Point 10 where it intersects the northern edge of the railroad tracks.

11. From Point 10 the GGAVA boundary follows the northern edge of the railroad tracks to the northwest for approximately 3 miles, passing as it does from the Badger Mountain map onto the Webber Canyon map in Section 36, T9N, R27E and continuing on the northern edge of the railroad tracks to where the boundary line intersects the western section line of Section 27, T9N, R27E at Point 11.

12. From Point 11 the GGAVA boundary turns north on that section line for about 300 feet to where it intersects the 600-foot contour at Point 12 and from there it follows the 600-foot contour line in a generally westerly then northerly direction, passing as it does from the Webber Canyon map onto the Benton City map in Section 20, T9N, R27E, and continuing on the 600-foot contour for a total of about 4.5 miles back to the starting Point 1 in the northwest corner of the proposed AVA.

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