RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS

MEMORANDUM

October 15, 2019

To: Ms. Donna Oldford
Plans 4 Wine
Sent via email (dboldford@aol.com)

cc: Mr. and Mrs. Wayne and Kara Fingerman
Via email (wfingerman44@gmail.com; karafinger@gmail.com)

Job No. 635-NPA01

From: Anthony Hicke, CHG
Richard C. Slade & Associates LLC (RCS)

Re: Response to Public Comments on Groundwater
Hard Six Cellars
Fingerman Winery Application P16-00333-UPC

Ref: Results of Napa County Tier 1 Water Availability Analysis (WAA)
For Hard Six Cellars
Napa County APN 020-100-014
1755 S. Fork Diamond Mountain Rd
Calistoga, Napa County, California
Prepared by RCS, dated February 9, 2017

Provided herein is a response by Richard C. Slade & Associates LLC (RCS) to groundwater related comments mentioned in two letters received from members of the public in response to the Hard Six Cellars, Fingerman Winery Application P16-00333-UP, located at 1755 S. Fork Diamond Mountain Rd. RCS prepared the referenced Tier 1 Water Availability Analysis (WAA).

Public Comment Letter 1
Letter from George Caloyannidis
2202 Diamond Mountain Road
Calistoga, CA 94515
Dated October 12, 2019

Item 6 in the Caloyannidis letter includes comments related to groundwater and the WAA prepared by RCS. Below, RCS quotes the comment from item 6, and provides a response.

Comment 1.1 – "The NEGD relies on the Napa County water table data to ensure that the water supply is adequate to accommodate the additional 0.49-acre feet (160,000 gallons) the proposed winery will require… relying on this type of hydrology may not be reliable…"

Response 1.1 – It is not clear to RCS what aspect of the RCS WAA document is being referenced by the phrase "Napa County water table data" mentioned in the letter. Water level data presented

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in the WAA include water level data collected from the two onsite wells. The comment may be referring to estimates of annual groundwater recharge at the property presented in the WAA. Those estimates were based on data derived from the report titled "Updated Hydrogeologic Conceptualization and Characterization of Conditions, Prepared for Napa County" prepared by Luhdorff & Scalmanini Consulting Engineers and MBK Engineers, dated January 2013. That document was prepared for Napa County, and includes watershed-specific hydrologic data, including estimates of deep percolation of rainfall in those watersheds. RCS used that data and applied further analysis to derive the estimated annual groundwater recharge for the referenced RCS WAA. RCS has successfully utilized this reference and methodology for multiple projects throughout Napa County since its publication, some of which have been subject to and passed peer review by other consultants.

Comment 1.2 – "The Tom Seaver vineyard at 1761 SF immediately bordering the subject property imports water on occasion when its well does not produce enough. Most wells on Diamond Mountain are very low producing. Our own 340-foot deep well produces 5 gallons / minute."

Response 1.2 – Pumping characteristics of wells constructed into the Sonoma Volcanics rocks are variable depending on a number of factors, including: the number, frequency, size and degree of openness of the fractures/joints in the subsurface; the degree of interconnection of the various fracture/joint systems in the subsurface; and other factors discussed on pages 6 and 7 of the referenced RCS WAA. Further, many operational factors can contribute to a decline in well performance overtime and the ability of a well to meet demand for vineyard irrigation, such as: biological growths and plugging of the well perforations; lack of regular well rehabilitation and pump maintenance; over-pumping of the well, etc. Further, the volume of water used for vineyard irrigation varies depending on the vineyard manager, varietal of grape being grown, and many other factors.

RCS cannot opine on the ability of the "Tom Seaver vineyard" well to meet irrigation or domestic demands, nor can RCS opine on the reported pumping rate of 5 gpm for the Caloyannidis well because specific data have not been provided for review and/or analysis.

However, for the Hard Six well, RCS provided specific data in the WAA with respect to the location, construction details, water levels, and performance of the Hard Six Winery well (referred to in the WAA as the "Primary well"). Vineyard irrigation demand for the existing onsite vineyards provided to RCS by Delta Engineering were reported by the vineyard manager for the Hard Six Vineyards. As noted on page 8 of the RCS WAA, "all of the existing onsite water demands are currently met by pumping groundwater from the existing Primary Well." Hence, the existing onsite well has been and continues to be used to meet the demands of the onsite vineyard and the existing onsite residence without importing water.

Comment 1.3 – "The applicant states that its well produces 15 gallons per minute. The County website does not contain information as to whether this production level has been certified and how it varies during the season."

Response 1.3 – As noted on Page 4 of the WAA document prepared by RCS, a short-term constant-drawdown pumping test of the Primary Well was conducted by Weeks Drilling and Pump in February 2015. The Primary well for the subject property, which is constructed to a depth of

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400 ft bgs, was pumped at a rate of 15 gpm with a maximum pumping water level of 250 ft below ground surface; that pumping water level was 150 ft above the bottom depth of the well.

As noted on Page 8 of the WAA, RCS conservatively assumed that "all future water demands at the subject property (irrigation, winery process, and domestic demands) will be required during the 16-week vineyard irrigation season. In reality, domestic use water demands (including both the winery and the onsite residence) will be required year-round (365 days/year), and all landscape and vineyard irrigation water demands will be required during a 16-week to 20-week (or longer) irrigation season each year." This means that the 7.5 gpm rate estimated to be necessary for the project is conservative, and that during the non-irrigation portions of the year, the pumping rate required of the onsite well would be lower than 7.5 gpm. That conservative 7.5 gpm pumping rate is half of the rate determined by the pumping test conducted by Weeks in February 2015. Hence, as stated on page 8 of the RCS WAA, "it appears that this well [the Primary well] is more than capable of meeting this [7.5 gpm] instantaneous groundwater flow demand."

To reiterate, as noted on page 8 of the RCS WAA, "all of the existing onsite water demands are currently met by pumping groundwater from the existing Primary Well." Hence, the existing onsite well has been and continues to be used to meet the demands of the onsite vineyard and the existing onsite residence.

Public Comment Letter 2
Letter from Charley and Gretchen de Limur
1771 Diamond Mountain Road
Calistoga, CA 94515
Dated October 14, 2019

The de Limur letter includes a section titled "Water and Wells" which includes comments related to groundwater and the WAA prepared by RCS. Below, RCS quotes the comments from the "Water and Wells" section and provides a response.

Comment 2.1 – "The impact on wells and the water table is not a quantifiable science. All of our wells around here are low flow wells and are subject to all sorts of conditions that are mostly out of our control. Drought, winter rain, runoff and usage are all part of living on a well."

Response 2.1 – The RCS WAA documents the available data related to the performance of the Hard Six Winery Primary well, including the short-term constant drawdown test data from February 2015. As noted above in the prior comment response, pumping characteristics of wells constructed into the Sonoma Volcanics rocks are variable depending on a number of factors, and may be affected by operational issues such as a lack of rehabilitation, among others. The RCS WAA provides an analysis of both average year and drought year rainfall, and quantifies groundwater recharge resulting from rainfall using industry standard techniques and recent hydrogeologic references.

Comment 2.2 – "Wineries are water intensive at best. Seven gallons are used for every gallon of product. A winery permit for 20,000 gallons of production means that just to make the wine, 140,000 gallons will be used per year. That is not inclusive of the winery's needs for personal sanitation, catering, landscape irrigation, nor does it include the applicant's personal home use, including a pool. All produced from a well that purportedly currently produces 15 gallons a minute."

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Response 2.2 – Page 8 of the RCS WAA provides an accounting of the existing and proposed water use estimated for the property as prepared by other project consultants. These estimates include not only the winery process water, but also the existing demands of the onsite residence and vineyard. Using the estimates provided on page 8 of the RCS WAA, and the conservative assumption that all water demands on the property would be met during a 16-week period each year, the well would need to be pumped at a rate of approximately 7.5 gpm to meet the average annual demand of 1.86 AF for all existing and proposed water demands in the future. This 7.5-gpm rate is half of the 15-gpm rate at which the short-term constant drawdown test was performed in February 2015.

Comment 2.3 – "Our neighbor, Tom Seaver has had to truck water into for his personal home use because he's experiencing low flow production. None of the wells up here on Diamond Mountain are great producers. And of all the issues that are most troubling in this application, it is the glossing over of this high water use activity."

Response 2.3 – As mentioned in Responses 1.2 and 2.1, no data have been provided that would allow RCS to opine on the viability of the Tom Seaver well for its intended uses. Various issues can affect the ability of a well to provide water. Further, the qualitative assessment of low flow production is relative to the uses for which the well is relied upon. As an example, perhaps the Tom Seaver property has a much higher water demand than other properties in the area, and the well cannot provide water at rates necessary for the site-specific demands. As mentioned above, RCS cannot opine on these matters without more site-specific data.

Notably, the RCS WAA provides specific well construction and pumping data for the Hard Six Primary well, and a detailed accounting of the estimated water demands for the existing and future property uses. The available data suggest that the onsite well is more than capable of providing water for the project.

From:	Gallina, Charlene
To:	PlanningCommissionClerk
Cc:	Hade, Jason; Anderson, Laura; Bordona, Brian
Subject:	FW: Hard Six Cellars
Date:	Wednesday, October 16, 2019 7:52:33 AM
Attachments:	RCS Hard Six WAA Comment Response 21091015.pdf

For the PC Meeting this morning.

Charlene Gallina
Supervising Planner
Napa County Planning, Building, & Environmental Services Department
(707) 299-1355

From: Donna Oldford <dboldford@aol.com>
Sent: Tuesday, October 15, 2019 6:44 PM
To: Hade, Jason <Jason.Hade@countyofnapa.org>; Gallina, Charlene <Charlene.Gallina@countyofnapa.org>; kara@napacountylandmarks.org; wfingerman44@gmail.com
Subject: Fwd: Hard Six Cellars

FYI, here's the letter response from Tony Hicke of Slade Associates. Tony will attend the hearing tomorrow. Sorry for last minute response into the record. We only received the letter of opposition earlier today.

Best,
Donna

-----Original Message-----
From: Anthony Hicke <anthony.hicke@rcslade.com>
To: Donna Oldford <dboldford@aol.com>
Cc: Kara Fingerman <karafinger@gmail.com>; Wayne Fingerman <wfingerman44@gmail.com>
Sent: Tue, Oct 15, 2019 6:11 pm
Subject: RE: Hard Six Cellars

Hi Donna,

Please see my comment response letter for the Hard Six project, attached.

Thanks,

Tony

Anthony Hicke, PG, CHG
Senior Groundwater Geologist
Richard C. Slade & Associates LLC
818.506.0418 Southern California
707.963.3914 Northern California
www.rcslade.com

-----Original Message-----
From: DONNA OLDFORD <dboldford@aol.com>
Sent: Monday, October 14, 2019 10:22 PM
To: Anthony Hicke <anthony.hicke@rcslade.com>
Cc: Kara Fingerman <karafinger@gmail.com>; Wayne Fingerman <wfingerman44@gmail.com>
Subject: Hard Six Cellars

Maybe a letter from you responding to the items in George's letter? Pretty clearly, he doesn't know what he's talking about. George is well known to the County, a self-professed expert in everything. Writes these very long anti-winery activist letters to all the newspapers. I don't want us to debate him At the hearing. Don't think the Commission will go there. A letter might be best. Thanks! I am available tomorrow, most of the day.

Cheers,
Donna

Sent from my iPhone