



March 21, 2023

Guillaume Fabre
Clos Solene Vineyard and Winery
2040 Niderer Road
Paso Robles, CA 93446

Subject: Hydrogeology and Groundwater Information

Dear Mr. Fabre:

Cleath-Harris Geologists (CHG) herein provides a technical review of the groundwater supply for the expansion of the Clos Solene winery (CUP ED22-132) (DRC2021-00025) (“Project”) located at 2040 Niderer Road, Paso Robles, CA 93446 (“Property:). The Project is described in detail in the Mitigated Negative Declaration prepared by the county. The qualifications of Timothy S. Cleath, Certified Hydrogeologist with Cleath-Harris Geologists, to provide this report are documented in Attachment A.

Project Access to Water Supply

Two active wells are on the Property—one used for the residence, winery and tasting room (Well #1) and one used for irrigating the vineyards (Well #2). Well #1 (250 feet total depth) was constructed in 1985 and was used for all purposes (domestic and irrigation of 7 acres) until Well #2 (600-foot total depth) was drilled in 2016 and equipped in 2017. Since that time, Well #2 has been used to irrigate the vineyard (17 acres), and Well #1 has been used for the residence, tasting room, and wine processing. Well #3, an existing 100-foot deep well drilled in 1992, has never been equipped or used.

The well location map (Attachment B) shows the locations of Well #1, Well #2, and Well #3. The map also shows the wells CHG has observed on neighboring parcels to the Property and a well on an adjacent parcel that has been reported to the State as dry in 2022. Other wells exist in the area.

Groundwater Bearing Sedimentary Beds Underlying the Property

The drill cuttings log in the well completion report (WCR) (Attachment C) for the Well #2 describes the geologic formations that are tapped by the well. The groundwater-producing fractured hard shales are within the Monterey Formation. These fractured hard shales are typically thin beds within the predominantly silty and clayey shales. The Araujo No.1 exploratory corehole (7,700 feet northeast of the property) encountered the base of the Monterey Formation at a depth of about 1,100 feet. These beds dip to the north-northeast at about 20 degrees along the northern boundary of the Property near the



creek north of the Clos Solene ranch buildings but there are structural folds that trend through the area resulting in variable structural dips. North of Lynx Road, beds dip to the south-southeast at about 10 degrees.

The groundwater bearing sedimentary beds underlying the Property are separate and distinct from the Paso Robles Groundwater Subbasin and the Atascadero Area Subbasin. Attached is a map (Attachment D) showing the distance from the Property’s wells to the Paso Robles Groundwater Subbasin (about 25,000 feet distant), as mapped by the Department of Water Resources. The Atascadero Groundwater Subbasin is about 12,000 feet from the Clos Solene wells.

Groundwater levels

The wells on the property have relatively stable groundwater levels. To provide a recent status on water levels, CHG measured the groundwater level at the wells on 2/15/2023 and on 3/20/23. The available data on water levels in the wells are in the following table.

Well	Total Well Depth	Date	Depth to Water
	Feet		Feet
1	250	4/3/85	56
		5/14/15	66
		3/12/20	50
		2/15/23	41.3
		3/20/23	23.1
2	600	12/14/16	64
		3/1/17	45.5
		2/15/23	52.0
		3/20/23	39.6
3	100	6/16/92	59.4
		3/20/23	28.5

Groundwater Production

Groundwater production has not been metered at the wells.

An estimate of the production from Well #2 (the well used to irrigate the vineyards) for 2021 and 2022 has been made by Filipponi & Thompson Drilling using electrical power records and the well pump design/efficiency (Attachment E). The annual production for 2021 was 0.47 acre-feet per acre (8 acre-feet applied to 17 acres of vineyards) and for 2022 was 0.64 acre-feet per acre (10.8 acre-feet applied to 17 acres of vineyard). Both of these years had lower than average rainfall. At the Paso Robles rain gage station (with



an average rainfall of 14.95 inches), 8.16 inches was recorded in 2021 and 11.95 inches were recorded in 2022.

An estimate of average applied water on this vineyard using these two years would be 0.5 feet per acre. With 17 acres of vineyard, it is reasonable to estimate the water demand for the vineyard to be 8.5 acre feet per year.

Groundwater production from other wells in the vicinity of Clos Solene are not public record. Some adjacent wells serve residences and others are used for irrigation of vineyards. Irrigation procedures at vineyards in the Adelaida area vary and the applied water can be more or less than the estimates obtained for the Clos Solene vineyards. CHG has observed that the applied water to irrigate vineyards is much less in the Adelaida area than for the vineyards in the Paso Robles groundwater basin area.

Groundwater Recharge to Local Aquifers

The fractured shale aquifers of the Monterey Formation receive recharge primarily from percolation of precipitation and from percolated stream flow and to a lesser extent return flow from irrigation and on-site wastewater leachfields. The quantity of groundwater recharge varies from year to year, depending on rainfall and runoff. The amount of recharge has not been quantified in available studies. The current study being performed by the U.S. Geological Survey, which may provide information on recharge, is in process and is estimated to be completed in Fall 2024.

Groundwater recharge does occur as is reflected in the groundwater levels. The heavy rains in January and March 2023 have resulted in runoff to the streams on and adjacent to the property. Surface water flow was observed in the stream along Niderer Road during our site visits on February 15, 2023 and March 20, 2023. Standing water was also observed in the creek along Via Munoz on March 20, 2023. Recharge to the groundwater has occurred as a result of this rainfall this winter. Runoff and groundwater levels measured this winter are at their highest levels of the past several years, higher than when the wells were initially drilled. We have observed this stream channel to be dry during previous site visits over the past several years. Based on these observations, recharge occurs, especially during wet years.

Dry Well Reporting

The State of California maintains a reporting database on dry wells. A review of this database found that a dry “household” well was reported on 12/15/2022 at coordinates 35.58854 -120.77182 (ID 21453). The approximate initial start date was 11/14/2022. This site is on San Luis Obispo County Assessor’s Parcel Number 026-342-033, which is located east of Niderer Road and north of Munoz Road, adjacent to the Clos Solene property. Further information on well conditions would be needed to evaluate the basis



for this dry well report and possible cause(s). The database states that the reported dry well's status is "undefined." It is likely that recharge to the groundwater during the current rainy season has replenished the aquifer(s) that this reported dry well produces from.

Vineyard Irrigation Reduction with Proposed Project

The Project proposes eliminating 2.245 acres of vineyard on the Project site. Using the estimate for average annual applied water demand of 0.5 acre-feet per acre that is particular to the Property and the Adelaida area, the Project irrigation demand is calculated to result in a 1.1225 acre foot per year reduction in irrigation for the vineyard (14.755 acres).

Respectfully Submitted,
CLEATH-HARRIS GEOLOGISTS

Timothy S. Cleath, Certified Hydrogeologist #81
Principal Hydrogeologist



ATTACHMENT A
RESUME
TIMOTHY S. CLEATH

TIMOTHY S. CLEATH

Hydrogeologist/Engineering Geologist
Vice President
Cleath-Harris Geologists, Inc.
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San Luis Obispo, California 93401
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PROFESSIONAL REGISTRATION

Certified Hydrogeologist in California, CHg 81
Certified Engineering Geologist in California, CEG 1102
Professional Geologist in California, PG 3675

EDUCATION

Master of Science in Geology, California State University, Los Angeles, 1978.
Bachelor of Arts in Geology, California State University, Fresno, 1974.

EXPERIENCE

Cleath-Harris Geologists, Inc.: President, 2009 to 2020, Vice President 2021
Cleath & Associates: Owner, 1984-2008
James M. Montgomery, Consulting Engineers, Inc.: Senior Hydrogeologist, 1977-1984

CAPABILITIES

Ground Water Basin Management: Water rights, hydrologic inventories, safe yield, basin yield optimization, conservation, institutional approaches, water quality monitoring.

Studies and Investigations: Feasibility, environmental impact, hydrogeologic, basin yield availability, ground water contamination.

Siting and Design Services for Water Wells: Site evaluation, preliminary designs, engineer's cost estimates, contract and specifications documents, monitor work progress and contractual compliance, record drawings.

Field Exploration: Pumping tests, drilling programs, geophysical surveys, fluid level measurements, ground water sampling, geologic mapping.

Engineering Geology: Sea cliff retreat estimates, seismic hazard assessments, subsidence assessment and mitigation, shrink-swell phenomena, landslide studies, dam siting.

Expert Witness/Consultant: Groundwater Basin Yield and Management, Hydrogeologic Characterization, Groundwater Impact Analysis, Groundwater Contamination, Water Well Design, Hydrologic Issues for Water Rights, Sea Water Intrusion, Geologic Hazards, Coastal and Stream Bluff Erosion.




ATTACHMENT B
WELL LOCATION MAP

Well Location Map

wells on and near Clos Solene Vineyard and Winery

Legend

 Clos Solène Winery



35.589011 -120.766894 1960 Niderer

8854 -120.77182 dry well reported 2022

35.587645-120.768098 1830 niderer

35.586780 -120.769324 Clos solene well 2

35.586766-120.771352 across from clos entrance

35.586138 -120.768316 clos solene well 1

35.585945 -120.768387 clos solene well 3

35.584308 -120.770832 2270 Niderer



ATTACHMENT C
WELL COMPLETION REPORT
CLOS SOLENE WELL #2

State of California
Well Completion Report
WCR Form Submitted 12/21/2016
WCR2016-008560

Owner's Well Number _____ Date Work Began 12/12/2016 Date Work Ended 12/15/2016
Local Permit Agency San Luis Obispo County Environmental Health Services
Secondary Permit Agency _____ Permit Number 2016-329 Permit Date 11/23/2016

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>GUILLAUME FABRE</u>	Activity <u>New Well</u>
Mailing Address <u>3050 LIMESTONE WAY</u>	Planned Use <u>Water Supply Irrigation - Agriculture</u>
City <u>PASO ROBLES</u> State <u>CA</u> Zip <u>93446</u>	

Well Location	
Address <u>2040 NIDERER RD</u>	APN <u>040-041-008</u>
City <u>TEMPLETON</u> Zip <u>93465</u> County <u>San Luis Obispo</u>	Township _____
Latitude <u>35</u> <u>35</u> <u>12.47</u> N Longitude <u>-120</u> <u>46</u> <u>0.16</u> W	Range _____
Dec. Lat. _____ Dec. Long. _____	Section _____
Vertical Datum _____ Horizontal Datum <u>WGS84</u>	Baseline Meridian _____
Location Accuracy _____ Location Determination Method _____	Ground Surface Elevation _____
	Elevation Accuracy _____
	Elevation Determination Method _____

Borehole Information	Water Level and Yield of Completed Well
Orientation <u>Vertical</u> Specify _____	Depth to first water <u>83</u> (Feet below surface)
Drilling Method <u>Direct Rotary</u> Drilling Fluid <u>Bentonite</u>	Depth to Static _____
Total Depth of Boring <u>600</u> Feet	Water Level <u>64</u> (Feet) Date Measured <u>12/15/2016</u>
Total Depth of Completed Well <u>600</u> Feet	Estimated Yield* <u>100</u> Test Type <u>Air Lift</u>
	Test Length <u>4</u> Total Drawdown _____ (Feet)
	*May not be representative of a well's long term yield.

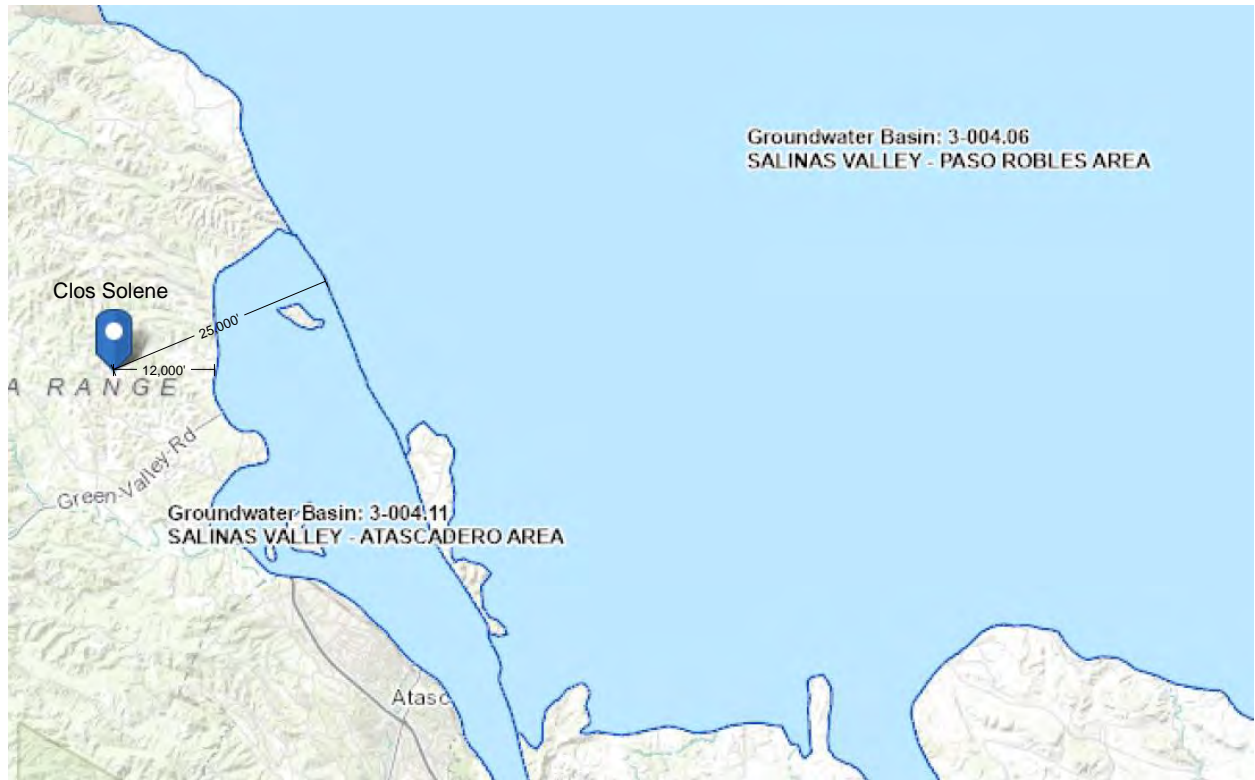
Geologic Log - Free Form		
Depth from Surface Feet to Feet	Description	Description
0 4	TOP SOIL	
4 6	WHITE SHALE	
6 24	BROWN SHALE	
24 600	HARD LAYERS	

Casings										
Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specifications	Well Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	100	Blank	PVC	OD: 5.563 in. SDR: 21 Thickness: 0.265 in.	0.265	5.563			
1	100	600	Other	PVC	OD: 5.563 in. SDR: 21 Thickness: 0.265 in.	0.265	5.563	Saw Cut	0.04	

Annular Material				
Depth from Surface Feet to Feet	Fill	Fill Type Details	Filter Pack Size	Description
0 50	Cement	10.3 Sack Mix		
50 600	Filter Pack	8 x 12	SAND	



ATTACHMENT D
BASIN LOCATION MAP



Project Site Proximity to DWR Bulletin 118 Groundwater Basins



ATTACHMENT E
PUMPING RECORDS
CALCULATED FROM POWER RECORDS
BY FILIPPONI & THOMPSON DRILLING

Clos Solene - PGE Service Agreement # 1124081072 - Vineyard Well meter readings & estimated well production

2021

<i>Period</i>	<i>Energy Amount (kWh)</i>	<i>3hp pump - 3.40 kW</i>	<i>Run time (hrs.)</i>	<i>Pump Rate (gpm)</i>	<i>min/hr.</i>	<i>gallons pumped</i>	<i>AF pumped</i>	<i>Vineyard Irrigated (acres)</i>	<i>AF per acre vineyard</i>
12/29/20 - 1/27/21	428.94	3.40	126.16	30	60	227,086	0.70	17	0.04
1/28/21 - 2/28/21	69.22	3.40	20.36	30	60	36,646	0.11	17	0.01
3/1/21 - 3/29/21	62.22	3.40	18.30	30	60	32,940	0.10	17	0.01
3/30/21 - 4/28/21	374.41	3.40	110.12	30	60	198,217	0.61	17	0.04
4/29/21 - 5/27/21	949.19	3.40	279.17	30	60	502,512	1.54	17	0.09
5/28/21 - 6/28/21	659.51	3.40	193.97	30	60	349,152	1.07	17	0.06
6/29/21 - 7/28/21	271.48	3.40	79.85	30	60	143,725	0.44	17	0.03
7/29/21 - 8/29/21	693.98	3.40	204.11	30	60	367,401	1.13	17	0.07
8/30/21 - 9/28/21	567.97	3.40	167.05	30	60	300,690	0.92	17	0.05
9/29/21 - 10/27/21	139.75	3.40	41.10	30	60	73,985	0.23	17	0.01
10/28/21 - 11/29/21	332.36	3.40	97.75	30	60	175,955	0.54	17	0.03
11/30/21 - 12/27/21	344.8	3.40	101.41	30	60	182,541	0.56	17	0.03
Total	4,894						7.95		0.47

2022

<i>Period</i>	<i>Energy Amount (kWh)</i>	<i>3hp pump - 3.40 kW</i>	<i>Run time (hrs.)</i>	<i>Pump Rate (gpm)</i>	<i>min/hr.</i>	<i>gallons pumped</i>	<i>AF pumped</i>	<i>Vineyard Irrigated (acres)</i>	<i>AF per acre vineyard</i>
12/28/21 - 1/26/22	133.42	3.40	39.24	30	60	70,634	0.22	17	0.01
1/27/22 - 2/27/22	438.55	3.40	128.99	30	60	232,174	0.71	17	0.04
2/28/22 - 3/28/22	966.44	3.40	284.25	30	60	511,645	1.57	17	0.09
3/29/22 - 4/27/22	759.01	3.40	223.24	30	60	401,829	1.23	17	0.07
4/28/22 - 5/26/22	588.03	3.40	172.95	30	60	311,310	0.96	17	0.06
5/27/22 - 6/27/22	626.99	3.40	184.41	30	60	331,936	1.02	17	0.06
6/28/22 - 7/27/22	1075.00	3.40	316.18	30	60	569,118	1.75	17	0.10
7/28/22 - 8/28/22	907.17	3.40	266.81	30	60	480,266	1.47	17	0.09
8/29/22 - 9/27/22	709.91	3.40	208.80	30	60	375,835	1.15	17	0.07
9/28/22 - 10/26/22	411.61	3.40	121.06	30	60	217,911	0.67	17	0.04
10/27/22 - 11/28/22	62.27	3.40	18.31	30	60	32,966	0.10	17	0.01
11/29/22 - 12/27/22	45.33	3.40	13.33	30	60	23,998	0.07	17	0.00
Total	6,724						10.92		0.64

Notes:

Energy used provided by PG&E meter readings, from dedicated meter at vineyard well.

Well pump energy consumption, and 30 gpm pump rate, provided by John Thompson of Filippini & Thompson Drilling.