PUBLIC HEALTH DIVISION
Drinking Water Services
Tina Kotek, Governor

Oregon Health Authority

800 NE Oregon Street, #640
Portland, OR 97232-2162
Phone: 971-201-9794
Fax: 971-673-0694
www.healthoregon.org/dwp

August 24, 2023

Lisa Hutchins
Office Manager
Anne Amie Vineyards
Via email: lisa@AnneAmie.com

Re: New System and Wells (PR#35-2023)
Anne Amie Vineyards (PWS ID#95700)
Site Plan and Conditional Approval

Dear Lisa:

Thank you for your submittal to the Oregon Health Authority's Drinking Water Services (DWS) of plan review information for the new system and wells for Anne Amie Vineyards. On March 7, 2023, our office received well logs, photos and a plan review fee of $825. Clarification on which wells were active was provided on May 10, 2023.

Under OAR 333-061-0060(1)(b), submittals must be prepared by a Professional Engineer registered in Oregon, unless exempted by DWS. An exemption was approved for this submittal. Note that by utilizing this exemption, the water system takes full responsibility for the design of the project.

The project includes five existing wells, four of which are active. The wells include:

- Well A (Source AA, Well ID YAMH 9467), currently listed as inactive. This well is within 100' of a vineyard.
- Well B (Source AB, Well ID YAMH 50174), currently listed as active.
- Well C (Source AC, Well ID YAMH 52251), currently listed as active. This well is within 100' of a vineyard and parking lot.
- Well D (Source AD, Well ID YAMH 52252), currently listed as active. This well is within 100' of a vineyard and a processing facility.
- Well E (Source AE, Well ID YAMH 52250), currently listed as active. This well is within 100' of a vineyard.

The project also includes two 5,000-gallon steel storage tanks.

A regional geologist with DWS reviewed the well log construction details and noted the following:

Well A
This well meets current construction standards and is drilled into a confined aquifer.

Additional details:
The well was drilled to a depth of 235 feet. The casing and casing seal extend to a depth of 40 feet, which is 32 feet into a low permeability sandstone that overlies the aquifer. A perforated liner was placed in the well to help keep the borehole open below the casing. Water can enter the well through the uncased portion of the well between 40 and 235 feet below ground level. The well draws water from a fractured sandstone aquifer system. Water was first encountered at a depth of 80 feet from what is assumed to be a narrow fracture within the sandstone. Similar water-bearing fractures may intercept the borehole at a greater depth. The first water-bearing fracture appears to be overlain by 72 feet of unfractured sandstone of low permeability that acts as a confining layer. Water within the water-bearing fracture(s) is under pressure, rising 43 feet above the depth at which water was first encountered to a depth of 37 feet.

Results from a sensitivity analysis indicate that the well construction does not contribute to the overall sensitivity of this water supply to local land use practices and the aquifer characteristics do not contribution to the overall sensitivity of this water supply to local land use practices. This means that if the water system needed to put this well online, a waiver from construction standards for the setback issue (vineyard within 100') may be possible.

Well B
Well B does not meet current construction standards, due to insufficient sealant volume causing the well to not be sealed properly.

This well was drilled to a depth of 300 feet. The casing and casing seal extend to a depth of 33 feet, 7 feet into a low permeability sandstone that overlies the aquifer. The well log indicates that 14 sacks of bentonite were used to form the casing seal. However, calculations indicate that the annual space between the 6-inch casing and 11-inch diameter borehole would have required 20 sacks of bentonite to form a continuous seal to a depth of 33 feet. Therefore, this well is considered to not meet current construction standards. A perforated liner was placed in the well to help keep the borehole open below the casing. Water can enter the well through the uncased portion of the well between 33 and 300 feet below ground level.

This well draws water from what is likely a fractured sandstone aquifer system. Water was first encountered at a depth of 92 feet from wat appears to be a narrow fracture in the sandstone. Similar water-bearing fractures were encountered at depths of 188 and 245 feet below ground level. The first water-bearing zone is overlain by 90 feet of impermeable material composed of unfractured siltstone/sandstone and silt. These materials act as a confining layer with water in the fractured aquifer system rising 30 feet above the first water-bearing fracture to a depth of 62 feet below ground.

Results from a sensitivity analysis suggest that the construction of the well is highly sensitive to local land use practices and the aquifer characteristics do not contribute to the overall sensitivity of this water source to local land use practices.

Well C

This well meets current construction standards and is drilled into a confined aquifer.

This well was drilled to a depth of 283 feet. The casing and casing seal extend to a depth of 79 feet, 14 feet into low permeability sandstone that overlies the aquifer. A perforated liner was placed in the well to keep the borehole open below the casing. Water enters through the uncased portion of the well between 79 and 283 feet below ground.

This well draws water from a deep sedimentary bedrock aquifer. The water-bearing zone within the sedimentary bedrock occurs at a depth of 115 feet and is under pressure, rising 60 feet above the identified water-bearing zone to a final static water-level depth of 55 feet below ground.

Results from a sensitivity analysis suggest that the well construction does not contribute to the overall sensitivity of this water source to local land use practices and the aquifer characteristics do not contribute to the overall sensitivity of this water source to local land use practices.

Well D

This well meets current construction standards and is drilled into a confined aquifer.

This well was drilled to a depth of 236 feet. The casing and casing seal extend to a depth of 78.5 feet, 15.5 feet into low permeability sandstone that overlies the aquifer. A perforated liner was placed in the well to keep the borehole open below the casing. Water enters the well through the uncased portion of the well between 78.5 and 236 feet below ground.

This well draws water from a deep fractured sedimentary bedrock aquifer. The water-bearing zone within the sedimentary bedrock occurs at a depth of 145 feet and is under pressure, rising 87 feet above the identified water-bearing zone to a final static water-level depth of 58 feet below ground.

Results from a sensitivity analysis suggest that the well construction does not contribute to the overall sensitivity of this water source to local land use practices and the aquifer characteristics do not contribute to the overall sensitivity of this water source to local land use practices.

Well E

This well meets current construction standards and is drilled into a confined aquifer.

The well was drilled to a depth of 303 feet. The casing and casing seal extend to a depth of 39 feet, 22 feet into low permeability sandstone that overlies the aquifer. A perforated liner was placed in the well to keep the borehole open below the casing. Water enters the well through the uncased portion of the well between 39 and 303 feet below ground.

This well draws water from a deep sedimentary bedrock aquifer. The water-bearing zone within the sedimentary bedrock occurs at a depth of 170 feet and is under pressure, rising 100 feet above the identified water-bearing zone to a final static water-level depth of 70 feet below ground.

Results from a sensitivity analysis suggest that the well construction does not contribute to the overall sensitivity of this water source to local land use practices and the aquifer characteristics do not contribute to the overall sensitivity of this water source to local land use practices.

The plans are approved with the following conditions:

Well A – If Well A were to be utilized by the water system, the following conditions would apply

- The casing height must be 12” above the slab (or 12” above grade, if a pitless adapter was installed.)
- A sample tap at the well head must be provided.
- Piping arrangements must include provisions for pumping the total flow of the well to waste. Pump-to-waste piping is typically installed for this, however, some systems plan to pump the flow to waste through the sample tap.
- A casing vent with a screened return bend must be provided. If a pitless adapter was installed, the caps are typically vented.

- Coliform bacteria, nitrate and arsenic sample results must be submitted. These samples must be obtained from the well head raw water sample tap.

Well B

- This well is not approved for public water system use due to the seal not being constructed properly. At a minimum, the well must be physically disconnected from the water system.
- If the water system wishes to fix the issue with the seal, then a well driller should be contacted. The well driller will be able to determine whether or not they can pull the well casing/break the seal or if it is more economical to redrill the well at a different location. If the well is not fixed, it should be properly abandoned per Oregon Water Resources Standards. Reconstruction or redrilling should not take place without going through our plan review process, which includes submittal and approval of a site plan and proposed well drilling specifications prior to drilling.
- If the well is ultimately fixed, then the same conditions listed under Well A (casing height, sample tap, pump-to-waste piping, casing vent and sample results) are required.

Well C

- A sample tap at the well head must be provided.
- Piping arrangements must include provisions for pumping the total flow of the well to waste. Pump-to-waste piping is typically installed for this, however, some systems plan to pump the flow to waste through the sample tap.
- Coliform bacteria, nitrate and arsenic sample results must be submitted. These samples must be obtained from the well head raw water sample tap.
- Since the well is drilled in a confined aquifer and located near a road/parking lot, OAR 333-061-0050(2)(a)(D) applies. This rule allows DWS to waive the setback requirement for a road/parking lot that is located within 100' of a well. In order to approve this setback issue, information must be submitted that demonstrates how the well is "…protected against contamination from surface runoff or hazardous liquids which may be spilled on the roadway [parking lot] and is protected from unauthorized access".
- A waiver from construction standards must be submitted for the location of the well with respect to the vineyard. The waiver form can be found on our website and more details will be provided in the email that accompanies this letter.

Well D

- A sample tap at the well head must be provided.
- Piping arrangements must include provisions for pumping the total flow of the well to waste. Pump-to-waste piping is typically installed for this, however, some systems plan

to pump the flow to waste through the sample tap.
- Coliform bacteria, nitrate and arsenic sample results must be submitted. These samples must be obtained from the well head raw water sample tap.
- A waiver from construction standards must be submitted for the location of the well with respect to the vineyard. If any chemicals are stored/utilized within the 100' radius in the processing facility, then those should also be wrapped into the waiver. The waiver form can be found on our website and more details will be provided in the email that accompanies this letter.

Well E

- The casing height must be 12" above the slab (or 12" above grade, if a pitless adapter was installed.)
- A sample tap at the well head must be provided.
- Piping arrangements must include provisions for pumping the total flow of the well to waste. Pump-to-waste piping is typically installed for this, however, some systems plan to pump the flow to waste through the sample tap.
- A casing vent with a screened return bend must be provided. If a pitless adapter was installed, the caps are typically vented.
- Coliform bacteria, nitrate and arsenic sample results must be submitted. These samples must be obtained from the well head raw water sample tap.
- A waiver from construction standards must be submitted for the location of the well with respect to the vineyard. The waiver form can be found on our website and more details will be provided in the email that accompanies this letter.

Storage tanks

- A fence or other vandal deterrence must be provided for the reservoir. In this case, a lock on the access lids may be sufficient.
- Screened vents must be provided above the highest water level to permit circulation of air above the water in finished water storage facilities.
- The outlet end of the drain/overflow must be fitted with angle-flap valve or equivalent protection and must discharge with an airgap to a watercourse or storm drain capable of accommodating the flow.
- A silt stop must be provided at the outlet pipe. This generally is met by having the outlet pipe be located above the floor of the tank.
- The roof access hatch must have curbing around the opening and a lockable watertight cover that overlaps the curbing.

Until we receive verification that the conditions have been met and final approval has

been issued, the facility is not approved for use. Documentation demonstrating how the above conditions were met should reference Plan Review #35-2023 and can be emailed to me at Carrie.L.Gentry@oha.oregon.gov.

In addition to the above conditions, I have the following comments:

- Water rights may be required for your water system, depending on how much water is utilized out of each well per day. Oregon's Water Resources Department regulates water rights and can be contacted at (503) 986-0900. Copies of water right permits or exemptions should be provided to DWS.
- I was unable to determine if the steel tanks were constructed in conformance with AWWA Standards D100 and D103. DWS will accept these tanks barring any future issues, and as long as the above conditions for the tanks are met.

If you have any questions, please feel free to call me at (971) 201-9794.
Sincerely,

Carrie Gentry, PE
Regional Engineer
Drinking Water Services

cc: Sarah Schwab, REHS, Oregon Department of Agriculture
Tommy Laird, Well Construction Program Coordinator, OWRD