

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 6/11/2015

FROM: Groundwater Section Jen Woody
Reviewer's Name

SUBJECT: Application G- 18013 Supersedes review of n/a
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: Clark Ellinson County: Yamhill

A1. Applicant(s) seek(s) 0.13 cfs from 1 well(s) in the Willamette Basin,
Yamhill River subbasin Quad Map: Muddy Valley

A2. Proposed use Irrigation Seasonality: March 1- October 31

A3. Well and aquifer data (**attach and number logs for existing wells; mark proposed wells as such under logid**):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	YAMH 53850	1	Volcanic Bedrock	0.13	4S/5W-S35 NE ¼ NW ¼	3145'S, 1985'E fr NW cor Thomas Owen DLC 53
2						
3						
4						
5						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	195	90	58	08/11/2004	163	0-62	0-69	0-163	100-163	60		air

Use data from application for proposed wells.

A4. **Comments:** The well log reports two water-bearing zones in basalt. Based on geologic mapping, this is outside the extent of Columbia River Basalt. Therefore this review considers the target aquifer as part of the Coastal Intrusives Group of the marine sediments and volcanics of the Coast Range (Yeats et al, 1991).

A5. ☐ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, or ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The aquifer is confined, therefor the pertinent basin rules do not apply.

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. ☐ **is** over appropriated, ☐ **is not** over appropriated, or ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ **will not** or ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☐ **will not** or ☐ **will** likely to be available within the capacity of the groundwater resource; or
- d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. ☒ The permit should contain condition #(s) 7C, Large water use reporting;
 - ii. ☐ The permit should be conditioned as indicated in item 2 below.
 - iii. ☒ The permit should contain special condition(s) as indicated in item 3 below;

- B2.
- a. ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
 - b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
 - c. ☒ **Condition** to allow groundwater production only from the bedrock groundwater reservoir ~~between approximately~~ _____ ft. and _____ ft. below land surface;
 - d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** _____

Wells in the area of interest produce water from the Coast Range Tertiary marine sediments and volcanics (Yeats et al, 1991). This group includes intrusive fractured basalts and marine sandstones, claystones and mudstones of the Nestucca Formation. Well logs on file for T4S/R5W-Section 35 report air test yields ranging from 0-60 gpm, with a median yield of 10 gpm. The subject well appears to access water in the basalts. Nearby groundwater level data are sparse, but available information indicates local marine sediment and volcanic aquifers are generally stable at the current level of use (see hydrograph). There are not enough data to determine over-appropriation of the groundwater system. This indicates the need for long-term water level monitoring.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**C1. 690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Volcanic Bedrock	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The water-bearing zones, located in fractured bedrock, are overlain by tens of feet of clay and basalt. The water level in the well rises above the reported water-bearing zone, indicating the aquifer is more confined than unconfined.

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Cozine Creek	137	140	11,250	☒	☐	☐	☐	☒
1	2	Unnamed tributary to South Yamhill	137	140	8,900	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: At distances less than a mile from the well, groundwater is below surface water elevation, so groundwater pumping impacts to surface water flow will generally not be notable. At distances of greater than one mile, groundwater is coincident with nearby streams. This indicates groundwater and surface water are hydraulically connected regionally, and pumping the well may capture groundwater that would discharge to local streams at greater than a mile from the well. Willamette Basin scale water table contours also indicate the South Yamhill River is a gaining reach south of the subject well (Conlon, 2005). However, PSI is not triggered by these criteria.

Water Availability Basin the well(s) are located within: The well is located within Watershed ID #: 162: S YAMHILL R > YAMHILL R - AB COZINE CR. Watershed ID #: 163: S YAMHILL R > YAMHILL R - AT MOUTH may also be affected by pumping this well.

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: _____

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: _____

The aquifer is a fractured rock aquifer, and there are currently no appropriate models available to estimate streamflow depletion by pumping from this type of aquifer. Based on the low-yielding nature of the aquifer, the variable distribution of the intrusives and water-bearing fractures, and the distance to surface water, stream depletion impacts to surface water are expected to be minimal.

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

- C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- i. ☐ The permit should contain condition #(s)_____;
 - ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions**

References Used:

Conlon and others, 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S Geological Survey Scientific Investigations Report 2005-5168.

Gannett and Caldwell, 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A,

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Jenkins, C.T., 1970, Computation of rate and volume of stream depletion by wells: U.S. Geol. Survey Techniques of Water-Resources Investigations of the United States Geological Survey, Chapter D1, Book 4, 17 p.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

Woodward and others, 1998, Hydrogeologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B,

Yeats and others, 1991, Tectonics of the Willamette Valley, Oregon, U.S. Geologic Survey Open-File Report 91-441-P.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

[illegible]

Water Availability Tables

Water Availability Analysis Detailed Reports

S YAMHILL R > YAMHILL R - AB COZINE CR
WILLAMETTE BASIN

Water Availability as of 6/10/2015

Watershed ID #: 162 ([Map](#))

Exceedance Level: 80%

Date: 6/10/2015

Time: 11:14 AM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,290.00	29.80	1,260.00	0.00	15.00	1,250.00
FEB	1,470.00	28.00	1,440.00	0.00	15.00	1,430.00
MAR	1,260.00	20.00	1,240.00	0.00	15.00	1,230.00
APR	764.00	15.30	749.00	0.00	15.00	734.00
MAY	378.00	23.90	354.00	0.00	15.00	339.00
JUN	171.00	44.20	127.00	0.00	15.00	112.00
JUL	79.00	66.70	12.30	0.00	15.00	-2.65
AUG	47.70	55.70	-8.05	0.00	15.00	-23.00
SEP	40.30	34.20	6.10	0.00	15.00	-8.90
OCT	53.80	9.37	44.40	0.00	15.00	29.40
NOV	363.00	14.90	348.00	0.00	15.00	333.00
DEC	1,220.00	28.10	1,190.00	0.00	15.00	1,180.00
ANN	847,000.00	22,400.00	825,000.00	0.00	10,900.00	815,000.00

Water Availability Analysis Detailed Reports

S YAMHILL R > YAMHILL R - AT MOUTH WILLAMETTE BASIN

Water Availability as of 6/11/2015

Watershed ID #: 163 [\(Map\)](#)

Exceedance Level: 80%

Date: 6/11/2015

Time: 8:04 AM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,330.00	35.00	1,300.00	0.00	200.00	1,100.00
FEB	1,520.00	33.00	1,490.00	0.00	200.00	1,290.00
MAR	1,300.00	19.00	1,280.00	0.00	200.00	1,080.00
APR	783.00	18.40	765.00	0.00	200.00	565.00
MAY	386.00	26.20	360.00	0.00	200.00	160.00
JUN	174.00	48.60	125.00	0.00	150.00	-24.60
JUL	81.00	74.20	6.83	0.00	62.00	-55.20
AUG	49.50	61.70	-12.20	0.00	62.00	-74.20
SEP	41.70	37.20	4.53	0.00	62.00	-57.50
OCT	55.00	9.44	45.60	0.00	150.00	-104.00
NOV	365.00	18.20	347.00	0.00	200.00	147.00
DEC	1,250.00	33.00	1,220.00	0.00	200.00	1,020.00
ANN	872,000.00	25,000.00	847,000.00	0.00	114,000.00	743,000.00

