

Groundwater Application Review Summary Form

Application # G- 19302

GW Reviewer Phillip I. Marcy Date Review Completed: 12/01/2023

Summary of GW Availability and Injury Review:

☐ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☐ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

December 1, 2023

TO: Application G- 19302

FROM: GW: Phillip I. Marcy
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 12/01/2023
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 19302 Supersedes review of _____
 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: Dan & Angela Chapman County: Yamhill

A1. Applicant(s) seek(s) 0.417 cfs from 4 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (52.7 acres) Seasonality: March 1st – October 31st (245 days)

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

POA 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	Proposed	1	Alluvium	0.417	5S/4W-10 SW-NW	1585'S, 970'E fr NW cor S 10
2	Proposed	2	Alluvium	0.417	5S/4W-10 SW-NW	1510'S, 1215'E fr NW cor S 10
3	YAMH 1649	3	Alluvium	0.417	5S/4W-10 NW-NW	965'S, 1275'E fr NW cor S 10
4	Proposed	4	Alluvium	0.417	5S/4W-10 SW-NW	1390'S, 1090'E fr NW cor S 10

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	200	0-20	0-200	Unknown	TBD	NA	NA	NA
2	200	0-20	0-200	Unknown	TBD	NA	NA	NA
3	132	0-22	0-132	None	112-132	100	NA	Air
4	200	0-20	0-200	Unknown	TBD	NA	NA	NA

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	156	NA	NA	NA		
2	149	NA	NA	NA		
3	160	80	25	07/31/1992	25	07/31/1992
4	160	NA	NA	NA		

Use data from application for proposed wells.

A4. **Comments:** Only one of the proposed POA wells has been constructed (POA 3 – YAMH 1649). POA wells 1, 2, and 4 are anticipated to target the same sand and gravel aquifer zone as the existing well.

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: None of the proposed POA locations lie within ¼ mile of a surface water source, therefore 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) 7RLN, 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 _____ 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:** _____
- The wells on this application will produce water from the lower sedimentary unit of the Willamette Aquifer (Conlon et al., 2005; Woodward et al., 1998; local well logs), consisting of lenses of sand and gravel interbedded with clays. In this area, the aquifer is 20-40 feet thick; it is overlain by 60- 80 feet of fine-grained Willamette Silt. The regional water table resides in the Willamette Silt, generally within 30 feet of land surface and the silt acts as a leaky confining unit in relation to the underlying aquifer. Recharge to the aquifer is primarily through the silt unit. Regional discharge is to the Willamette River which is incised completely through the silt unit into the underlying Willamette aquifer. Smaller streams, such as the Yamhill River, are entrenched in, but do not fully penetrate, the silt unit. Although these smaller streams are hydraulically connected to the underlying aquifer, the connection is weak because of the low vertical permeability of the silt that occurs between the streambed and the aquifer. Because the Willamette Confining Unit is confined, pumping impacts will propagate rapidly to aquifer boundaries. The principal boundaries are the Willamette River and the Willamette Silt (diffuse downward seepage over a large area). Smaller streams will be weak boundaries (diffuse seepage over a small area). Pumping withdrawals will be offset by a decrease in stored water in the aquifer, reduced streamflow in the Willamette River, downward leakage of water from the overlying silt into the aquifer, and reduced streamflow to smaller streams.

Available water level data do not suggest long-term declines in the area (see attached hydrograph). Seasonal fluctuations appear to be from 10-20' in the target aquifer. As seasonal fluctuations increase due to increased use, hydraulic interference during the irrigation season will become more pronounced over time and shallow wells may need to be deepened to compensate for these impacts. Water level and water use reporting is recommended for this reason.

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	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Local well logs report resulting static water levels above the elevation of the productive sand and gravel aquifer.

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	South Yamhill River	~134	105	5740	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	South Yamhill River	~134	105	5870	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	South Yamhill River	~134	105	5580	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	South Yamhill River	~134	105	5700	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: There are no surface water sources within one mile of the proposed POA wells, but elevation of confined groundwater indicates upward movement of groundwater discharging to surface water. Ultimately, depletion of surface water by reduction in storage induced by groundwater pumping will likely have the greatest effect on the South Yamhill River, just over one mile WNW of the POA locations.

Water Availability Basin the well(s) are located within: S YAMHILL R > YAMHILL R - AT MOUTH

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 (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, 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?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: This section does not apply as all proposed POA locations are greater than one mile from the South Yamhill River.

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
3	1	1.32 %	1.37 %	.22 %	.33 %	.46 %	.59 %	.74 %	.89 %	1.05 %	1.22 %	1.19 %	1.26 %
Well Q as CFS		0	0	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0	0
Interference CFS		.005	.006	.001	.001	.002	.002	.003	.004	.004	.005	.005	.005
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													
(A) = Total Interf.		.005	.006	.001	.001	.002	.002	.003	.004	.004	.005	.005	.005
(B) = 80 % Nat. Q		1330	1520	1300	783	386	174	81	49.5	41.7	55.0	365	1250
(C) = 1 % Nat. Q		13.3	15.2	13.0	7.83	3.86	1.74	0.81	.495	.417	.550	.365	1.25
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %	<.001 %

(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 distance from the South Yamhill River and the presence of fine-grained sediments above the productive aquifer minimize the effects of pumping at the proposed POA locations within the period of one year. The above results for stream depletion were calculated using the analytical model of Hunt (2003), which accounts for the presence of a confining aquitard that extends below the streambed of the surface water body in question. A combination of parameters were used from published values (Conlon, et al. 2005) in addition to those observed in local well logs and pump tests.

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, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005. Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

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

OWRD GWIS database, including well logs, water level data, accessed 11/30/2023.

Woodward, D.G., and others, 1998. Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington. USGS Professional Paper 1424-B.

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.**Water Availability Tables**

Watershed ID #: 163 S YAMHILL R > YAMHILL R - AT MOUTH Exceedance Level: 80
 Time: 4:26 PM Basin: WILLAMETTE Date: 11/30/2023

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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Monthly values are in cfs.
 Storage is the annual amount at 50% exceedance in ac-ft.

JAN	1,330.00	36.90	1,290.00	0.00	200.00	1,090.00
FEB	1,520.00	34.70	1,490.00	0.00	200.00	1,290.00
MAR	1,300.00	21.50	1,280.00	0.00	200.00	1,080.00
APR	783.00	20.10	763.00	0.00	200.00	563.00
MAY	386.00	27.60	358.00	0.00	200.00	158.00
JUN	174.00	49.20	125.00	0.00	150.00	-25.20
JUL	81.00	75.00	6.02	0.00	62.00	-56.00
AUG	49.50	62.50	-13.00	0.00	62.00	-75.00
SEP	41.70	37.60	4.06	0.00	62.00	-57.90
OCT	55.00	9.68	45.30	0.00	150.00	-105.00
NOV	365.00	18.80	346.00	0.00	200.00	146.00
DEC	1,250.00	34.60	1,220.00	0.00	200.00	1,020.00
ANN	872,000	25,900	847,000	0	114,000	743,000

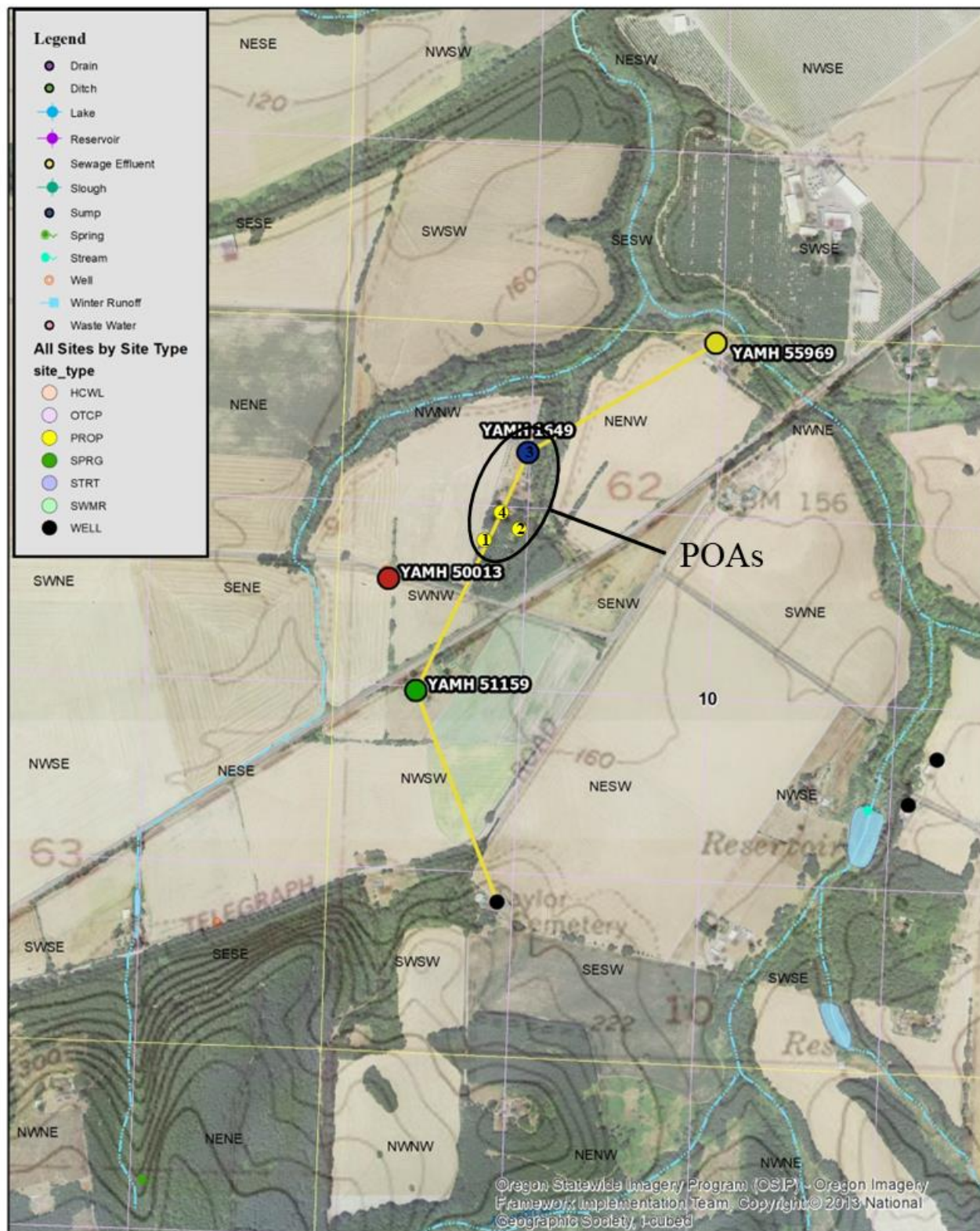
Watershed ID #: 163 S YAMHILL R > YAMHILL R - AT MOUTH Basin: WILLAMETTE
 Time: 4:26 PM Date: 11/30/2023

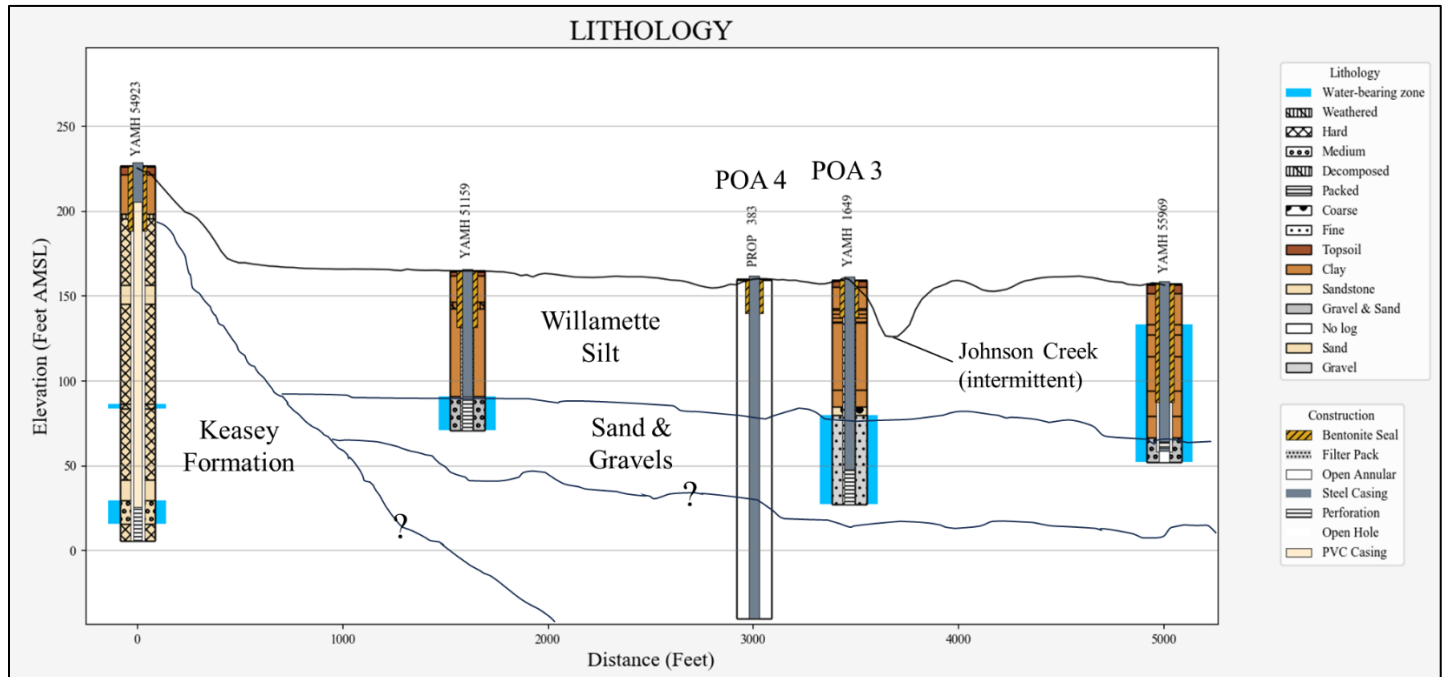
Application Number	Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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Monthly values are in cfs.

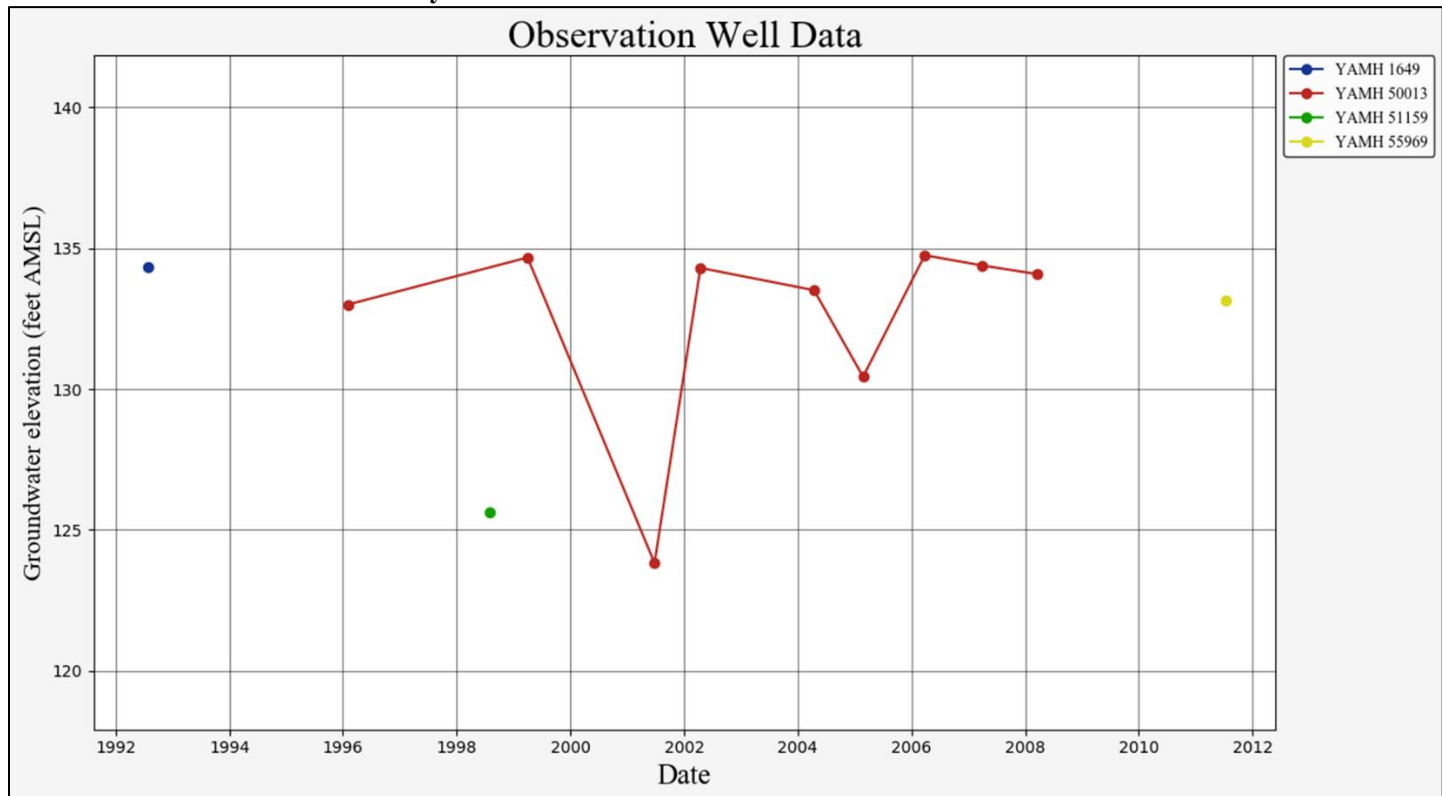
MF163A	CERTIFICATE	200.0	200.0	200.0	200.0	200.0	150.0	62.0	62.0	62.0	150.0	200.00	200.0
IS73553A	CERTIFICATE	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.20	21.2
IS73554A	CERTIFICATE	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.00	15.0
IS73555A	CERTIFICATE	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.60	14.6
MAXIMUM		200.0	200.0	200.0	200.0	200.0	150.0	62.0	62.0	62.0	150.0	200.0	200.0

Well Location Map



Cross-Section

The proposed POA wells are anticipated to be produced from sands and gravels beneath the confining Willamette Silt, which in turn underlies many smaller streams in the area.

Water-Level Measurements in Nearby Wells

Available water level data do not suggest long-term declines for the immediate area surrounding the proposed POA wells.

Stream Depletion (Hunt) Model Analysis

