Groundwater Application Review Summary Form

Application # G- 19285

GW Reviewer Travis Brown Date Review Completed: 10/4/2024

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 **_10/4/2024_**

TO: **Application** G-**_19285_**

FROM: **GW:** **_Travis Brown_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO** The source of appropriation is hydraulically connected to a State Scenic 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 10/4/2024
FROM: Groundwater Section Travis Brown
Reviewer's Name
SUBJECT: Application G- **19285** 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: **Willamette Valley Land, LLC** County: **YAMHILL**

A1. Applicant(s) seek(s) 1.315 cfs from 9 well(s) in the Willamette Basin, Willamette Mainstem subbasin

A2. Proposed use IR (95.2 ac; 259 af/yr); IS (8.4 ac) Seasonality: Irrigation Season (March 1 – Oct 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 6500	W1	Alluvium	0.556[a]	5S/3W-16 SW-SE	N 48°29'02" W, 2079.4' fr NE cor DLC 57
2	Proposed	W2	Alluvium	1.315	5S/3W-16 NW-SE	2210' N, 1305' W fr NE cor DLC 57
3	Proposed	W3	Alluvium	1.315	5S/3W-16 NE-SE	2140' N, 530' W fr NE cor DLC 57
4	Proposed	W4	Alluvium	1.315	5S/3W-15 NW-SW	2145' N, 615' W fr NE cor DLC 57
5	Proposed	W5	Alluvium	1.315	5S/3W-15 SW-SW	1350' N, 575' W fr NE cor DLC 57
6	Proposed	W6	Alluvium	1.315	5S/3W-16 SE-SE	1340' N, 555' W fr NE cor DLC 57
7	Proposed	W7	Alluvium	1.315	5S/3W-16 SW-SE	1310' N, 1135' W fr NE cor DLC 57
8	Proposed	W8	Alluvium	1.315	5S/3W-16 SE-SE	860' N, 640' W fr NE cor DLC 57
9[b]	Proposed	W9	Alluvium	1.315	5S/3W-16 SW-SE	335' N, 1320' W fr NE cor DLC 57

* 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	168	UNK	5	2/15/1967	74	0-34	0-74 (8")	N/A	54-74 (PERF)	200	60	Pump (5 hr)
2	161				200							
3	164				200							
4	144				200							
5	166				200							
6	165				200							
7	166				200							
8	163				200							
9	167				200							

Use data from application for proposed wells.

A4. **Comments:** Proposed POA and POU are ~7 miles southeast of McMinnville, OR.
[a]POA 1 (YAMH 6500) has over-lapping rights; it is the sole authorized POA on Cert 85048, which authorizes Irrigation of 8.4 acres at a maximum rate of 0.11 cfs (~49 gpm). POA 1 will be assessed at the combined rate of 0.556 cfs (0.11 cfs from Cert 85048 and 0.446 cfs from this application).
[b]The table in Section 3 of the application only lists 8 POA wells, but other sections of the application and the application map refer to 9 POA wells. It is assumed the applicant is requesting 9 POA wells.

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:

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 (annual), 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 **alluvial** 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 proposed POA are or will be completed through a terrace of up to 100 ft thick, predominantly fine-grained Missoula flood deposits – the Willamette Silt (Brownfield and Schlicker, 1981; Gannett and Caldwell, 1998). The POA produce or will produce groundwater from the 20-40 feet of underlying sand and gravel – the Willamette Aquifer (Gannett and Caldwell, 1998).

Available data do not indicate that water levels have Declined Excessively or are Excessively Declining (see attached Hydrograph). Groundwater in the proposed aquifer is not over-appropriated. Several nearby observation wells do exhibit generally declining water levels, with YAMH 6565 exhibiting the largest decline of ~17 feet since 1949 at an overall average rate of ~0.2 ft/yr. Although groundwater level declines appear relatively widespread near the proposed POA, the modest rate of decline suggests that water levels will gradually stabilize as surface water capture from Lambert Slough and other streams increases.

Numerous domestic wells exist nearby. All domestic properties in this area are presumed to be dependent upon wells. Potential injury to these wells from the proposed use was assessed using the Theis (1935) solution for drawdown in a confined aquifer (see Theis Interference Analysis, attached). Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2003, 2005; Iverson, 2002; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the given parameter within the hydrogeologic regime (Domenico and Mifflin, 1965; Freeze and Cherry, 1979; Halford and Kuniansky, 2002). **Results of the analysis indicate that, at the proposed rates, all proposed POA locations are likely to cause interference exceeding 25 ft at nearby domestic wells within the course of the irrigation season. Standard conditions on new groundwater permits require**

that use be curtailed if hydraulic interference with neighboring well exceeds 25 ft; therefore, the proposed use is beyond the capacity of the groundwater resource, as it could not be fully exercised without violating its permit conditions. To overcome this finding, the applicant would need to reduce the requested rate(s), with the necessary reduction being dependent on the proposed POA location.

If a permit is issued for the proposed use, the conditions specified in B1.d and B2.c are recommended to protect senior users and the groundwater resource.

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	☒	☐
2	Alluvium	☒	☐
3	Alluvium	☒	☐
4	Alluvium	☒	☐
5	Alluvium	☒	☐
6	Alluvium	☒	☐
7	Alluvium	☒	☐
8	Alluvium	☒	☐
9	Alluvium	☒	☐

Basis for aquifer confinement evaluation: The proposed POA are or will be completed through a terrace of predominantly fine-grained Missoula Flood deposits (Brownfield and Schlicker, 1981). Nearby well logs generally indicate confined conditions.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Lambert Slough**	**~160-165[a]**	**79-82[c]**	**~2630**	☒	☐	☐	☐	☒
2	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~3080**	☒	☐	☐	☐	☒
3	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~2320**	☒	☐	☐	☐	☒
4	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~1190**	☒	☐	☐	☐	☒
5	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~1300**	☒	☐	☐	☐	☒
6	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~1930**	☒	☐	☐	☐	☒
7	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~2290**	☒	☐	☐	☐	☒
8	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~1620**	☒	☐	☐	☐	☒
9	**1**	**Lambert Slough**	**~125-131[b]**	**79-82[c]**	**~1890**	☒	☐	☐	☐	☒
1	**2**	**Warner Creek**	**~160-165[a]**	**148-154[c]**	**~5310**	☒	☐	☐	☐	☒
2	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~4900**	☒	☐	☐	☐	☒
3	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~5570**	☒	☐	☐	☐	☒
4	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~6530**	☒	☐	☐	☐	☒
5	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~6940**	☒	☐	☐	☐	☒
6	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~6040**	☒	☐	☐	☐	☒
7	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~5630**	☒	☐	☐	☐	☒
8	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~6310**	☒	☐	☐	☐	☒
9	**2**	**Warner Creek**	**~125-131[b]**	**148-154[c]**	**~6250**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The estimated water table – based on nearby water levels, well reports, and water table mapping (Woodward et al., 1998) – is at or above the elevation of nearby surface water in SW 1 (Lambert

Slough) and SW 2 (Warner Creek). The Missoula Flood deposits overlying the water-bearing zones are anticipated to act as a leaky confining unit, with saturated sediments between the water-bearing zones and the nearby perennial streams.
[a] Based on reported static water level for YAMH 6500.
[b] Based on water level measurements in YAMH 6565. Note that this is the estimated potentiometric elevation of groundwater in the POA wells, which have similar proposed construction to YAMH 6565, and not the elevation of the water table at the location of these wells, which is higher than or close to the elevation of nearby surface water sources.
[c] Based on LIDAR (Oregon Lidar Consortium, 2024) within 1 mile of the POA wells.
Water Availability Basin the well(s) are located within: SW1: WILLAMETTE R > COLUMBIA R – AB MOLALLA R
SW2: YAMHILL R > WILLAMETTE 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?
1	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
2	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
2	**2**	☐	☐	**N/A**	**N/A**	☐	**56.50**	☒	**<25%**	☒
3	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
4	**1**	☒	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☒
5	**1**	☒	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☒
6	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
7	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
8	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐
9	**1**	☐	☐	**N/A**	**N/A**	☐	**3,830**	☐	**<25%**	☐

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 #		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?
	1		☐			☐	**3,830**	☐		☐

Comments: **Proposed POA 2 is within 1 mile of SW 2 (Warner Creek) and has a well-specific flow rate (1.315 cfs) that exceeds 1 percent (0.565 cfs) of the natural stream flow (56.50 cfs) of SW 2 (Warner Creek) 80 percent of time. Per OAR 690-009-0040(4)(c), this POA has the Potential for Substantial Interference (PSI).**

Proposed POA 4 and 5 are within ¼ mile of SW 1 (Lambert Slough). Per OAR 690-009-0040(a), these wells have the potential for Substantial Interference (PSI).

Potential depletion of SW 1 by proposed POA W4 and W5 was analyzed using the Hunt (2003) analytical model. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2005; Iverson, 2002; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the given parameter within the hydrogeologic regime (Domenico and Mifflin, 1965; Freeze and Cherry, 1979; Halford and Kuniansky, 2002). Results of the analysis indicate depletion of SW 1 by the proposed POA is unlikely to exceed 25 percent of the rate of withdrawal within the first 30 days of continuous pumping. As other wells are further away from SW 1 and have a less efficient hydraulic connection with SW 2, surface water depletion of SW 1 and SW 2 by these POA is also inferred to not exceed 25 percent of the rate of withdrawal.

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													
(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: _____

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:** **If the application is amended, the combined rate of all POA within 1 mile of SW 2 (Warner Creek) must be less than 0.565 cfs and no POA must be within ¼ mile of SW 1 (Lambert Slough) to avoid PSI.**

References Used:

Brownfield, M.E., and Schlicker, H.G., 1981, Preliminary geologic map of the McMinnville and Dayton Quadrangles, Oregon [map, 1:24,000, Open File Report O-81-6, Oregon Department of Geology and Mineral Industries, Portland, OR.

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, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington, Professional Paper 1424-A, 32 p: U. S. Geological Survey, Reston, VA.

Halford, K.J., and Kuniansky, E.L., 2002, Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data, Open File Report 02-197, 51 p: U. S. Geological Survey, Reston, VA.

McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Transactions, vol. 16, p. 519-524.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

Oregon Lidar Consortium, 2024, bare earth elevation data, accessed 6/28/2024.

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:** _____

_____

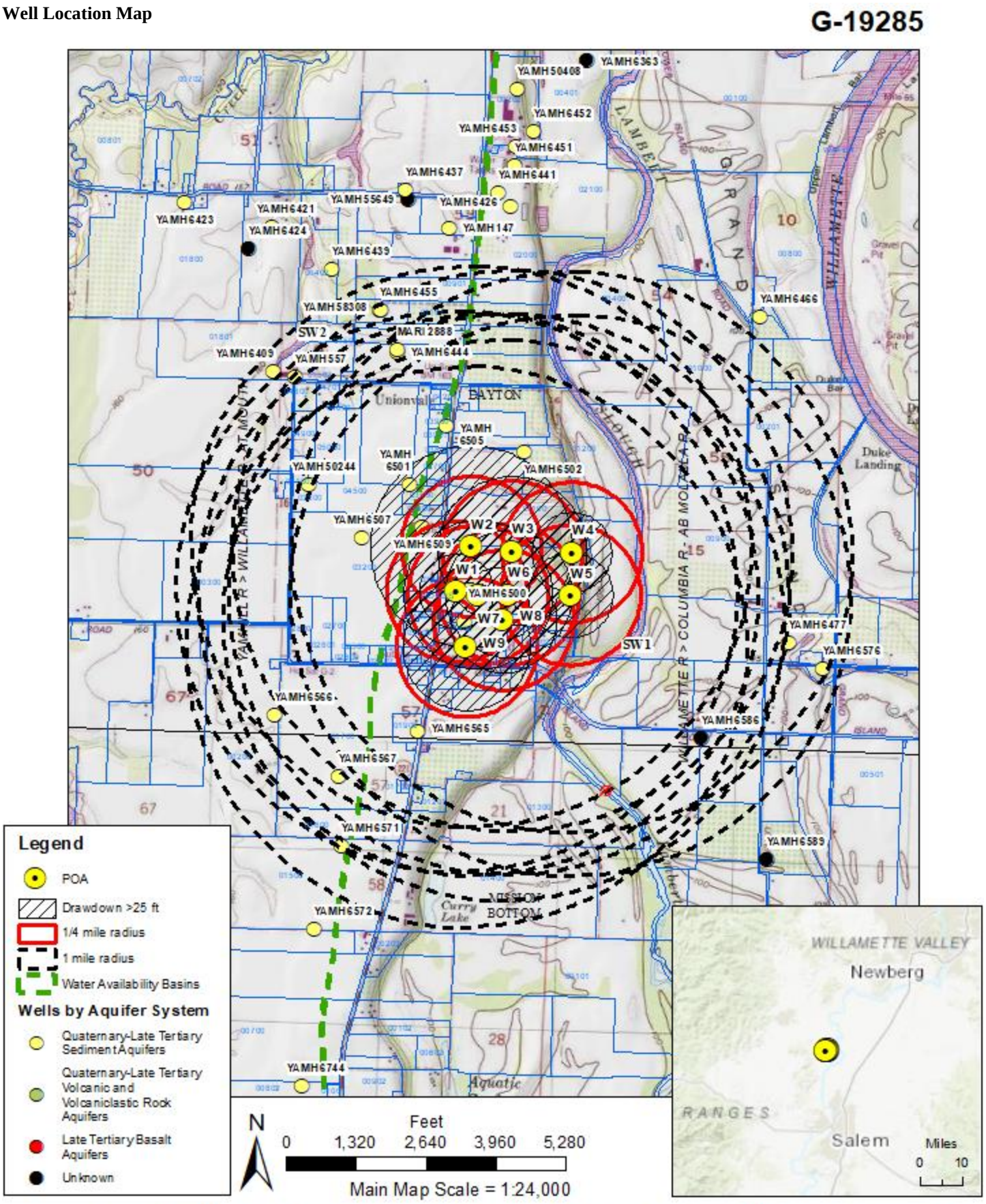
_____

_____

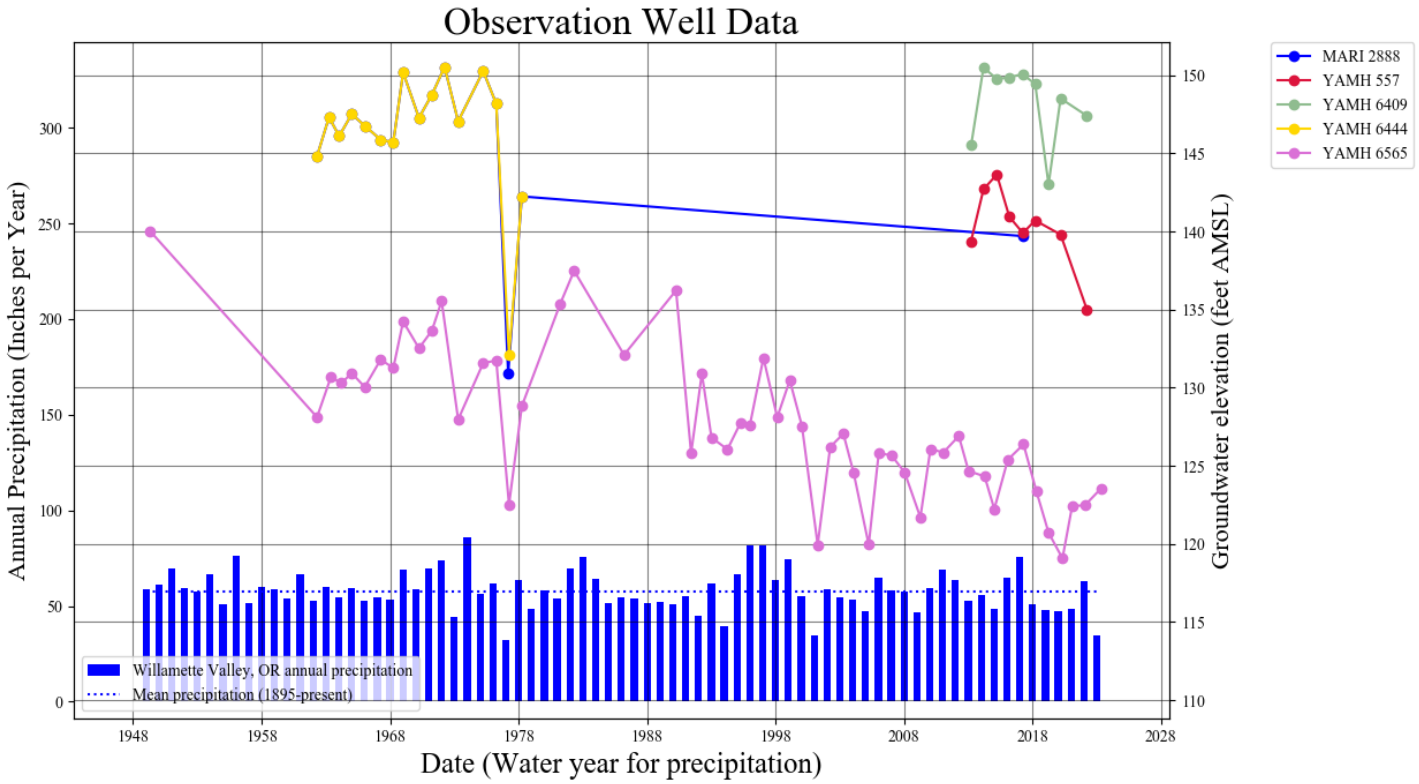
_____

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

Well Location Map



Hydrograph


Observation Well Data
Annual Precipitation (Inches per Year)
Groundwater elevation (feet AMSL)
Date (Water year for precipitation)
MARI 2888
YAMH 557
YAMH 6409
YAMH 6444
YAMH 6565
Willamette Valley, OR annual precipitation
Mean precipitation (1895-present)
0
50
100
150
200
250
300
110
115
120
125
130
135
140
145
150
1948
1958
1968
1978
1988
1998
2008
2018
2028

Well-to-Well Interference Analysis

Modeled Aquifer Properties

Transmissivity, T = 550 ft^2/day [Pumping Test Results]

Storativity, S = 0.001 [Conlon et al., 2005, MSU]

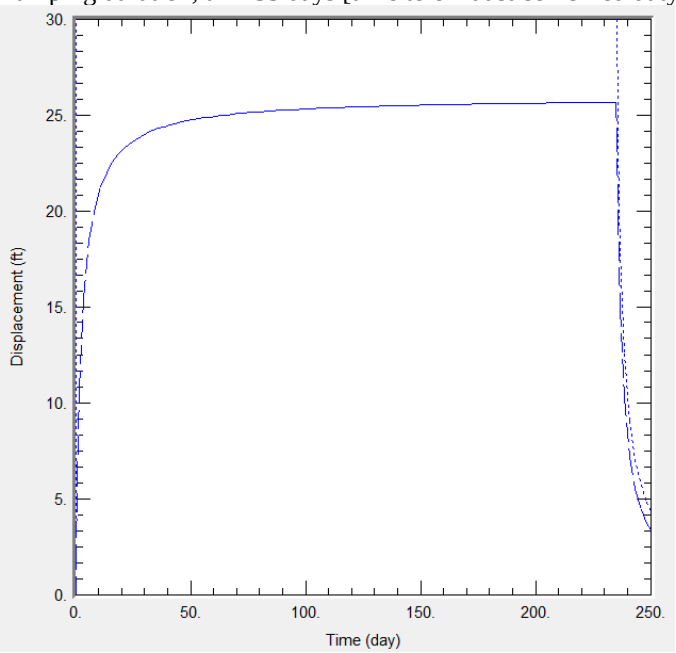
Well W1

Radial distance, r = 700 ft

Distance to recharge boundary (Lambert Slough), x = 2,600 ft

Pumping rate, Q = 250 gal/min [maximum combined rate of 0.556 ft^3/sec]

Pumping duration, t = 235 days [time to exhaust combined duty (259 ac-ft) at maximum combined rate]



Wells W2-9

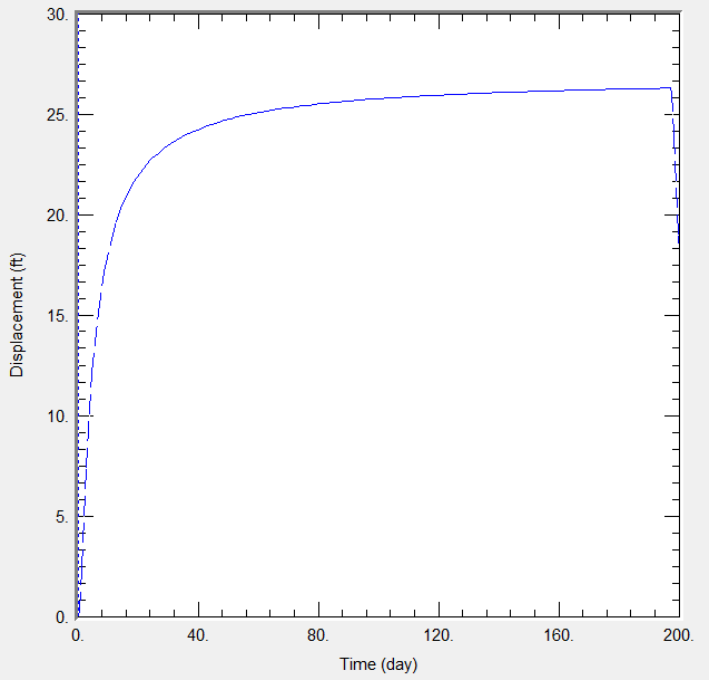
Pumping rate, Q = 590 gal/min [maximum requested rate of 1.315 ft^3/sec]

Pumping duration, t = 197 days [time to exhaust combined duty (259 ac-ft) at maximum combined rate]

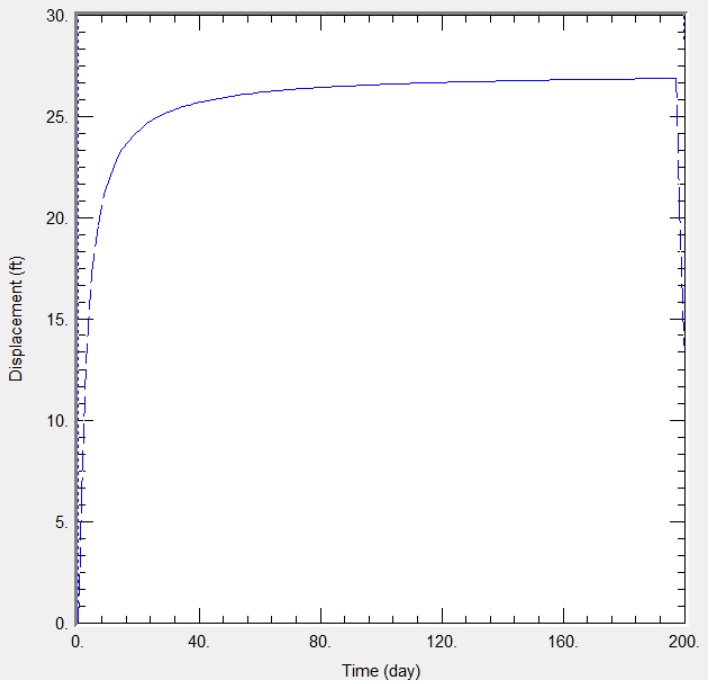
Well	Distance to Boundary (Lambert Slough), x [ft]	Radial Distance of Analysis, r* [ft]
W2	3100	1900
W3	2300	1400
W4	1200	750
W5	1300	800
W6	1900	1200
W7	2300	1400
W8	1650	1000
W9	1900	1200

*Radial distance of analysis is that within which all locations are predicted to experience drawdown greater than 25 feet before the end of pumping. The listed radial distances around each well are indicated on the Well Location Map. Due to the recharge effects of Lambert Slough, which does not follow a straight line, some locations beyond the indicated radial distance may still experience greater than 25 ft of drawdown.

W2


Displacement (ft)
Time (day)
0.
5.
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W3


Displacement (ft)
Time (day)
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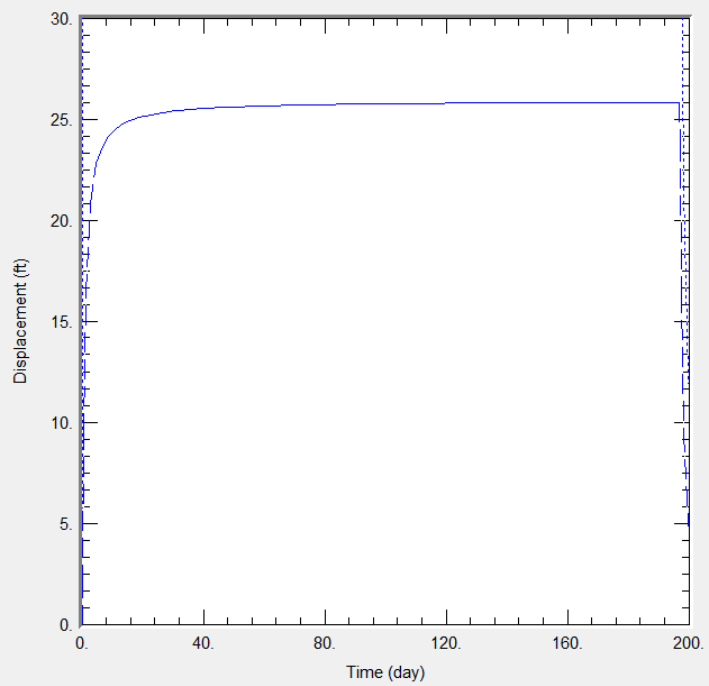
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W4


Displacement (ft)
Time (day)
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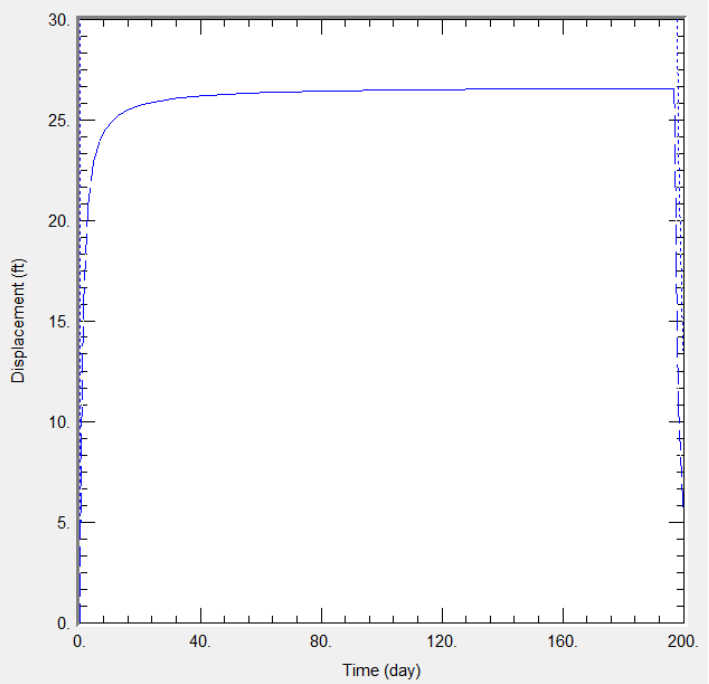
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W5


Displacement (ft)
Time (day)
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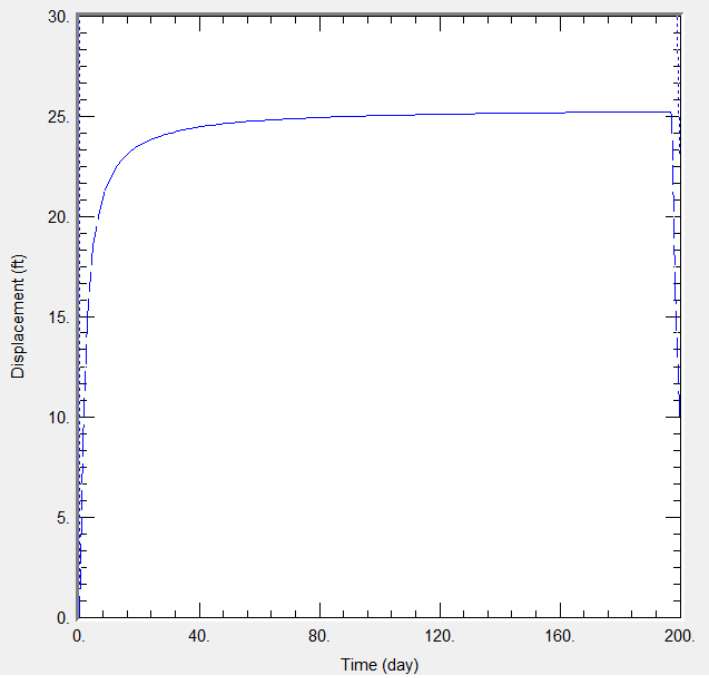
20.
25.
30.
0.
40.
80.
120.
160.
200.

W6


Displacement (ft)
Time (day)
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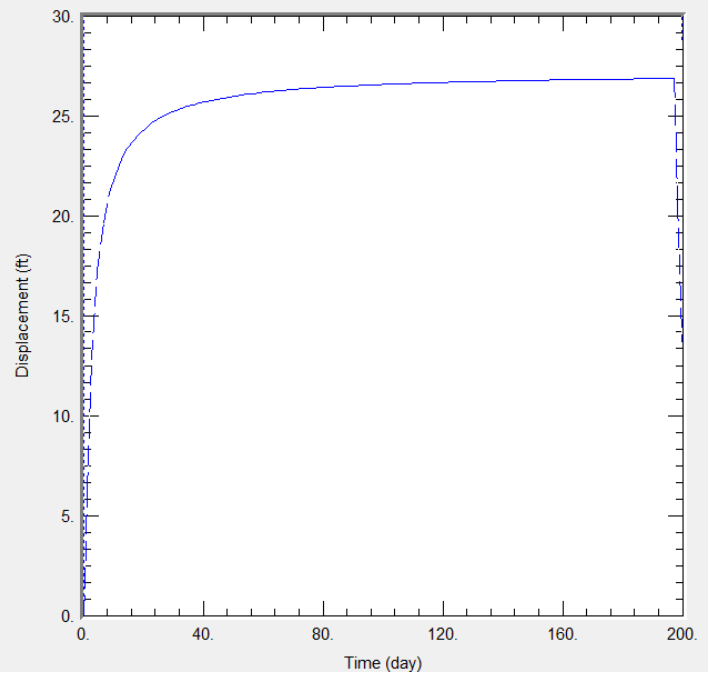
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W7


Displacement (ft)
Time (day)
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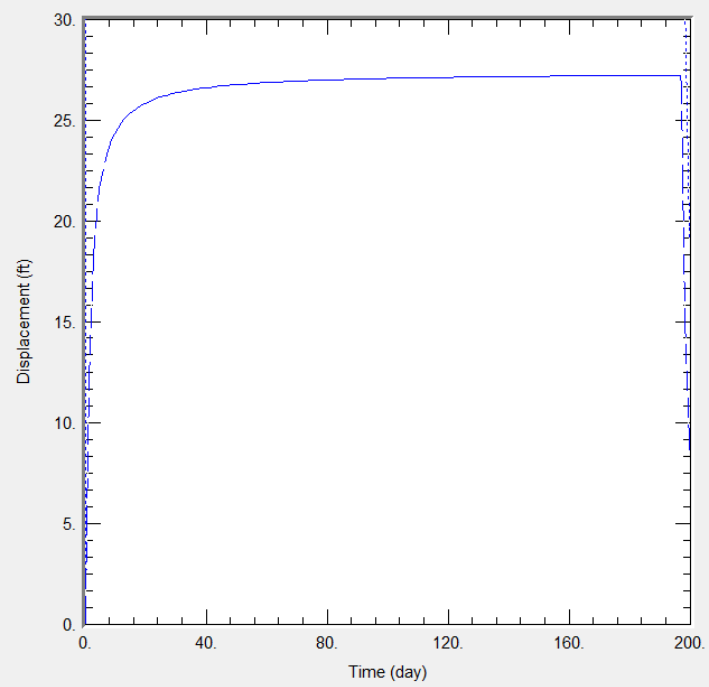
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W8


Displacement (ft)
Time (day)
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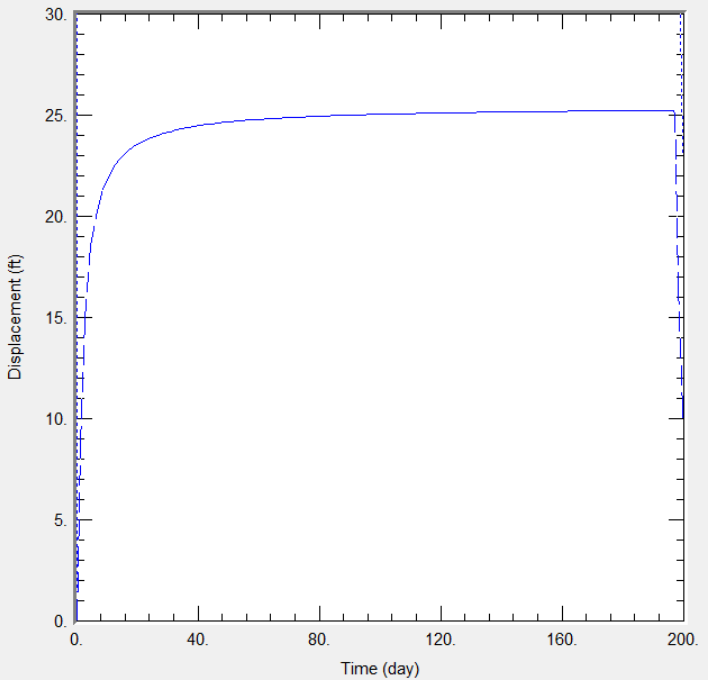
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

W9


Displacement (ft)
Time (day)
0.
5.
10.
15.
20.
25.
30.
0.
40.
80.
120.
160.
200.

Water Availability Tables

SW1

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN

Water Availability as of 10/4/2024

Watershed ID #: 182 (Map) Exceedance Level: 80%
Date: 10/4/2024 Time: 6:16 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

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	21,400.00	2,300.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,490.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,260.00	15,100.00	0.00	1,500.00	13,600.00
APR	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,300.00	0.00	1,500.00	10,800.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	997.00
OCT	4,850.00	753.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	887.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	975.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000.00	2,250,000.00	13,000,000.00	0.00	1,090,000.00	11,900,000.00

SW2

YAMHILL R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 10/4/2024

Watershed ID #: 30200801 (Map) Exceedance Level: 80%
Date: 10/4/2024 Time: 6:16 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

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	1,840.00	70.70	1,770.00	0.00	90.00	1,680.00
FEB	2,070.00	68.30	2,000.00	0.00	90.00	1,910.00
MAR	1,760.00	44.40	1,720.00	0.00	90.00	1,630.00
APR	1,060.00	51.40	1,010.00	0.00	90.00	919.00
MAY	523.00	67.00	456.00	0.00	90.00	366.00
JUN	232.00	87.60	144.00	0.00	80.00	64.40
JUL	108.00	111.00	-2.98	0.00	60.00	-63.00
AUG	66.90	98.30	-31.40	0.00	31.70	-63.10
SEP	56.50	62.80	-6.26	0.00	31.70	-38.00
OCT	72.50	16.50	56.00	0.00	60.00	-4.00
NOV	462.00	38.20	424.00	0.00	90.00	334.00
DEC	1,670.00	67.10	1,600.00	0.00	90.00	1,510.00
ANN	1,180,000.00	47,300.00	1,130,000.00	0.00	53,900.00	1,080,000.00

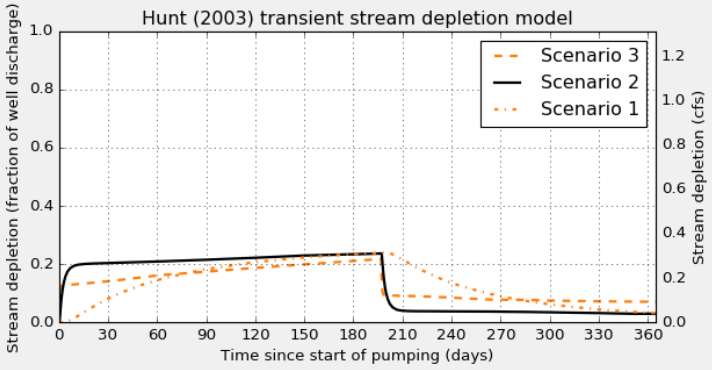
Surface Water Interference Analysis

Application type:	G
Application number:	19285
Well number:	W4
Stream Number:	1
Pumping rate (cfs):	1.315
Pumping duration (days):	197
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1200	1200	1200	ft
Aquifer transmissivity	T	170	550	1700	ft2/day
Aquifer storativity	S	0.005	0.001	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	30	20.0	10	ft
Aquitard thickness below stream	babs	1	1	1	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	120	120	120	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	20	3	3	20	21	21	22	23	23	4	4	4	3
Depletion (cfs)	0.26	0.04	0.04	0.27	0.27	0.28	0.29	0.30	0.31	0.05	0.05	0.05	0.04



Application type:	G
Application number:	19285
Well number:	W5
Stream Number:	1
Pumping rate (cfs):	1.315
Pumping duration (days):	197
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1300	1300	1300	ft
Aquifer transmissivity	T	170	550	1700	ft2/day
Aquifer storativity	S	0.005	0.001	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	30	20.0	10	ft
Aquitard thickness below stream	babs	1	1	1	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	180	180	180	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	22	3	3	23	24	25	25	26	27	4	4	3	3
Depletion (cfs)	0.30	0.04	0.04	0.31	0.32	0.33	0.34	0.34	0.35	0.06	0.05	0.04	0.04