

Groundwater Application Review Summary Form

Application # G- 19336

GW Reviewer Stacey Garrison Date Review Completed: 12/22/2023

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 22 2023

TO: Application G- 19336

FROM: GW: Stacey Garrison
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

- ☐ YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries
- ☒ NO
-
- ☐ YES Use the Scenic Waterway Condition (Condition 7J)
- ☒ NO
-
- ☐ 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 12/22/2023
 FROM: Groundwater Section Stacey Garrison
 Reviewer's Name
 SUBJECT: Application G- 19336 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: Robert and Arlene Bryson County: Lane

A1. Applicant(s) seek(s) 0.125 cfs from 1 well(s) in the Willamette Basin,
Main Stem Willamette subbasin

A2. Proposed use Irrigation Seasonality: Mar 1-Oct 31

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	LANE 6159	1	Alluvial	0.125	15S/4W-20 NE-NW	980' S, 2680' W fr NE Cor S 20

* 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	35	18	0 to 35		18.5 to 33.5	300	2	Bailer

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU are ~1.5 miles southwest of Harrisburg, Oregon.

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: There are no surface water sources within 0.25 miles. Per OAR 690-502-0240, the relevant basin rules (OAR 690-502-0050) 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 (7-yrs measurement), medium 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/POU are on Holocene floodplains deposits of the Willamette River consisting of unconsolidated gravel, sand, silt and clay with a maximum thickness of approximately 50 feet (McClaughry et al., 2010) and assigned to the Upper Sedimentary Unit, USU, of the Willamette Aquifer (Herrera et al., 2014, Woodward et al., 1998). The floodplain deposits can be further delineated as active channel gravel and sand, floodplain sand and silt, and floodplain gravel and sand lenses (Wallick et al., 2013). The water-bearing zones, WBZs, of these floodplain deposits likely interfinger with adjacent units, resulting in semi-confined conditions. The Holocene floodplain gravel deposits have a strong hydraulic connection to the Willamette River (Conlon et al., 2005, Gannet and Caldwell, 1998). A review of statistics for nearby well records was completed and compared with the proposed rate of 0.125 cfs (~56 gpm) for this application (see Well Statistics). The median reported well yield is 70 gpm and the maximum reported well yield is 1500 gpm. The proposed rate for this application is 80% of the median and 4% of the maximum reported yield. QLTS wells within a mile of the POA report yields of 10 to 500 gpm. The proposed rate of use of 0.125 cfs (56 gpm) is likely within the capacity of the groundwater resource.
- Water levels are stable (see Water Level Measurements in Nearby Wells). Within two miles, there were ten Quaternary-to-Late-Tertiary Sedimentary (QLTS)-source observation wells in Lane County. Of these ten wells, five do not have records within the last 5 years (LANE 6145, LANE 6216, LANE 6130, LANE 6157, and LANE 6087). The five remaining observation wells with recent data (LANE 55179, LANE 6621, LANE 5121, LANE 5122, and LANE 71979) show steady water levels. Water levels in the Holocene floodplain deposits are closely tied to the stream stage of the Willamette River (Conlon et al., 2005). As a result, groundwater levels in the Holocene floodplain deposits are anticipated to be stable in the long-term, but seasonal fluctuations may be pronounced, particularly in the late summer (see Gage Height for USGS 14166000). There are 53 POAs for 48 groundwater rights within 1 mile of the proposed POA, however, the overall steady water levels described above, high transmissivity with strong hydraulic connection to the Willamette River, and the semi-confined nature of the aquifer indicate that there is a low likelihood of interference with other groundwater users. The groundwater resource is not likely over-appropriated.

The nearest groundwater user to the POA is LANE 6170 (exempt domestic well serving tax lot 301 at 95494 Noraton Rd Junction City), at an elevation of 316 ft msl. It is likely the proposed use would cause some degree of well-to-well interference with LANE 6170. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with LANE 6170 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

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	Alluvial	☐	☒

Basis for aquifer confinement evaluation: The WBZs of the POA and other nearby wells is the shallow floodplain deposits of the Willamette River. Wells in the area report shallow SWLs regardless of depth that track well with river stage at USGS Gage 14166000 implying a single, unconfined aquifer. The POA (LANE 6159) records a SWL of 16.5 ft bls [295.5 ft amsl] in August, which aligns with summer low flows at USGS Gage 14166000.

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 ^b	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Willamette River	288-309	288-304	4,399	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: SWLs in surrounding wells utilizing the QLTS aquifer vary from 288 to 309 ft msl^a. Within a mile north and south of the POA, the local streambed of SW 1 (Willamette River) is 288 to 304 ft msl, indicating the local groundwater is in strong connection with the SW 1 and consistent with literature (Gannett and Caldwell, 1998; Woodward et al., 1998; Conlon et al., 2005).

^a Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for LANE 6038, LANE 6043, LANE 6051, LANE 6138, LANE 6136, LANE 6159, LANE 6158, LANE 6132, LANE 5976, LANE 6087, LANE 6130, LANE 6145, LANE 6216, LANE 55179, LANE 71979, LANE 6148, LANE 6069, LANE 6170, LANE 3691, LANE 76615, LANE 77161, LANE 304, LANE 27, LANE 6146, LANE 51861, LANE 52273, LANE 52707, LANE 54951, LANE 56675, LANE 57517, LANE 59548, LANE 61431, LANE 63981, LANE 65087 and well head elevations estimated based on LIDAR measurements at existing well locations (Watershed Sciences, 2009).

^b Surface water elevations were obtained from the USGS (2002) bathymetry survey data.

Water Availability Basin the well(s) are located within: WILLAMETTE R>COLUMBIA R-AB PERIWINKLE CR AT GAGE 14174

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?	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: NA-no streams within 1 mile

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: N/A-Q is not distributed

- 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
1	1	%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS				0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052		
Interference CFS				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
(A) = Total Interf.				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
(B) = 80 % Nat. Q	10,100	11,600	11,000	9,760	8,430	5,360	3,270	2,560	2,540	2,860	4,170	8,150	
(C) = 1 % Nat. Q	101	116	110	97.6	84.3	53.6	32.7	25.6	25.4	28.6	41.7	81.5	
(D) = (A) > (C)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100	<1 %	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%

(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: SW1 (Willamette River) is located more than a mile from the POA and is anticipated to have a strong hydraulic connection. A single well is anticipated for the appropriation of the requested rate of 0.125 cfs (~56 gpm) for irrigation season use from March 1 through October 31 (245 days). The 1% of the 80% exceedance natural flows for the WAB are much greater than the maximum proposed rate of appropriation and so PSI is not assumed and stream depletion modeling was not necessary.

Because only the distance is expected to vary between the POA and other surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 1 and SW 1) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 1 and SW 1. Therefore, the interference of the proposed POA with all surface water sources is also likely 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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

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

References Used: _____

Application File: G-19336

Pumping Test Files: LANE 6300, LANE 55179

Well Reports: LANE 6038, LANE 6043, LANE 6051, LANE 6138, LANE 6136, LANE 6159, LANE 6158, LANE 6132, LANE 5976, LANE 6087, LANE 6130, LANE 6145, LANE 6216, LANE 55179, LANE 71979, LANE 6148, LANE 6069, LANE 6170, LANE 3691, LANE 76615, LANE 77161, LANE 304, LANE 27, LANE 6146, LANE 51861, LANE 52273, LANE 52707, LANE 54951, LANE 56675, LANE 57517, LANE 59548, LANE 61431, LANE 63981, LANE 65087

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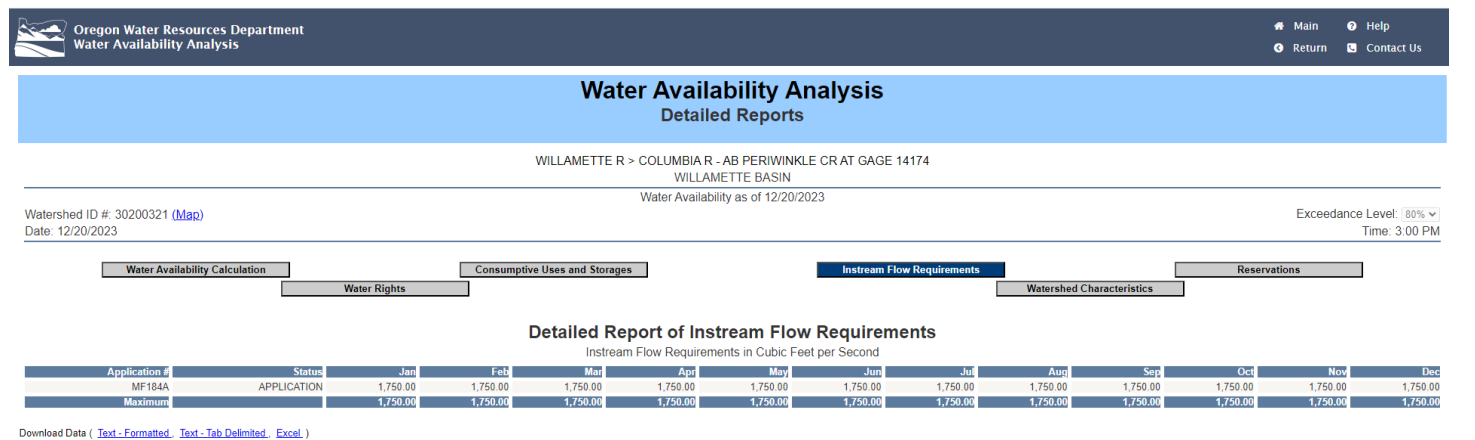
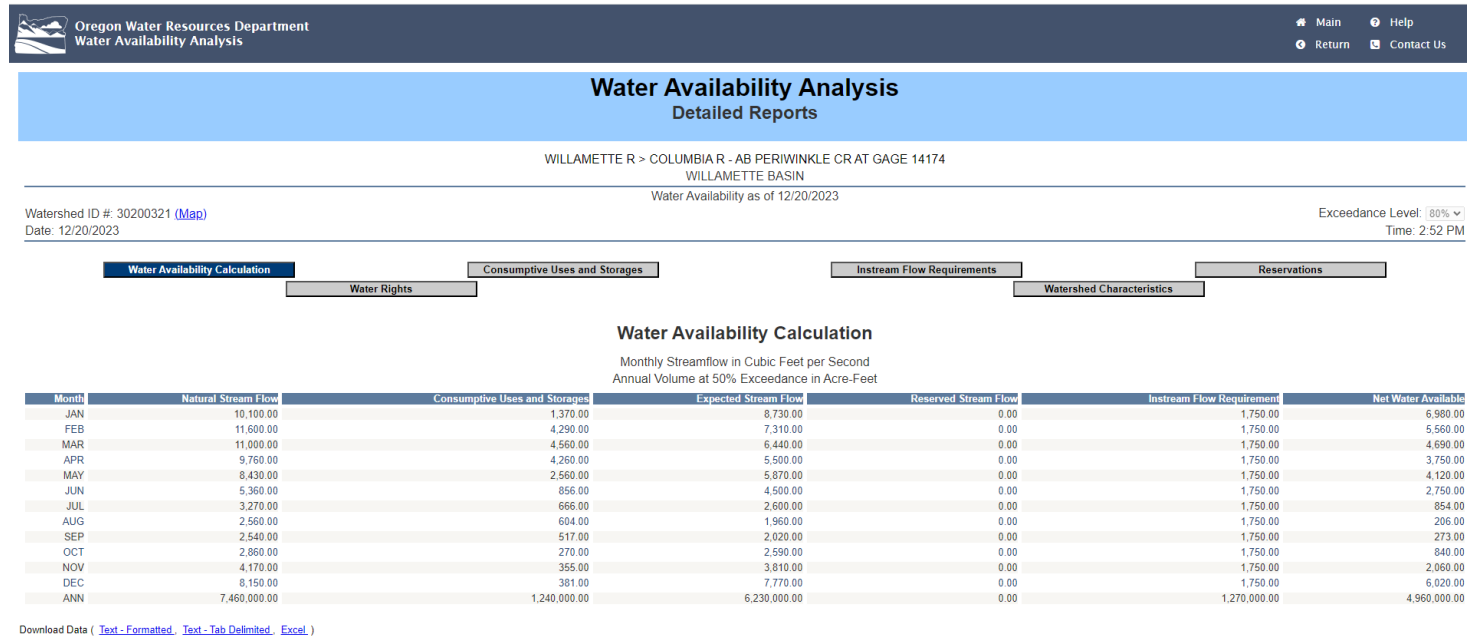
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- McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.
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- United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.
- Wallick, J.R., Jones, K.L. O'Connor, J.E., Keith, M.K., Hulse, David, and Gregory, S.V., 2013, Geomorphic and vegetation processes of the Willamette River floodplain, Oregon—Current understanding and unanswered questions: U.S. Geological Survey Open-File Report 2013-1246., 70 p.
- Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.
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D. WELL CONSTRUCTION, OAR 690-200

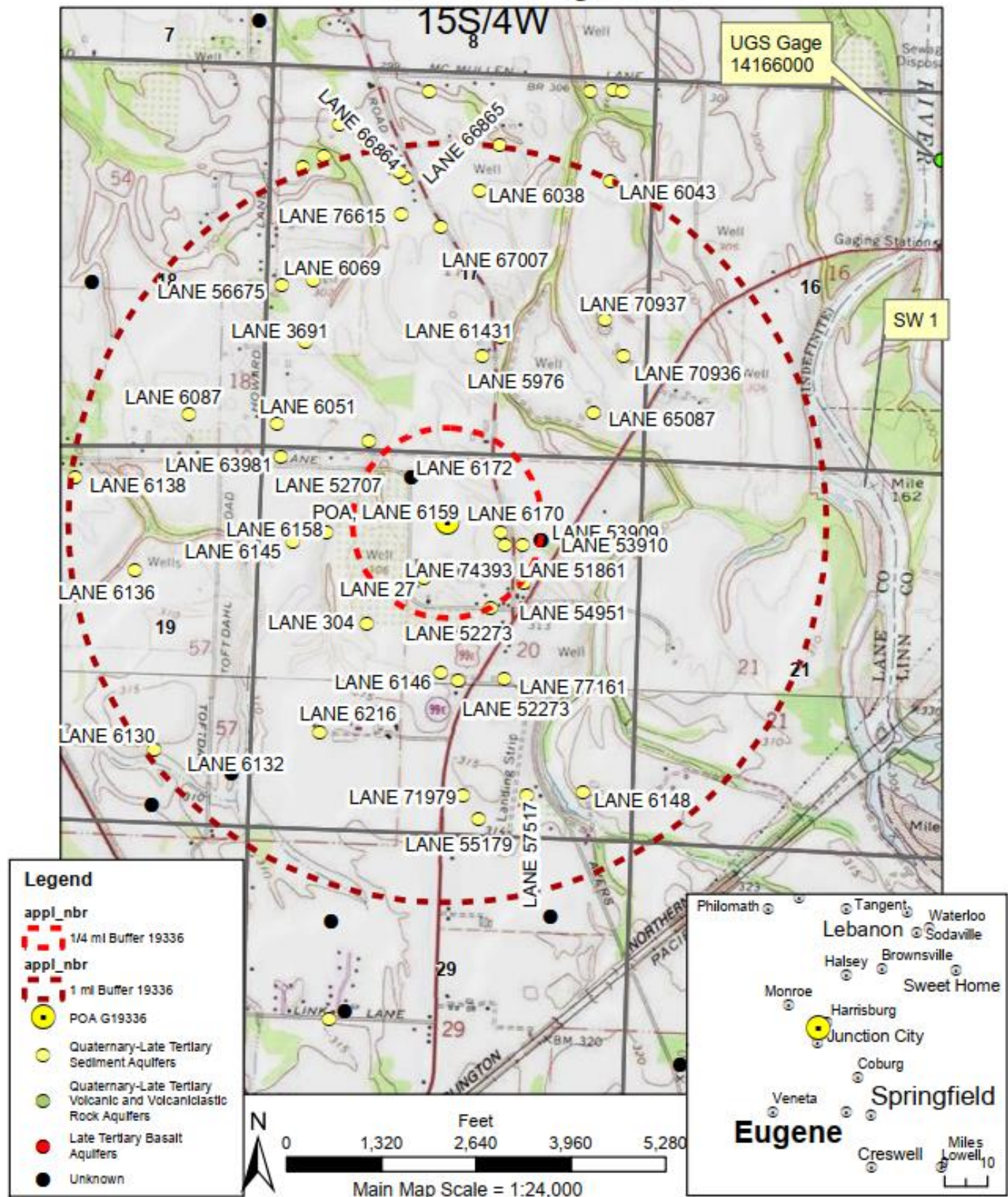
- D1. **Well #:** _____ **Logid:** _____
- D2. **THE WELL does not appear to meet current well construction standards based upon:**
- a. ☒ review of the well log;
 - b. ☐ field inspection by _____;
 - c. ☐ report of CWRE _____;
 - d. ☐ other: (specify) _____
- D3. **THE WELL construction deficiency or 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

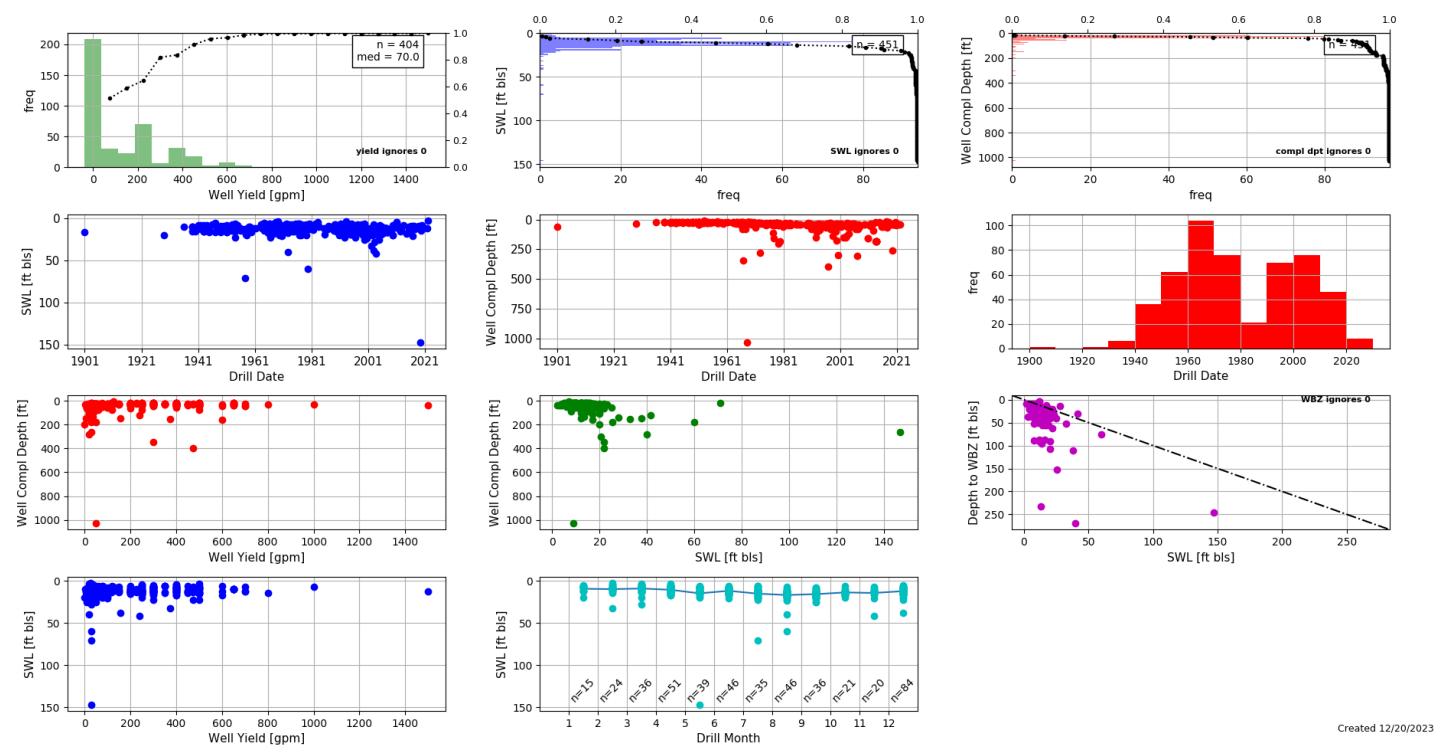


Well Location Map

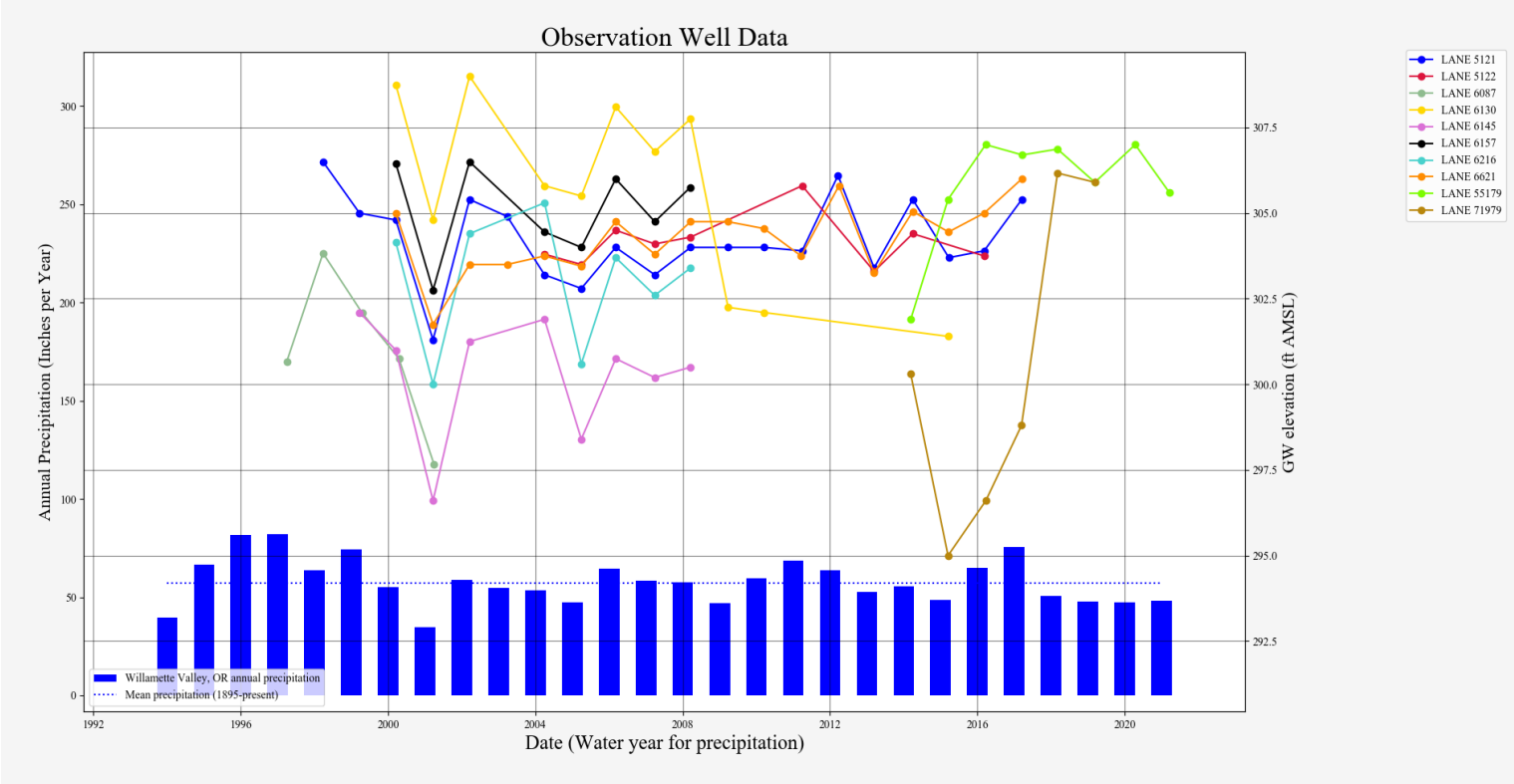
G19336 Bryson



Well Statistics



Water-Level Measurements in Nearby Wells

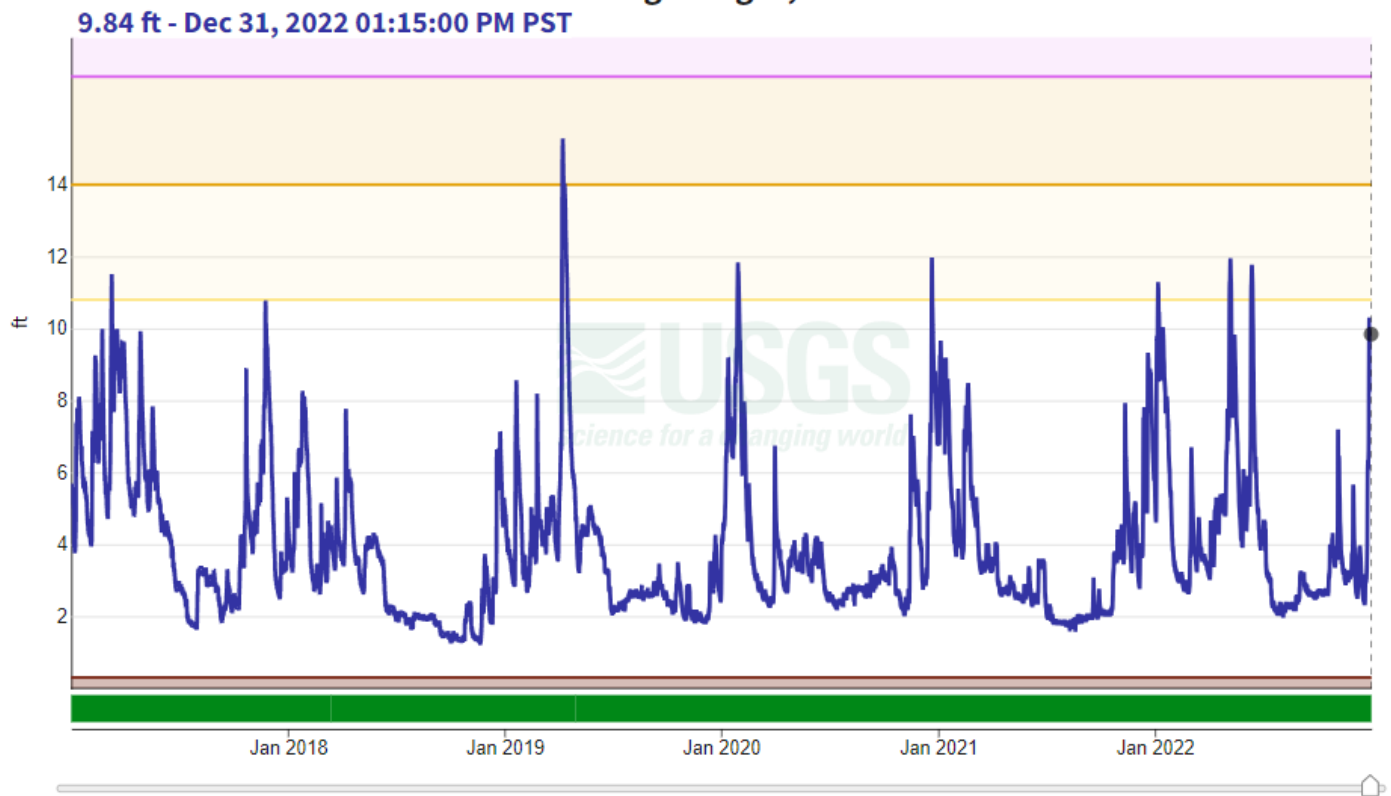


USGS Gage 14166000

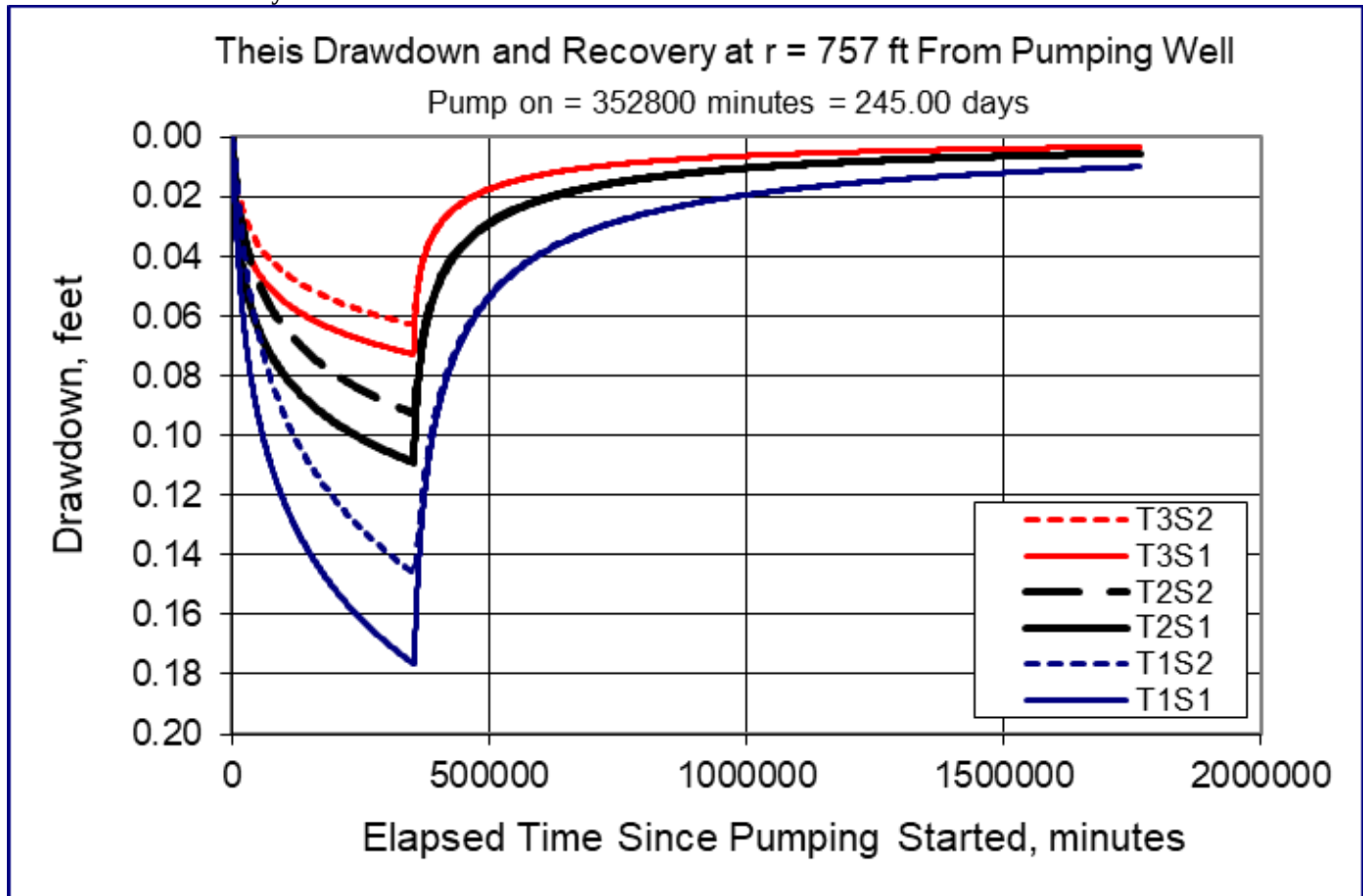
Willamette River at Harrisburg, OR - 14166000

January 1, 2017 - December 31, 2022

Gage height, feet



Gage elevation is approximately 288 ft amsl±10 ft.

Theis Interference Analysis

Radial distance from pumping well (r)=193 ft [estimated radial distance from POA to nearest user, LANE 6170]

Pumping Rate (Q)= 0.052 cfs (~23 gpm)*

Aquifer Transmissivity (T_1)= 59,840 gpd/ft (8,000 ft²/day), (T_2)= 112,200 gpd/ft (15,000 ft²/day), (T_3)= 187,000 gpd/ft (25,000 ft²/day)

Storativity (s_1) = 0.15, (s_2) = 0.3 [Heath 1983 and Morris & Johnson 1967, values for specific yield in gravel and sand]

Total pumping time=245

*The full pumping rate could not be utilized continuously for the entire 245-day irrigation season without exceeding the 25 ac-ft maximum allowed duty. For the maximum allowed duty of 25 ac-ft, continuous pumping would occur for 245 days at a rate of 0.052 cfs (~23 gpm)