Groundwater Application Review Summary Form

Application # G- _19442_

GW Reviewer _James Hootsmans_ Date Review Completed: _11/22/2024_

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 **_November 22, 2024_**

TO: **Application** G-**_19442_**

FROM: **GW: _James Hootsmans_**
(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 11/22/2024
FROM: Groundwater Section James Hootsmans
Reviewer's Name
SUBJECT: Application G- **19442** 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: **Paul Kuschnick** County: **Marion**

A1. Applicant(s) seek(s) 0.38 cfs from 2 well(s) in the Willamette Basin, Pudding River subbasin

A2. Proposed use Nursery Seasonality: Year Round

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	PROP 560	1	Alluvial	0.38	5S/2W-26 SESE	770' N, 540' W fr SE cor S 26
2	PROP 561	2	Alluvial	0.38	5S/2W-26 SESE	600' N, 1025' W fr SE cor S 26
3						
4						

* 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	150	0-150	0-150		TBD			
2	150	0-150	0-150		TBD			
3								
4								

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	183					
2						
3						
4						

Use data from application for proposed wells.

A4. **Comments:** The applicant is proposing two new POAs (PROP 560 and 561) for nursery use year-round with total annual use of 76 acre-feet across 15.2 acres. The POAs are proposed to be located a few hundred feet south of the City of Gervais, south of the intersection of Portland Rd NE (US 99E) and Mt Angel-Gervais Rd NE.

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 proposed POA wells are not located within ¼ mile of a perennial surface water source, therefore the pertinent basin rules do not apply.

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

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; 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 applicant's wells are located in an area that contains low-permeability saturated silt and clay from land surface to a depth of approximately 90 feet. A 30-40 feet thick package of sand and gravel underlies the low-permeability silt. Underlying the sand and gravel is a >1000 feet thick sequence of mostly fine-grained alluvium with thin beds of sand and gravel (Gannett and Caldwell, 1998).

Potential injury to other nearby groundwater rights was analyzed using the Theis equation for drawdown in a confined aquifer (Theis, 1935). 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 parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). The nearest known groundwater right to the proposed POA is MARI 2671, approximately 700 ft southwest of POA 2 (PROP 561) (see Well Location Map, attached). Assuming a continuous pumping rate of 0.38 cfs (~143 gpm) year round under the most likely hydraulic parameters, results using the Theis equation indicate that pumping of PROP 561 is not anticipated to affect another groundwater right such that said right would not be able to divert water to which it is legally entitled (see Theis Drawdown Analysis, attached).

Reported yields for nearby wells range from approximately 20 to 520 gpm, with a median yield of 70 gpm. Although the requested rate under this application is approximately double the median yield in this area, it would not be outside the range of reported yields. Therefore, it cannot be stated that the proposed use would exceed available capacity of the groundwater resource in this area, if properly conditioned.

Recent water levels for nearby observation wells do not indicate persistent or widespread declines in the Willamette Aquifer in this area (see Hydrograph, attached). Specifically, water levels in state observation well MARI 2666 have declined approximately 8 feet in the last 80 years. Other wells with shorter periods of observation show no obvious declines. Because of uncertainties about the stability of the resource, annual water levels measurements are recommended (permit condition 7RLN) to assess the health of the ground-water system over time.

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**	☒	☐
2	**Alluvial**	☒	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Nearby well logs indicate that static water levels are typically somewhat higher than the elevation of respective water-bearing zones. The confining Willamette Silt is, in places, incised by local drainages, producing local confinement that likely varies by location and well construction. Considering the proposed well depth, the POA wells are likely to produce from semi-confined zones at depth within the alluvial aquifer system.

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**	**Sam Brown Creek (Trib to Pudding River)**	**150 - 165**	**140 - 170**	**1850**	☒	☐	☐	☐	☒
2	**1**	**Sam Brown Creek (Trib to Pudding River)**	**150 - 165**	**140 - 170**	**2100**	☒	☐	☐	☐	☒
1	**2**	**Withrow Creek (Trib to Pudding River)**	**150 - 165**	**150 - 160**	**3700**	☒	☐	☐	☐	☒
2	**2**	**Withrow Creek (Trib to Pudding River)**	**150 - 165**	**150 - 160**	**4500**	☒	☐	☐	☐	☒
1	**3**	**Farmers Creek (Trib to Pudding River)**	**150 - 165**	**140 - 160**	**3900**	☒	☐	☐	☐	☒
2	**3**	**Farmers Creek (Trib to Pudding River)**	**150 - 165**	**140 - 160**	**3300**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Water level elevations in the alluvial aquifer are similar to the elevations of nearby creeks. Water table mapping in this area indicates that groundwater in the alluvial Willamette Aquifer in this area flows toward and discharges into local streams incised into the French Prairie plateau (Gannett and Caldwell, 1998; Conlon et al, 2005). Because nearby tributaries of the Pudding River do not fully penetrate the confining layer above the aquifer, the efficiency of the connection between these streams and the ground water system will be low.

Water Availability Basin the well(s) are located within: WAB 151: PUDDING R > MOLALLA R – AB MILL CR

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**	☐	**67.30**	☐	**<<25%**	☐
2	**1**	☐	☐	**N/A**	**N/A**	☐	**67.30**	☐	**<<25%**	☐
1	**2**	☐	☐	**N/A**	**N/A**	☐	**67.30**	☐	**<<25%**	☐

2	**2**	☐	☐	**N/A**	**N/A**	☐	**67.30**	☐	**<<25%**	☐
1	**3**	☐	☐	**N/A**	**N/A**	☐	**67.30**	☐	**<<25%**	☐
2	**3**	☐	☐	**N/A**	**N/A**	☐	**67.30**	☐	**<<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?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: Interference at the nearest stream was estimated using the Hunt 2003 model (<<25% after 30 days). Impacts to the other steams should be of the same order of magnitude. The maximum requested rate by the applicant is lower than the 1% of 80% of the natural flow for the Water availability basin. In addition, there are no pertinent instream water rights at these tributary levels of the Pudding 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
		%	%	%	%	%	%	%	%	%	%	%	%
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													
(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:**

References Used: Application Files: G-16839, G-18783, and G-19442

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

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

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 Unites States Geological Survey, Chapter D1, Book 4,17 p.

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 and others, 1998, Hydrogeologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey 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:** _____

_____

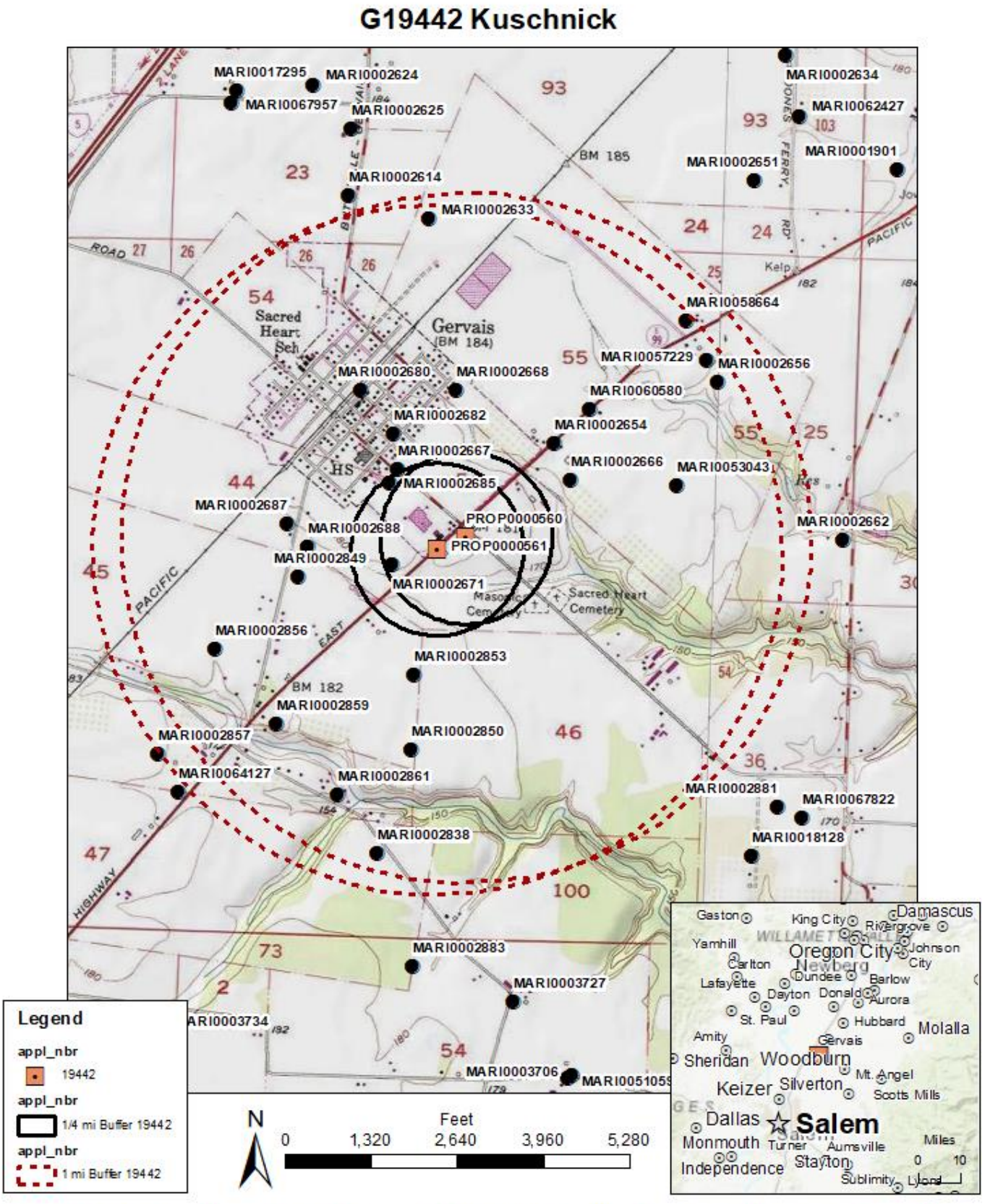
_____

_____

_____

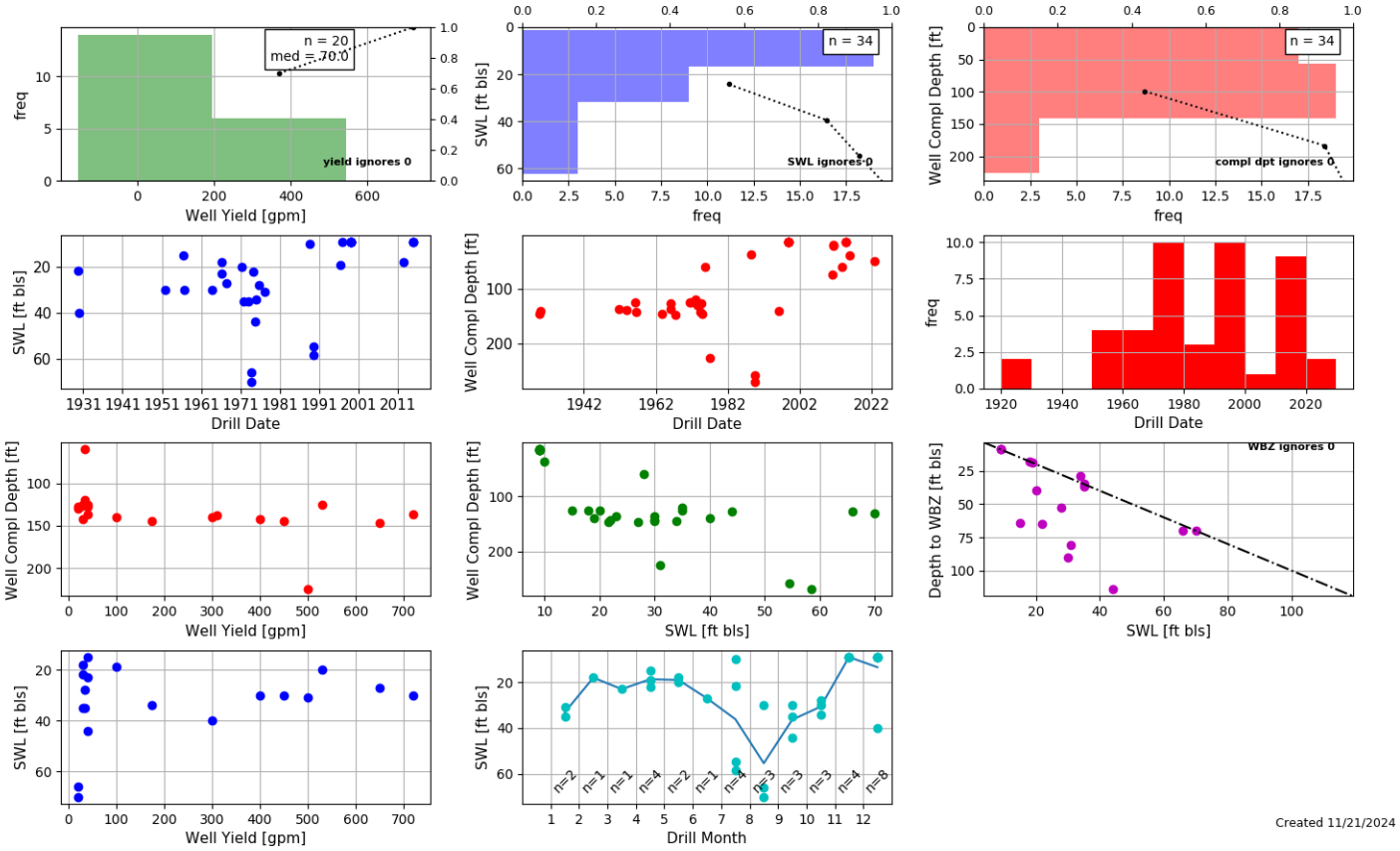
D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map

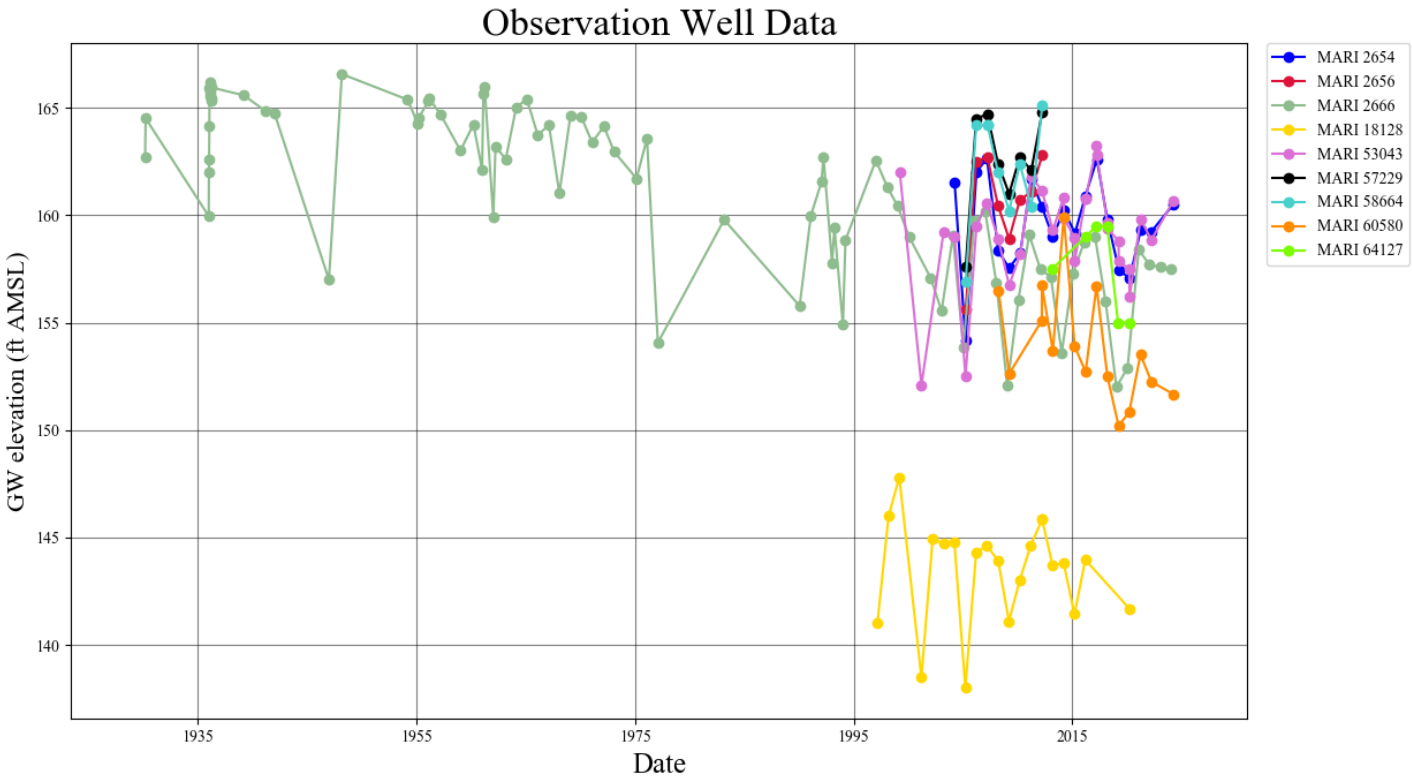


Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Well Statistics



Water-Level Measurements in Nearby Wells



Water Availability Tables

Water Availability Analysis
Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN
Water Availability as of 11/22/2024

Watershed ID #: 151 (Map)
Date: 11/22/2024

Exceedance Level: 80%
Time: 9:38 AM

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

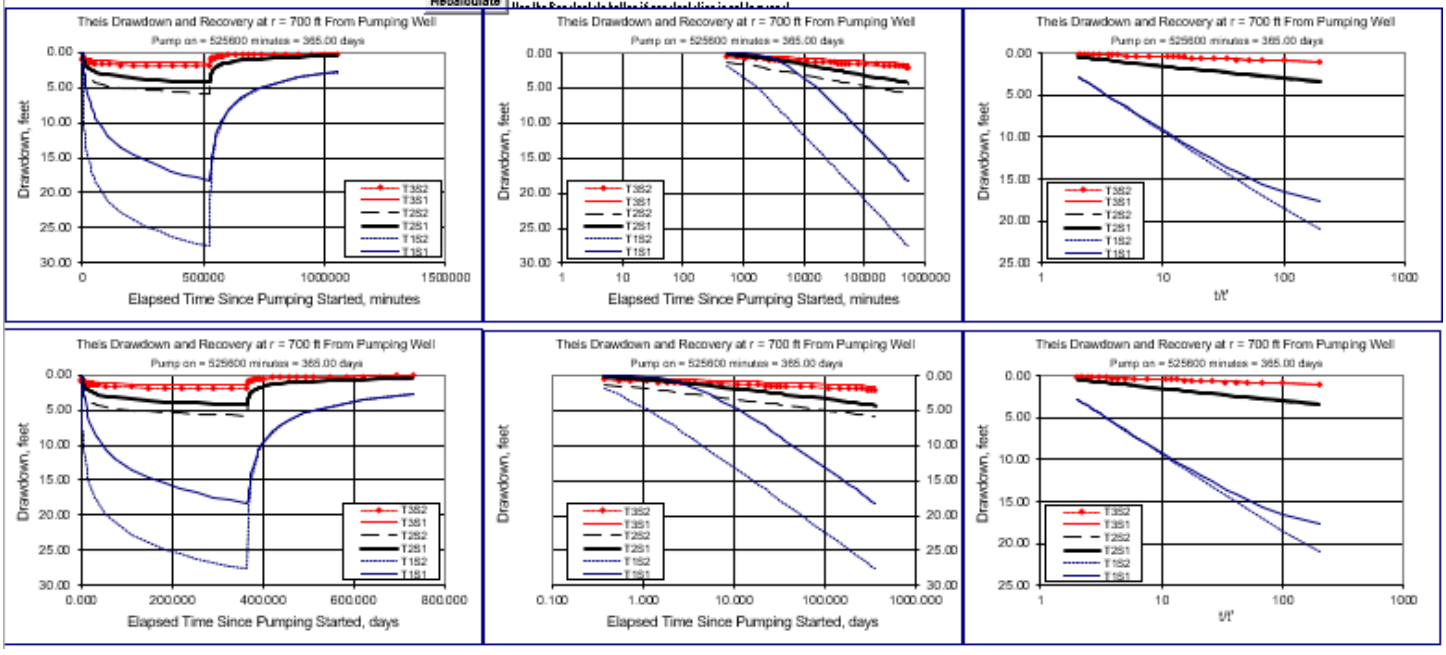
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,040.00	125.00	915.00	0.00	80.00	835.00
FEB	1,180.00	114.00	1,070.00	0.00	80.00	986.00
MAR	1,010.00	76.50	934.00	0.00	80.00	854.00
APR	787.00	52.40	735.00	0.00	80.00	655.00
MAY	425.00	51.00	374.00	0.00	80.00	294.00
JUN	224.00	73.10	151.00	0.00	50.00	101.00
JUL	109.00	115.00	-6.14	0.00	40.00	-46.10
AUG	71.00	94.30	-23.30	0.00	36.00	-59.30
SEP	67.30	53.50	13.80	0.00	36.00	-22.20
OCT	91.60	11.50	80.10	0.00	50.00	30.10
NOV	363.00	48.50	314.00	0.00	80.00	234.00
DEC	957.00	118.00	839.00	0.00	80.00	759.00
ANN	706,000.00	56,300.00	650,000.00	0.00	46,500.00	606,000.00

Theis Interference Analysis

Theis Time-Drawdown Works v.3.00
Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 30, 2014

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		365		d	
Radial distance from pumped well:	r		700.00		ft	Q conversions
Pumping rate	Q		143.0		gpm	143.00 gpm
Hydraulic conductivity	K	14	81	275	ft/day	0.32 cfs
Aquifer thickness	b		40		ft	19.12 cfm
Storativity	S_1		0.01000			27,529.41 cfd
	S_2		0.00100			0.63 af/d
Transmissivity Conversions	T_f2pd	540	3,255	11,000	ft2/day	
	T_ft2pm	0.3750	2.2604	7.6389	ft2/min	
	T_gpdpft	4,039	24.347	82,280	gpd/ft	

Recalculate



Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19442
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.38
Pumping duration (days):	365
Pumping start month number (3=March)	1
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1850	1850	1850	ft
Aquifer transmissivity	T	750	750	750	ft2/day
Aquifer storativity	S	0.0001	0.0001	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	50	50	50	ft
Aquitard thickness below stream	babs	60	60	60	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	10	10	10	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00