

Groundwater Application Review Summary Form

Application # G- 19278

GW Reviewer Mitra Khadka/Travis Brown Date Review Completed: 8/9/2023

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

August 9, 2023

TO: **Application G- 19278**

FROM: **GW: Mitra Khadka/Travis Brown**
 (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 8/9/2023
 FROM: Groundwater Section Mitra Khadka/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19278 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: Benito Mendoza County: Marion

A1. Applicant(s) seek(s) 0.083 cfs from 1 well(s) in the Willamette Basin,
Molalla-Pudding 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):

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 342	1	Alluvium (Sand and Gravel)	0.083	4S/1W-29	300'N, 520'W fr NE cor DLC 58

* 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	185 ^a	NA	NA	NA	150	0-18	NA	NA	NA	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The proposed POA is approximately 3.5 miles northeast of Woodburn, Oregon. Applicant proposes to pump 0.083 cfs groundwater from a proposed well (PROP 342) for irrigation of 3.3 acres nursery.

^a Well elevation data from LiDAR ground surface elevation (Watershed Sciences, 2009).

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 is not located within 1/4 mile of any perennial surface water body, and the well will produce groundwater from a confined alluvium aquifer. Therefore, per OAR 690-502-0240, the relevant Willamette Basin rules do not apply.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: _____
 Comments: _____

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

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

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition #(s) 7c, Static Water Level Condition;
 - 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 will produce from water-bearing sand and gravel deposits of the Willamette aquifer and possibly from the upper Willamette Confining Unit. In this area, the Willamette aquifer is ~20-30 ft thick, and is overlain by about 100-120 ft of fine-grained, low-permeability sediments, the Willamette Silt Unit (Gannet and Caldwell, 1998; Conlon et al. 2005; Well-logs MARI 826 and MARI 60942). The underlying Willamette Confining Unit is estimated to be ~1400 ft and is composed of low-permeability fine sand and clay.

The requested pumping rate (~37 gpm) is well within the range of reported yields for water wells in this area. Median well yield is 47.5 gpm in the area (see attached Well Statistics). Static water levels are typically 20-40 ft bls in this area of the Willamette aquifer, though seasonal water level fluctuations in the shallow alluvium are typically 50-60 ft per year (see attached Hydrographs). Despite the substantial fluctuation in water level, which is expected to grow as groundwater use increases in this area, and the relatively shallow total depths of the proposed POA, the low requested rate should mean that there will be sufficient available head for the proposed use. Groundwater level data from nearby wells for last 20-25 years indicate reasonably stable groundwater conditions (see attached Hydrographs).

The nearest permitted well to the proposed POA appears to be MARI 837 (Registration No. GR-1352), located about 1370 ft northeast of the proposed POA PROP 342. Interference with MARI 837 was quantitatively estimated using a Theis (1935) time-drawdown model for a confined aquifer. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2005; McFarland and Morgan, 1996). The analysis estimates maximum drawdown to be ~11 ft in MARI 837 after 365 days of continuous pumping at the maximum requested rate (see attached Well to Well Interference). The proposed use of groundwater is not anticipated to cause Substantial and Undue Interference with neighboring wells that meets a definition of well-to-well injury.

The available hydrogeological and groundwater levels data indicate that the proposed groundwater reservoir is not over-appropriated and is within the capacity of resources in the area. However, in order to monitor and protect the resources and

other groundwater rights in the area, the conditions specified in Item B1(d) and B2(c) are recommended for any permit issued pursuant to this application.

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"/>

Basis for aquifer confinement evaluation: In this area, the wells completed in the Willamette Aquifer or Willamette Confining Unit generally report SWLs above the water-bearing zones (see attached Well Stat). Additionally, available well logs in the area indicate ~100-120 ft thick low permeability clay/silt layer (the Willamette Silt Unit) overlying sand and gravel aquifer (the Willamette 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	Senecal Creek	~140-160	~133-145 ^a	~2100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Mill Creek	~140-160	~130-138 ^a	~5500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Estimated groundwater elevations are above the nearby surface water elevations for SW 1 and SW 2. Additionally, potentiometric mapping in this area indicates that groundwater is discharging to surface water sources (Woodward et al., 1998). Based on the available evidence, the proposed POA would be hydraulically connected to SW 1 and SW 2.

^a Surface water elevation estimated from LIDAR (Watershed Sciences, 2009).

Water Availability Basin the well(s) are located within: WID #30200901 MILL CR > PUDDING 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	<input type="checkbox"/>	<input type="checkbox"/>	NA	NA	<input type="checkbox"/>	1.88	<input checked="" type="checkbox"/>	<25%	<input checked="" 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 #	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"/>

Comments: The requested rate (0.083 cfs) is greater than 1 percent (0.0188 cfs) of the stream discharge which is equaled or exceeded 80 percent of time (1.88 cfs) for SW 1. Per OAR 690-009-0040(c), the Potential for Substantial Interference (PSI) is assumed.

The anticipated interference with SW 1 due to the proposed use was quantitatively estimated using the Hunt (2003) model. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2005; McFarland and Morgan, 1996) or are within a typical range of values for the given parameter within the hydrogeologic regime (Freeze and Cherry, 1979). Results indicate that interference with SW 1 is not anticipated to exceed 25 percent of the rate of withdrawal within the first 30 days of continuous pumping (See attached Stream Depletion Model Analysis). Depletion of local surface water will be buffered by the low vertical hydraulic conductivity and substantial thickness of fine-grained sediments between the relevant water-bearing zones and local streambeds. However, there will still be some depletion of surface water. Net impacts will be small at the onset of pumping but will increase with time until a new equilibrium between local recharge and discharge is reached, at which time surface water depletion is anticipated to be relatively constant throughout the year.

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: _____

References Used:

Application File: G-19278

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, 83 p.

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.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

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.

Pumping Test Report: MARI 614, MARI 19191, MARI 55994, MARI 59508, MARI 905, MARI 2011, MARI 55251, MARI 50236, MARI 52215, MARI 60041.

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.

Theis, C.V., 1940, The source of water derived from wells: Essential factors controlling the response of an aquifer to development: Civil Eng., Vol. 10: pp. 277-280.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Hood to Coast, Oregon: Portland, OR, May 27.

Well-log Report: MARI 826, MARI 60942.

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.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

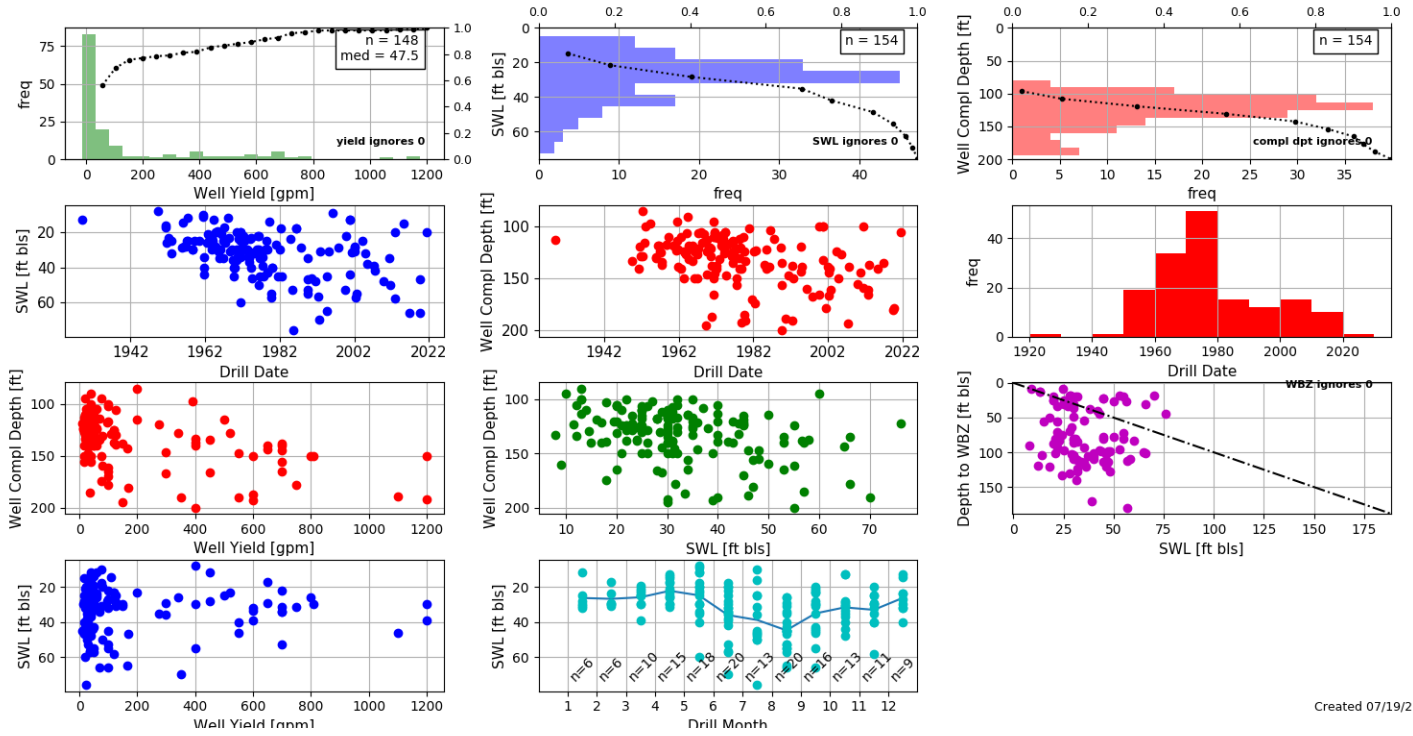
D2. **THE WELL does not appear to meet current well construction standards based upon:**

- 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.**

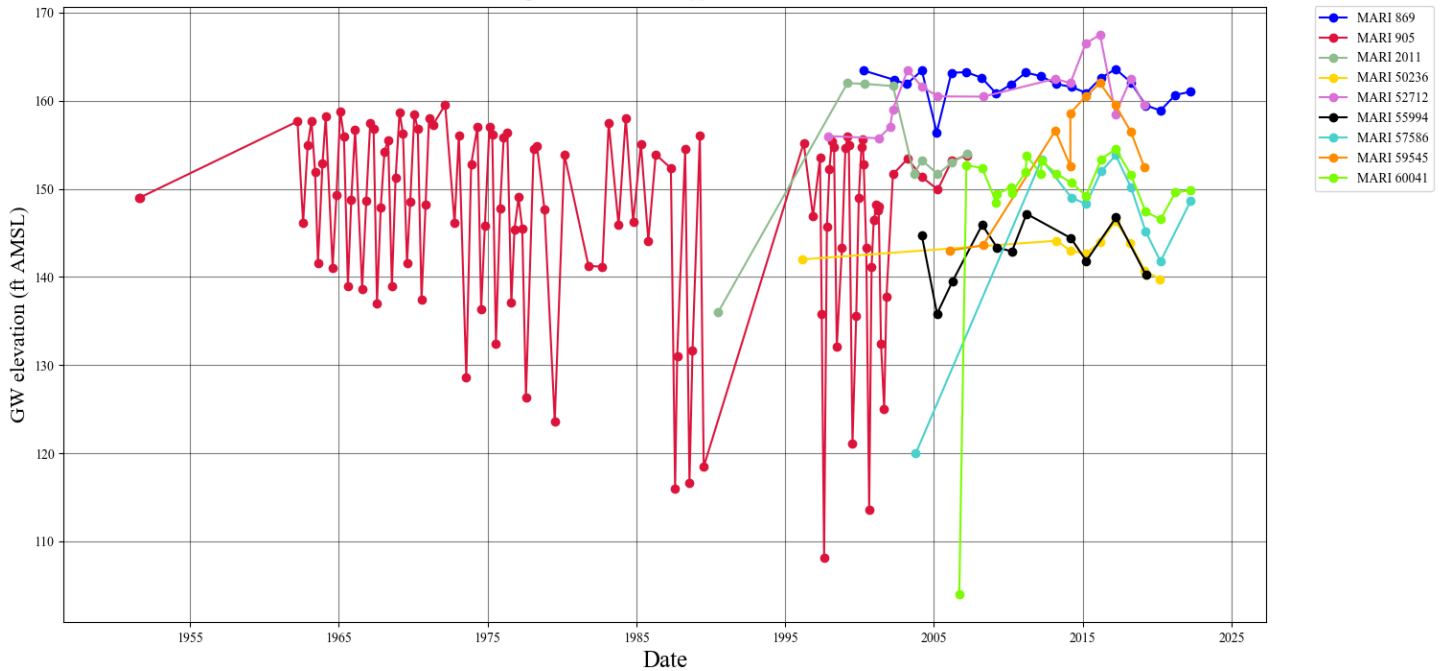
Well Statistics - 4S/1W S28-33



Created 07/19/2023

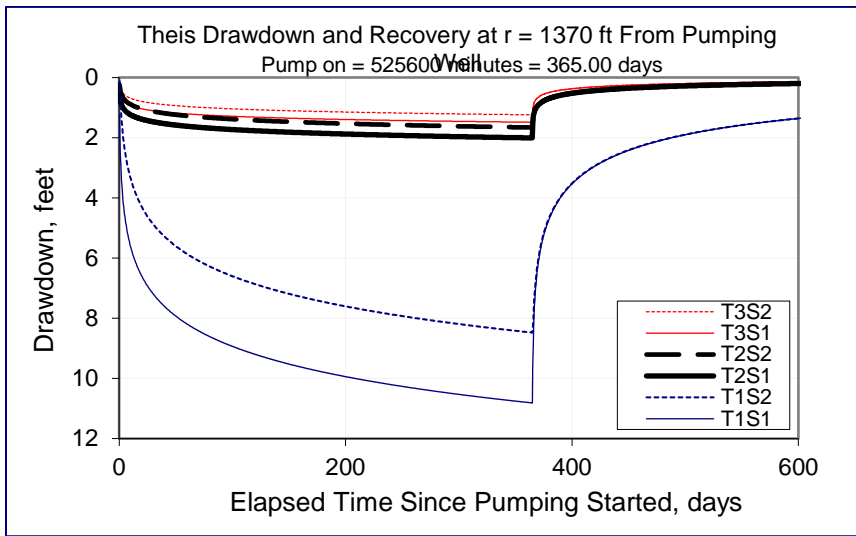
Water-Level Measurements in Nearby Wells

Observation Well Data



Well Interference Analysis

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		365		d	
Radial distance from pumped well:	r		1370		ft	Q conversions
Pumping rate	Q		37		gpm	37.00 gpm
Hydraulic conductivity	K	13	88	123	ft/day	0.08 cfs
Aquifer thickness	b		30		ft	4.95 cfm
Storativity	S_1		0.0001			7,122.99 cfd
	S_2		0.0005			0.16 af/d
Transmissivity Conversions	T_ftpd	390	2640	3690	ft ² /day	Recalculate
	T_ft2pm	0.2708333	1.8333333	2.5625	ft ² /min	
	T_gpd/ft	2917.2	19747.2	27601.2	gpd/ft	



Water Availability Analysis

Water Availability Analysis
Detailed Reports

MILL CR > PUDDING R - AT MOUTH
WILLAMETTE BASIN

Watershed ID #: 30200901 (Map)
Date: 7/25/2023

Water Availability as of 7/25/2023

Exceedance Level: 80%
Time: 3:33 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	39.20	9.74	29.50	0.00	0.00	29.50
FEB	53.90	9.88	44.00	0.00	0.00	44.00
MAR	38.40	9.47	28.90	0.00	0.00	28.90
APR	27.60	7.10	20.50	0.00	0.00	20.50
MAY	13.70	5.73	7.97	0.00	0.00	7.97
JUN	8.72	7.06	1.66	0.00	0.00	1.66
JUL	3.79	10.80	-7.05	0.00	0.00	-7.05
AUG	2.09	8.81	-6.72	0.00	0.00	-6.72
SEP	1.88	4.81	-2.93	0.00	0.00	-2.93
OCT	2.39	1.25	1.14	0.00	0.00	1.14
NOV	6.05	7.23	-1.18	0.00	0.00	-1.18
DEC	25.90	9.56	16.30	0.00	0.00	16.30
ANN	30,000.00	5,520.00	25,300.00	0.00	0.00	25,300.00

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19278
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.083
Pumping duration (days):	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	200.0	330.0	330.0	ft
Aquifer transmissivity	T	400	2650	3700	ft ² /day
Aquifer storativity	S	0.001	0.005	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	65	55	45	ft
Aquitard thickness below stream	babs	40	35	25	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0

