

This Groundwater Technical Review and the included analysis help inform the Water Rights Section's review of whether the proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 and ORS 537.621. The Water Rights Section also considers other information sources when making its public interest determination, including watermaster input, any comments received, input from other agencies, other Commission rules not evaluated as part of the Groundwater Review, and other information.

PUBLIC INTEREST TECHNICAL REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date: 8/17/2026
FROM: Groundwater Section Byron Ebner / Travis Brown
Reviewer's Name
SUBJECT: Application G - 19499 Supersedes review of _____

Date Reviewed by GW Lead and Returned to WRSD: Travis Brown, 8/17/2026

PUBLIC INTEREST PRESUMPTION: GROUNDWATER

OAR 690-310-0130 (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 if

(a) The proposed use is allowed in the applicable basin program established pursuant to ORS 536.300 and 536.340 or given a preference under ORS 536.310(12);

(b) Water is available;

(c) The proposed use will not injure other water rights; and

(d) The proposed use complies with the rules of the Commission.

Department staff review groundwater applications under OAR 690-310-0140 to determine whether the presumption is established and may modify or condition the proposed use 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:

A1. Application

Applicant's Name: Brad Hazenberg County: Marion
Applicant(s) seek(s) 1.003 cfs from 1 well(s) in the Willamette Basin,
Mainstem Willamette subbasin
Proposed use Primary Agricultural Uses/Livestock Seasonality: 11/1 – 2/28

A2. Well and aquifer data:

A2 a: Well identifiers, aquifer, rate, and location

POA Well	Well Log ID	Applicant's Well #	Proposed Aquifer	Proposed Rate (cfs)	Location (T/R-S QQ-Q)	Latitude	Longitude
1	MARI 69050	4	Quaternary-Late Tertiary Sed	1.003	4S/2W-9 NW-NW	45.24416987	-122.94459260

A2 b: Well construction information by depth below land surface. All units in feet.

POA Well	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
	Min	Max	Min	Max	Min	Max	Min	Max	
1	0	321.58	-2	321.58	280	318	37	321.58	322

A2 c: Well construction information by elevation above mean sea level. All units in feet.

POA Well	Land Surface Elevation	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
		Min	Max	Min	Max	Min	Max	Min	Max	
1	180.81	180.81	-140.77	182.81	-140.77	-99	-137	143.81	-140.77	-141.19

A2 d: Information relevant to water levels, including land surface elevation, depth of first water, recent annual high level, and reference levels for permit conditions

POA Well	Depth of First Water from Well Log (ft bls)	Shallowest Static Water Level (ft bls)	Most Recent Annual High WL		Reference Levels for:				Well Tests			
					RSGL		Permit Conditions		(max yield on well log)			
			Depth (ft bls)	WL Date	Depth (ft bls)	Depth (ft bls)	Date	Pro-visional?	Yield (gpm)	Draw-down (ft)	Test Type	Duration (hours)
1	52	N/A	N/A	N/A	N/A	100.50	3/18/2025	Yes	800	75.8	P	4

Use data from application for proposed wells.

“SWL” = static water level (most recent or representative SWL). “amsl” = above mean sea level. “bls” = below land surface

Comments: Provisional permit condition reference level for POA MARI 69050 (Table A2d) is 100.50 ft bls based off permit condition measurement collected 3/18/2025; despite this measurement being noted as non-static (“Rising”), it is the highest observed water level in the POA well. Future static water level collected to meet permit condition requirements under Certificate 98500 or other permits could be used to established a final condition reference level for a permit pursuant to this application.

A3. Description of hydrogeologic setting / conceptual model:

The proposed POA is located in the Central Willamette Basin, south of Newberg and northeast of St. Paul near the French Prairie area. Based on mapping from (Conlon et al., 2005), the proposed POA is likely completed in the Lower Sedimentary Unit of the Willamette Aquifer, referred to as the Willamette Confining Unit by Woodward et al. (1998), which underlies the Willamette Silt Unit and Middle Sedimentary Unit of the Willamette Aquifer. The Lower Sedimentary Unit overlies the Columbia River Basalt Unit and consists of mostly distal alluvial fan sediments from Cascade Range streams and fine-grained sediments deposited from Coast Range streams (Conlon et al., 2005). Recharge to the Middle and Lower Sedimentary Units occurs primarily through the Willamette Silt Unit. While the Lower Sedimentary Unit can be regionally characterized as a confining unit, there are localities of coarser grained sediments found throughout the Central Willamette Basin that have proven productive. One of the productive areas for the Lower Sedimentary Unit is nearby the area between Woodburn and Newberg in which many irrigation wells have produced up to 250 gpm and some as high as 1000 gpm (Conlon et al., 2005).

Regional discharge of groundwater in the Central Willamette Basin flows to the Willamette River, which is fully incised through the Willamette Silt Unit and into either the Middle Sedimentary Unit, if present, or the Lower Sedimentary Unit. Smaller streams, such as Mission Creek and unnamed streams in the area, do not fully incise through the Willamette Silt Unit and receive groundwater discharge from the less permeable silt unit (Conlon et al., 2005). Due to the confined nature of the Lower Sedimentary Unit, pumping impacts propagate rapidly to aquifer boundaries, which are the Willamette River and the overlying Silt Unit. Increased pumping will result in decreased storage in the aquifer, less discharge to the Willamette and smaller streams, and increased infiltration from the Silt Unit into the Lower Sedimentary Unit (Barlow and Leake, 2012). Herrera et al., (2014) modeled streamflow depletion in the Middle and Lower Sedimentary Units of the Willamette Aquifer in this area that shows streamflow depletion of the Willamette River and “Other Rivers” when pumping is increased in the Lower Sedimentary Unit.

B. BASIN PROGRAM:

OAR 690-310-0130 (1)(a)

B1. ☒ **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: SWL indicates confined aquifer and well is greater than ¼ mile from a perennial source of water.

B2. ☐ **Well(s) #** _____, _____, _____, _____, _____, are limited by an administrative restriction under the applicable basin program.

Comments: _____

C. WATER AVAILABILITY:

OAR 690-310-0130 (1)(b)

OAR 690-300-0010(57): "Water is Available" [...] means: [...]

- (d) The proposed groundwater source exhibits Reasonably Stable Groundwater Levels, as defined in OAR 690-008-0001; and
- (e) The total requested rate of groundwater allocation is obtainable by the expected yield of the well(s) proposed in the application given best available information; and
- (f) The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that does not have water available]

C1. Reasonably Stable Groundwater Levels

OAR 690-008-0001 (9): "Reasonably Stable Groundwater Levels" means that Annual High Water Levels, based on observed trends over time, remain within a range consistent with sustaining the function and character of a groundwater reservoir indefinitely, and:

- (a) The Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof:
- (A) indicate no decline or an average rate of decline of less than 0.6 feet per year over any immediately preceding averaging period with duration between 5 and 20 years. Four Annual High Water Levels are required to calculate the rate of change; one must have been measured in the year to which the evaluation of reasonably stable applies, and at least one must have been measured between 5 and 20 years prior; and
 - (B) have not declined by more than 25 feet from a reference level to the level in the year to which the evaluation of reasonably stable applies. The reference level shall be the highest known water level unless Annual High Water Levels have been measurably increased by human activity, in which case the Department may set a different reference level using best available information.
- (b) If water level data are insufficient to perform either test in (a) for a given year, then the Department will presume that groundwater levels are not reasonably stable unless:
- (A) the most recent evaluation of reasonably stable applies to a year within 5 years of the given year, in which case the Department may presume that the recent evaluation still applies; or
 - (B) groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir, in which case the Department may presume that groundwater levels are reasonably stable.
- (c) The Department may evaluate Reasonably Stable Groundwater Levels for the year of the priority date of a groundwater right application or for a later year if more recent data are available.

- C1a. If part (a) of 690-008-0001(9) has been superseded by a basin program rule as per 690-008-0001(9)(B)(d) proceed to C1c. List one or more representative wells in the proposed groundwater reservoir or part thereof that have sufficient data to evaluate part (a) of 690-008-0001(9). Both the Rate (OAR 690-008-0001(9)(a)(A)) and Magnitude (OAR 690-008-0001(9)(a)(B)) tests for a given well must be passed in order to find that the water levels are Reasonably Stable. It is not necessary to include all POAs proposed on this application into this table, as long as they all access the same part of the groundwater reservoir and have the same reasonable stability status indicated in C1b below. If some POAs are found to be reasonably stable while others are not, then all the POAs on the application should be included in the table below, with their POA number indicated in the second column. In that situation, the reviewer does not need to indicate in this table which wells are considered representative for determining reasonable stability status for different POAs, but they should describe those relationships in the comments below.

Well Log ID	POA Well #	Reference Level for Evaluation of Reasonable Stability (ft bls)	Rate Test	Magnitude Test	Water Levels Reasonably Stable
MARI 69050	1	N/A*	Insufficient Data	Insufficient Data	Insufficient Data
MARI 50581	N/A	52	Insufficient Data	Pass	Insufficient Data
MARI 1072	N/A	63	Insufficient Data	Insufficient Data	Insufficient data
MARI 1054	N/A	42	Pass	Fail	No
MARI 1057	N/A	51	Pass	Pass	Yes
MARI 1050	N/A	23	Pass	Pass	Yes

Comments: *Proposed POA has 3 reported measurements: one post construction measurement in August 2019, one non-static March 2025 measurement noted as "Rising" and measured 15 minutes after pumping, and one static March 2026 measurement. The highest known measurement would be the March 2025 (100.50 ft bls) measurement despite it not being static. MARI 50581, the nearest well with data to the POA, has questionable water level data due to the impact of near-continuous pumping for the dairy and apparently insufficient recovery time before collecting permit-required water level measurements. The most recent seemingly-reliable measurement from MARI 50581 (which was reportedly idled for 24 hours

before the measurement) was collected on March 18, 2025 and indicates a water level of 60.67 ft bls, which is 8.67 ft below the highest known water level for the well (52 ft bls on May 15, 1995; reported on the well log) and sufficient to pass the "Magnitude Test" (OAR 690-008-0001(9)(a)(B)); however, there are insufficient reliable measurements to evaluate the "Rate Test" (OAR 690-008-0001(9)(a)(A)). MARI 1072 likewise had insufficient reliable data to evaluate the "Rate Test" and the most recent seemingly reliable measurement was in 2005 – too old to evaluate the "Magnitude Test." The nearest representative well with sufficient data to evaluate both the "Rate" and "Magnitude" tests is MARI 1054, ~3,520 ft north of POA MARI 69050; MARI 1054 passes the "Rate Test" with water levels increasing over the past 11 years at a (Theil-Sen) rate of 0.67 ft/yr, but it fails the "Magnitude Test" with 35.4 ft of total decline between 2026 (35.4 ft bls) and its reference level in 1988 (42 ft from its well log). However, water level measurements in MARI 1057, ~2,370 ft northwest of MARI 1054 and ~4,650 ft north of POA MARI 69050, pass both the "Rate" and "Magnitude" tests, despite substantial and seemingly near-continuous use for dairy operations under Certificate 98500. Similarly, MARI 1050, ~6,820 ft northeast of POA MARI 69050, passes both the "Rate" and "Magnitude" tests.

- C1b. Summary finding for this application. Check only one primary finding. It is possible that different proposed POAs could access different parts of the GW reservoir, and for some of those parts to be Reasonably Stable while others are not. In that case, summary finding for the application should be "Not Reasonably Stable," and the reviewer should indicate which POAs access part(s) of the groundwater reservoir that are Reasonably Stable. OAR 690-008-0001(9)(a): *Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof:*

☒ **Are Reasonably Stable**

☐ Groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir

☐ **Are Not Reasonably Stable**

☐ If some Proposed POAs are Reasonably Stable, list the Reasonably Stable POAs here: _____

☐ **Sufficient data are not available to evaluate reasonable stability**

List representative wells identified during review that could be measured in order to overcome a finding of Insufficient Data: _____

Comments: **Since all evaluated wells near the proposed POA MARI 69050 with sufficient data pass the "Rate Test" and the majority of evaluated wells pass the "Magnitude Test" – notably including MARI 50581 immediately adjacent to POA MARI 69050 – the preponderance of the evidence indicates that water level in the subject part of the groundwater reservoir are "Reasonably Stable".**

- C1c. OAR 690-008-0001(d): Evaluation for reasonably stable water levels per superseding basin program rules OAR 690-_____ for the _____ administrative basin.

Comments: _____

C2. Well Yield

- C2a. OAR 690-300-0010(57)(e): Is the total requested rate of groundwater allocation obtainable by the expected yield of the well(s) proposed in the application given best available information?

☒ **Yes** ☐ **No**

Comments: Pump Test from proposed POA indicates a yield that exceeds the requested rate.

C3. Groundwater Interference with Surface Water

OAR 690-300-0010(57): "Water is Available", when used in OAR 690-310-0080, 690-310-0010 and 690-310-0130, means [...]:
(f) The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that is not available for further appropriation]

OAR 690-009-0040: (1) When evaluating a Proposed Groundwater Use, Hydraulic Connection and the Potential for Substantial Interference with a surface water source shall be determined by the Department according to these rules. These determinations shall be based upon the application of generally accepted hydrogeologic principles using best available information concerning the hydrologic system of interest and the well(s) under consideration.

- (a) Appropriate information that is provided in the application or in the public comment period for the application shall be considered in the process of making these determinations.
(b) Best available information may include, but is not limited to, pertinent water well reports, aquifer test analyses, hydrologic and geologic studies and reports, groundwater and surface water elevation data, available numerical and analytical groundwater flow models, and any other information that is used in applying generally accepted hydrogeologic principals and methodologies.

- (2) A determination of Hydraulic Connection is a prerequisite for a determination of the Potential for Substantial Interference.
- (3) A determination of the Potential for Substantial Interference with a surface water source shall at a minimum include application of the generally accepted hydrogeological principles described in “Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow” by P. M. Barlow and S. A. Leake, 2012.
- (4) The Potential for Substantial Interference with a surface water source exists if the well(s) under consideration will, over the full term of the proposed or authorized groundwater use, obtain water from Streamflow Depletion.

OAD 690-009-0020(4): “Hydraulic Connection” means saturated conditions exist allowing water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources.

OAD 690-009-0020 (7) “Streamflow Depletion” means a reduction in the flow of a surface water source due to pumping a hydraulically connected groundwater source. Streamflow Depletion encompasses:

- (a) captured groundwater that would otherwise discharge to a surface water source; or
- (b) induced infiltration from a surface water source to the hydraulically connected groundwater source.

C3a. OAD 690-009-0020(5): Potential for Substantial Interference”, or “PSI”, means that a groundwater use will cause streamflow depletion based on the assessments described in OAD 690-009-0040, and therefore may cause or has caused substantial interference with or undue interference with a surface water source, based on the definitions in OAD 690-008-0001.

Summary of surface water sources evaluated for hydraulic connection and Potential for Substantial Interference. For hydraulic connection and potential for substantial interference, a value of 1 means yes, and blank means no.

POA Well	WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID	Hydraulically Connected	Potential for Substantial Interference
1	021140	Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182	1	1
1	0211400690	Unnamed Tributary to Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182	1	1
1	02114006300020	Mission Creek	<u>CHAMPOEG CR > WILLAMETTE R – AT MOUTH</u>	30200708	1	1
1	0211400710	Unnamed Tributary to Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182	1	1

Comments: Herrera et al., (2014) modeled streamflow depletion in the Middle and Lower Sedimentary Units of the Willamette Aquifer in this area that shows streamflow depletion of the Willamette River and “Other Rivers” when pumping is increased in the Lower Sedimentary Unit. The Lower Sedimentary Unit is hydraulically connected to the overlying Willamette Silt Unit, which Mission Creek and the unnamed tributaries flow through before their confluence with the Willamette River.

List all surface water sources identified to have PSI and their associated Water Availability Basin:

WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID
02114006300020	Mission Creek	<u>CHAMPOEG CR > WILLAMETTE R – AT MOUTH</u>	30200708
021140	Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182
0211400690	Unnamed Tributary to Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182
0211400710	Unnamed Tributary to Willamette River	WILLAMETTE R> COLUMBIA R- AB MOLALLA R	182

Comments: Increased pumping will result in storage reduction, less outflow to the Willamette River and smaller streams such as Mission Creek. The majority of stream depletion is likely to be sourced from the Willamette River due to the rapid spreading of the cone of depression in confined aquifers and the full incision of the Willamette River through the Willamette Silt Unit making a direct hydraulic connection with the target aquifer. However, some smaller fraction of stream depletion will very likely be sourced from Mission Creek and other smaller streams due to their proximity to the proposed POA. As noted in the attached Water Availability Calculation for the Champoeg Creek WAB, there is no net water available in this WAB from June through October.

D. INJURY:

OAR 690-310-0130 (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 if... (c) The proposed use will not injure other water rights.

To make a finding of injury to an existing water right, the Department must make a finding of “Substantial Interference” as defined in OAR 690-008-0001(10). The finding of “Substantial Interference” with a surface water right is made by the Water Rights Services Division based on the evaluation in section C3. Sections D1 and D2, below, address the finding of “Substantial Interference” with a groundwater right.

OAR 690-008-0001(10): “Substantial or Undue interference”, means the spreading of the cone of depression of a well to intersect a surface water source or another well, or the reduction of the groundwater levels as a result of pumping or otherwise extracting groundwater from an aquifer, which contributes to:

- (b) The groundwater level being drawn down to the Economic Pumping Level of the senior appropriator(s); or*
- (c) One or more of the senior groundwater appropriators being unable to obtain either the permitted or customary quantity of groundwater, whichever is less, from a reasonably efficient well that fully penetrates the aquifer where the aquifer is relatively uniformly permeable. However, in aquifers where flow is predominantly through fractures, full penetration may not be required as a condition of substantial or undue interference.*

D1a. OAR 690-008-0001(10): Will the proposed groundwater use result in substantial or undue interference with an existing groundwater user?

☐ Yes ☐ No ☒ **No, as long as the permit is conditioned as indicated in item F below.**

Comments:

The POA for Certificate 88839 (MARI 62390) is 1660 ft from the proposed POA. Assuming constant use at max rate, the requested water use would likely not injure Cert 88839. However, in addition to the requested period of use associated with this permit (11/1 – 2/28), the proposed POA is an authorized POA for Certificate 98500, which has primary and supplemental irrigation rights that equal a combined max rate of 1.98 CFS. The estimated combined and supplemental rate noted on OWRD’s Water Rights Information Query for Certificate 98500 is 0.3636 CFS with the period of use being 3/1 – 10/31.

A Theis (1941) drawdown analysis was conducted to assess potential well-to-well interference on MARI 62390 that may occur due to pumping from the proposed POA from the existing water right Certificate 98500 as well as the requested rate from this application. Hydraulic parameters used for the analyses were pulled from nearby pump test reports, well reports and Conlon et al. (2005). Estimated drawdown on MARI 62390 from pumping the proposed POA, assuming the water table is fully recovered from the previous season and constant use at max rate is 46.8 – 210.2 ft. According to the well report for MARI 62390, the depth of the water column is 244 ft from a SWL measurement taken in 2009. Considering that groundwater levels in this area are reasonably stable and constant use at max rate is unlikely to occur for agricultural and livestock use, injury isn’t likely to occur.

An additional drawdown analysis using the same parameters was performed on MARI 1128, which is roughly 880 ft from the proposed POA. Drawdown from pumping the proposed POA 1.98 CFS year-round for 5 years results in an estimated drawdown of 38 – 162.6 ft. The maximum rate associated with exempt use wells is approximately 10.41 gpm, which is miniscule compared to the rates associated with the proposed POA. A conservative estimate of drawdown on MARI 1128 was gained by using a 1.98 CFS rate at constant use for 5 years combined with constant use at the max rate of 10.41 gpm (0.0232 CFS). The total estimated drawdown from pumping these two wells is 167.2 ft. According to the well report for MARI 1128, the water column is over 220 ft deep. Based on the above information, injury isn’t likely to occur.

E. OTHER RULES OF THE COMMISSION:

OAR 690-310-0130 (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 if...(d) The proposed use complies with the rules of the Commission.

E1. OAR 690-200, 690-210 and 690-215: Well Construction

Identify any notable well construction deficiencies or hydrogeologic considerations to support review by Well Construction & Compliance.

E1a. Well #: 1 Logid: MARI 69050

E1b. Well construction deficiency or other comment is described as follows: _____

E2. OAR 690-310-0260: Water Rights Within or Above State Scenic Waterways

E2a. Are any of the proposed sources of appropriation hydraulically connected to a State Scenic Waterway or its tributaries?
☐ Yes ☒ No

Hydraulically connected State Scenic Waterway: _____
 Comments: _____

E2b. Per ORS 390.835, is the Groundwater Section able to calculate ground water interference with surface water that contributes to a Scenic Waterway?

☐ **Yes. The calculated interference is distributed below:**

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 "No" option below, 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

☐ **No. 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.**

Comments: _____

E3. Other Relevant Rules of the Commission:

Comments: _____

F. RECOMMENDED MODIFICATIONS OR CONDITIONS:

OAR 690-310-0140(2): If the Department determines that the presumption is not established, the Department shall determine whether the proposed use will impair or adversely affect the public welfare, safety and health under ORS 537.525 and may either:

(a) Propose denial of the application upon a finding that the use will impair or adversely affect the public welfare, safety and health; or

(b) Make specific findings to demonstrate that even though the presumption is not established, the proposed use will not impair or adversely affect the public welfare, safety and health and propose approval of the application with appropriate modifications or conditions.

Based on the findings in sections A-D above, the following conditions are recommended if the permit is approved:

7RLN, Large Water Use Reporting

REFERENCES:

Application File: G-19499, G-18849, G-18672

Barlow, P. M., & Leake, S. A. (2012). Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow. In *Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow* (C1; USGS Numbered Series No. 1376; Circular, Vol. 1376, p. 95). U.S. Geological Survey; GW Library. <https://doi.org/10.3133/cir1376>

Conlon, T. D., Wozniak, K. C., Woodcock, D., Herrera, N. B., Fisher, B. J., Morgan, D. S., Lee, K. K., & Hinkle, S. R. (2005). Ground-Water Hydrology of the Willamette Basin, Oregon (C3; USGS Numbered Series Nos. 2005–5168; Scientific Investigations Report, p. 95). U. S. Geological Survey; GW Library. <https://pubs.usgs.gov/sir/2005/5168/>

Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D. A., & Constantz, J. (Eds.). (2003). Heat as a tool for studying the movement of ground water near streams. In *Heat as a tool for studying the movement of ground water near streams* (C1; USGS Numbered Series No. 1260; Circular, Vol. 1260). U.S. Geological Survey; GW Library. <https://doi.org/10.3133/cir1260>

Herrera, N. B., Burns, E. R., & Conlon, T. D. (2014). Simulation of groundwater flow and the interaction of groundwater and surface water in the Willamette Basin and Central Willamette subbasin, Oregon. In *Simulation of groundwater flow and the interaction of groundwater and surface water in the Willamette Basin and Central Willamette subbasin, Oregon* (C4; USGS Numbered Series Nos. 2014–5136; Scientific Investigations Report, p. 170). U.S. Geological Survey; GW Library. <https://doi.org/10.3133/sir20145136>

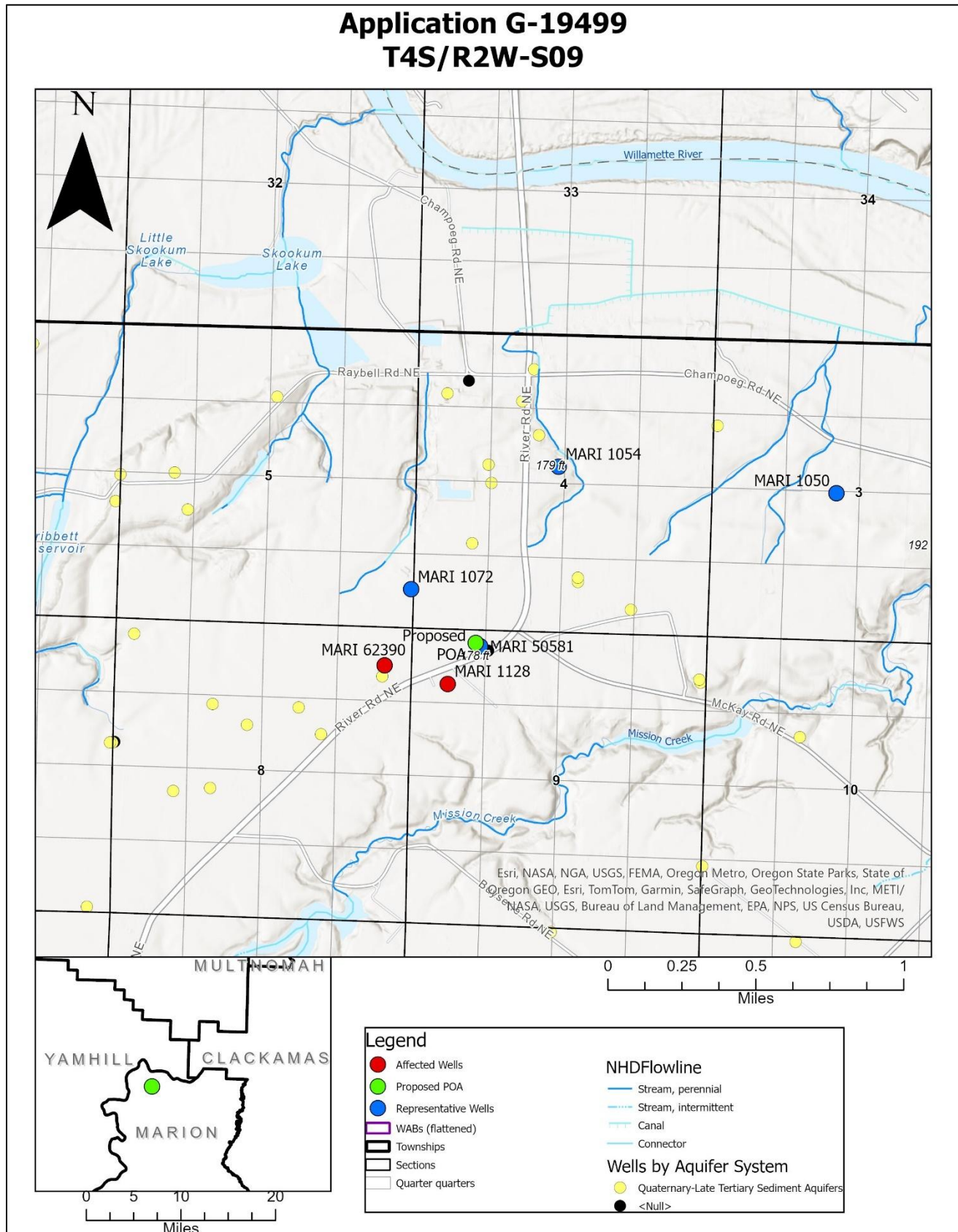
Oregon Water Resources Department (OWRD). Water Rights Information System. <https://apps.wrd.state.or.us/apps/wr/wrinfo/>.

Oregon Water Resources Department (OWRD). Groundwater Information System. https://apps.wrd.state.or.us/apps/gw/gw_info/gw_info_report/Default.aspx.

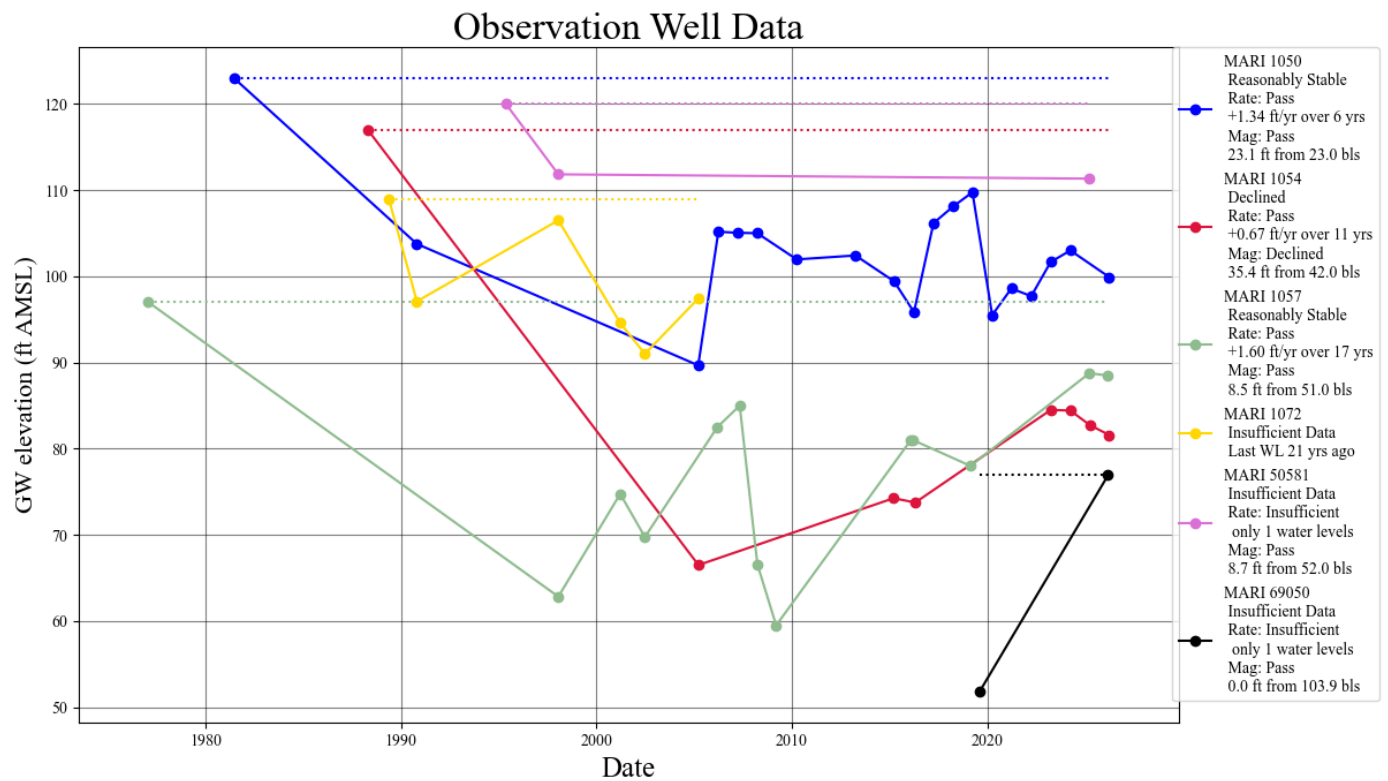
Oregon Water Resources: Pump Tests for MARI 50581, MARI 52911, MARI 1050

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

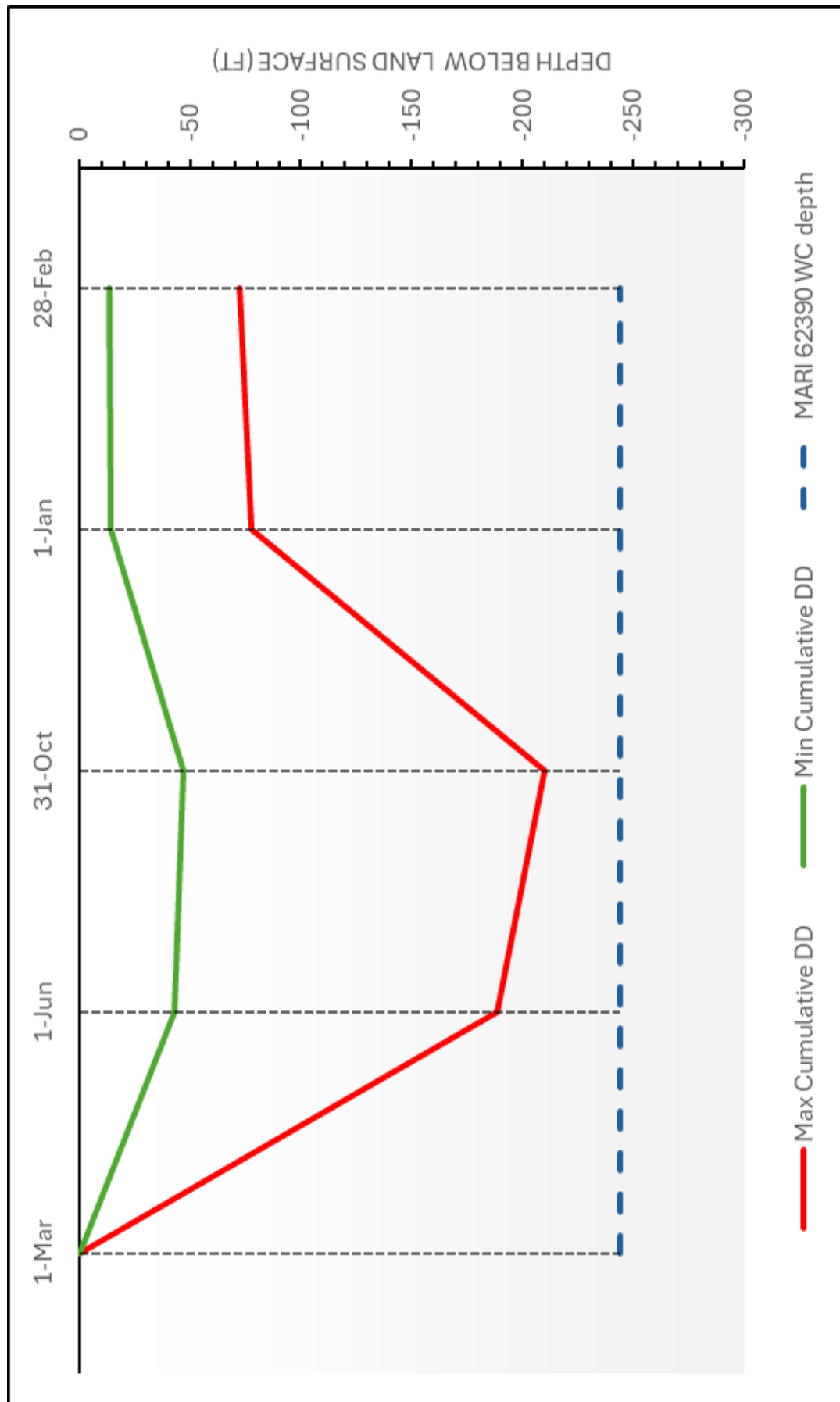
Woodward, D. G., Gannett, M. W., & Vaccaro, J. J. (1998). *Hydrogeologic framework of the Willamette Lowland Aquifer system, Oregon and Washington* (C3; USGS Numbered Series Nos. 1424-B; Professional Paper, p. 82). U. S. Geological Survey; GW Library. <https://pubs.er.usgs.gov/publication/pp1424B>

ATTACHMENTS:**Well Location Map**

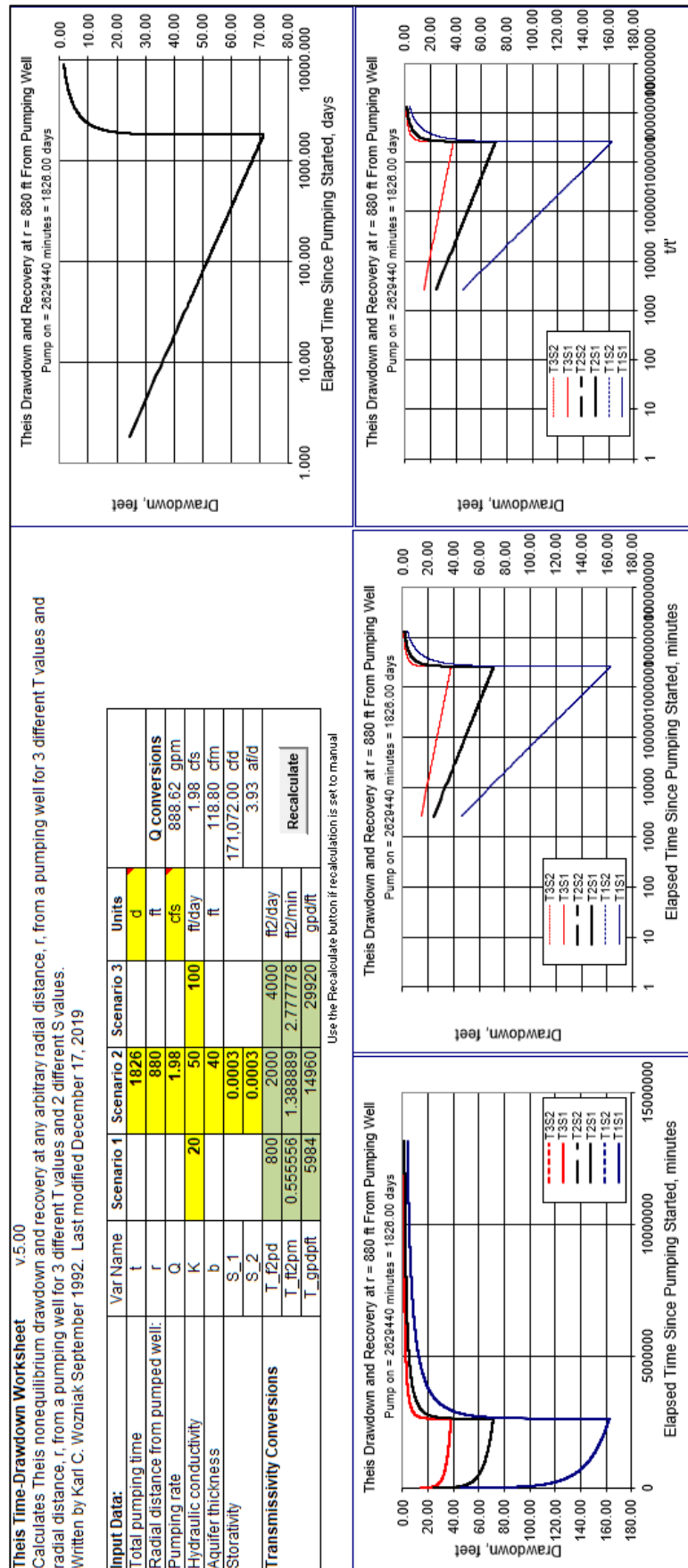
Water-Level Measurements in Nearby Wells



Theis Cumulative Drawdown Analysis for Certificate 88839 (MARI 62390)



Theis Drawdown for MARI 1128



Water Availability Analysis for Willamette River

Water Availability Analysis

WILLAMETTE R- COLUMBIA R- AB MOLALLA R

WILLAMETTE BASIN

Water Availability as of 9/18/2025

Watershed ID # 182 (Map)

Date: 9/18/2025

Exceedance Level: 85% V

Time: 11:01 AM

Water Availability

Complete Water Availability Analysis

Limiting Watersheds

Water Availability

Select any Watershed for Details

Stream Name

WILLAMETTE R- COLUMBIA R- AT MOUTH

WILLAMETTE R- COLUMBIA R- AB MOLALLA R

Watershed ID #

181

182

Needing Order

1

2

Select

Select

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Watershed Characteristics

Reservations

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	2,310.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,460.00	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	19,800.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	19,800.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
JUN	8,740.00	1,890.00	6,850.00	0.00	1,500.00	5,350.00
JUL	4,660.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,630.00	1,650.00	2,180.00	0.00	1,500.00	680.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	997.00
OCT	4,830.00	723.00	4,100.00	0.00	1,500.00	2,600.00
NOV	8,740.00	1,890.00	6,850.00	0.00	1,500.00	5,350.00
DEC	19,300.00	875.00	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	1,060,000.00	11,940,000.00

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Version: 1.0- 8/7/2025

Water Availability Analysis for Champoeg Creek

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Water Availability as of 1/7/2020 for
CHAMPOEG CR > WILLAMETTE R - AT MOUTH

Watershed ID #: 30200708 Basin: WILLAMETTE Exceedance Level: 80
Time: 12:00 Date: 01/07/2020

Month	Natural Stream Flow	CU + Stor Prior to 1/1/93	CU + Stor After 1/1/93	Expected Stream Flow	Reserved Stream Flow	Instream Water Rights	Net Water Available
1	37.30	8.64	0.00	28.66	0.00	0.00	28.66
2	51.70	8.16	0.00	43.54	0.00	0.00	43.54
3	22.40	5.11	0.00	17.29	0.00	0.00	17.29
4	10.90	3.96	0.00	6.94	0.00	0.00	6.94
5	6.15	6.11	0.00	0.04	0.00	0.00	0.04
6	3.04	7.88	0.00	-4.84	0.00	0.00	-4.84
7	2.94	12.32	0.00	-9.38	0.00	0.00	-9.38
8	1.88	9.99	0.00	-8.11	0.00	0.00	-8.11
9	1.08	5.42	0.00	-4.34	0.00	0.00	-4.34
10	1.00	1.37	0.00	-0.37	0.00	0.00	-0.37
11	10.10	5.79	0.00	4.31	0.00	0.00	4.31
12	47.80	11.51	0.00	36.29	0.00	0.00	36.29
Stor	28100	5220	0	22880	0	0	22880