# Groundwater Application Review Summary Form

**Application # G- _19454_**

**GW Reviewer _James Hootsmans_ Date Review Completed: _12/12/2024_**

**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** **_December 12, 2024_**

**TO:** **Application** G-**_19454_**

**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 12/12/24
FROM: Groundwater Section James Hootsmans
Reviewer's Name
SUBJECT: Application G- **19454** 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: **David and Yengcheeko Vang** County: **Clackamas**

A1. Applicant(s) seek(s) 0.125 cfs from 1 well(s) in the Willamette Basin, Molalla 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 578 | 1 | Alluvial (Sand and Gravel) | 0.125 | 5S/2E-6 SENE | 170' N, 170' W fr E1/4 cor S 6 |
| 2 | | | | | | |
| 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 | 300 | 0-160 | TBD | TBD | TBD | NA | NA | NA |
| 2 | | | | | | | | |
| 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 | 312 | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to complete one Point of Appropriation (POA) approximately 0.3 miles northwest of the City of Molalla. The POA, identified as PROP 578 on the location map, is proposed to be developed in the alluvial groundwater system. The applicant proposed to pump 0.125 cfs (approximately 56 gallons per minute (gpm)) from the proposed POA. The total planned annual volume is 25 acre feet for 5 acres (Duty 5 acre-feet/acre).

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 POAs will produce groundwater from a confined 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: **NA**
Comments: _____

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

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

a. ☐ **is** over appropriated, ☒ **is not** over appropriated, *or* ☐ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the groundwater resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:

i. ☒ The permit should contain condition #(s) **7RLN**;

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 (PROP 578) is situated in the Willamette Valley, with over 500 feet of alluvial sediments from surface elevation. Therefore, the proposed depth of 300 feet will mean that the proposed POA will develop in these alluvial sediments. Sand and gravel beds with higher permeability occur throughout the sediments, separated by lower permeability silt and clay, which in turn confine deeper water-bearing zones as depth increases.

Groundwater elevations in nearby wells to the proposed POA have remained relatively stable over time, based on limited data, indicating a hydraulic connection to the nearby surface water bodies (see Observation Well Data) The proposed POA is adjacent to intermittent stream Creamery Creek and within a mile of Bear Creek. Water levels in the area indicate that groundwater for the proposed use is likely not over appropriated.

The closest groundwater right to the proposed POA is Permit G-17920, in neighboring tax lot 800, All the POU for the neighboring right is within a quarter mile of the proposed POA and the POA on the permit location is approximately 400 feet away. A Theis (1935) drawdown analysis was conducted to assess the potential well-to-well interference with the neighboring groundwater right due to pumping of the proposed POA in the amounts requested. Hydraulic parameters used for the analyses were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2003, 2005; Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979). To be conservative, it was assumed that pumping would occur year-round at the maximum rate, irrespective of time to reach the total annual volume. Results of the Theis (1935) analysis indicate that, at the maximum rate, well-to-well interference is unlikely due to the low pumping rate (see Theis Drawdown Analysis, attached).

Reported yields from regional wells (5S 2E Sections 5 and 6) range from less than 1 to ~ 800 gpm, with a median of 35 gpm (see attached Well Statistics). The requested rate of 0.125 cfs (~56 gpm) therefore represents ~7 percent of the maximum yield reported for water wells in this area, and ~160 percent of the median reported yield. Therefore, it is likely the applicant will be able to achieve the requested pumping rate with the proposed POA.

## 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 |
|---|---|---|---|
| | **Alluvium** | ☒ | ☐ |
| | | ☐ | ☐ |
| | | ☐ | ☐ |
| | | ☐ | ☐ |

**Basis for aquifer confinement evaluation:** Water bearing zones are overlain by several hundred feet of fine-grained alluvial sediments, creating a confined to semi-confined groundwater system at depth. Similarly constructed wells nearby have static water levels above the water bearing zone within the well.

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** | **Bear Creek** | **240 - 260** | **260 - 320** | **3850** | ☒ | ☐ | ☐ | ☐ | ☒ |
| | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | | | | | ☐ | ☐ | ☐ | ☐ | ☐ |

**Basis for aquifer hydraulic connection evaluation:** Water levels in nearby wells from similar depths as the proposed POA are equal or close to elevations of adjacent streams elevations. The presence of fine-grained sediments indicates a likely inefficient hydraulic connection.

**Water Availability Basin the well(s) are located within:**
Proposed POA: (ID# 69796) MOLALLA R> WILLAMETTE R – AT MOUTH
SW1: (ID# 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** | ☐ | ☐ | | | ☐ | **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 with hydraulically connected streams should be well below 25% in the first 30 days of pumping with the presence of fine-grained sediments between the upper water bearing zone and the streambeds of Bear Creek and other regionals streams. Results of stream depletion models (Hunt 2003) in this regional area indicate less than 1% of the pumping rate after 30 days. In addition, the proposed seal interval to a depth of 160 feet will also assist in limiting impacts to nearby perennial and intermittent streams. The pumping rate is much lower than 1% of the 80% of natural flow in both Water Availability Basins that could be influenced by pumping.

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-19454, G18417

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 and Cherry, 1979, Groundwater, Prentice-Hall, Inc.

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, 2003.

Woodward, Gannett and Vaccaro, 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS 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:** _____

_____

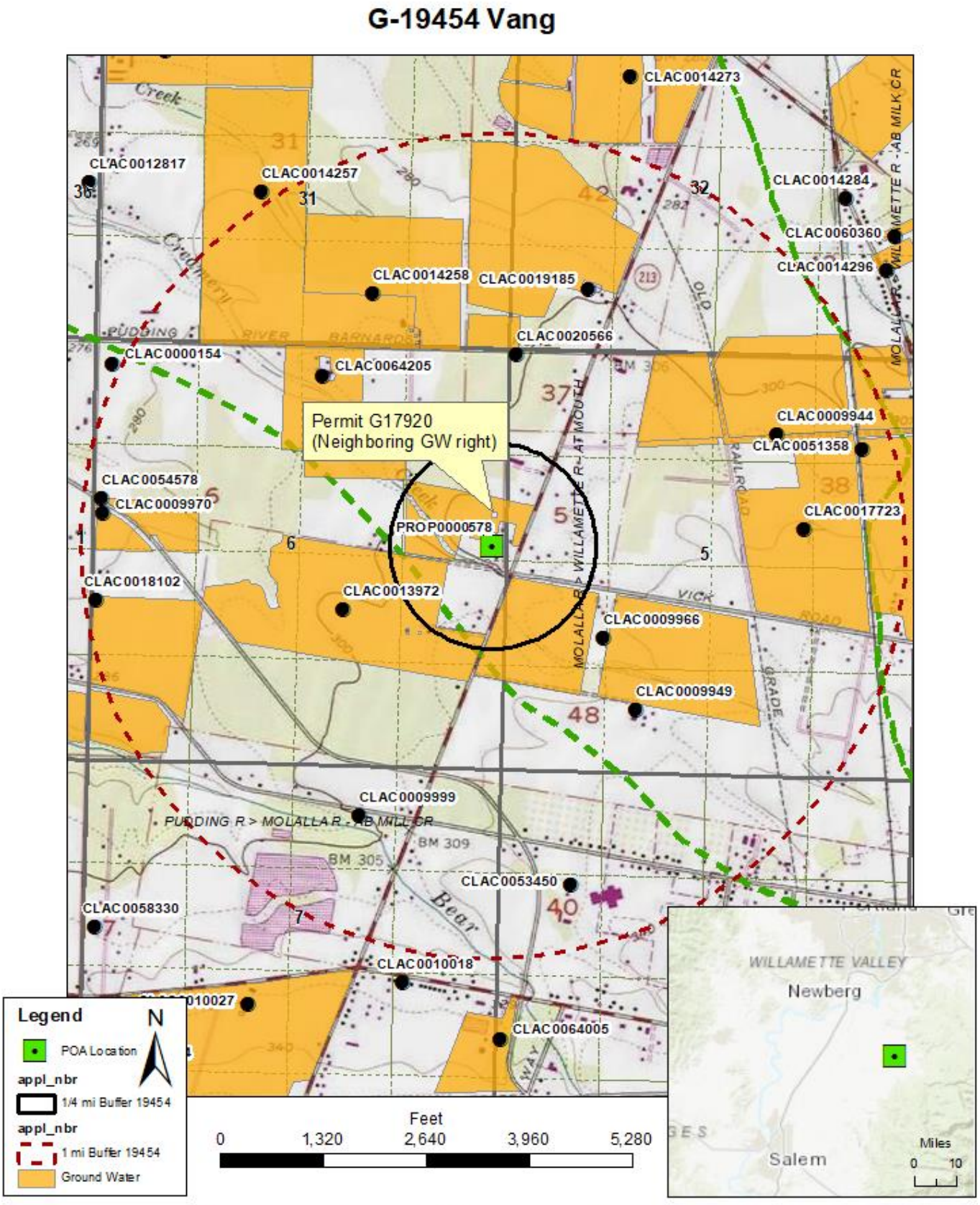
_____

_____

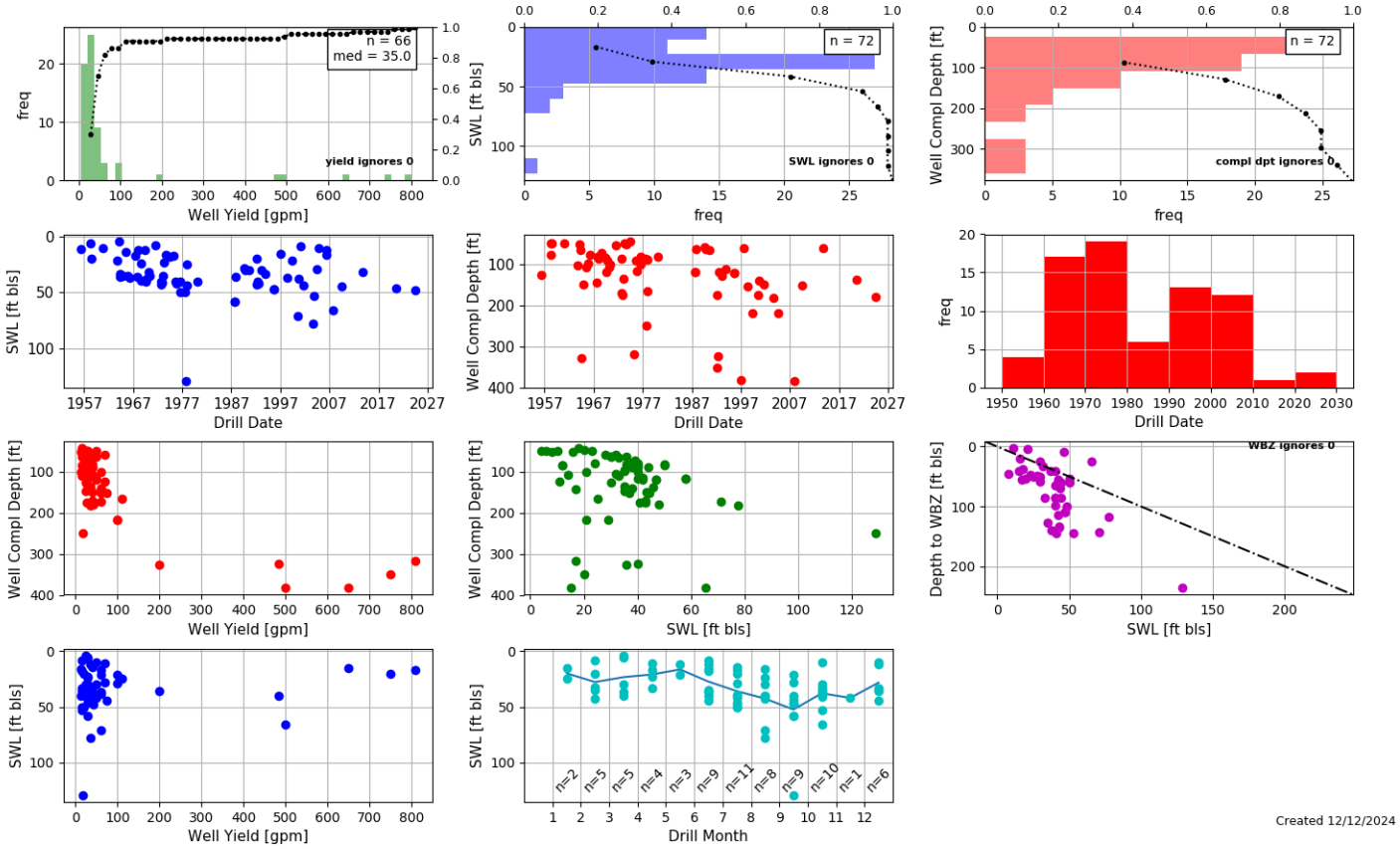
_____

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

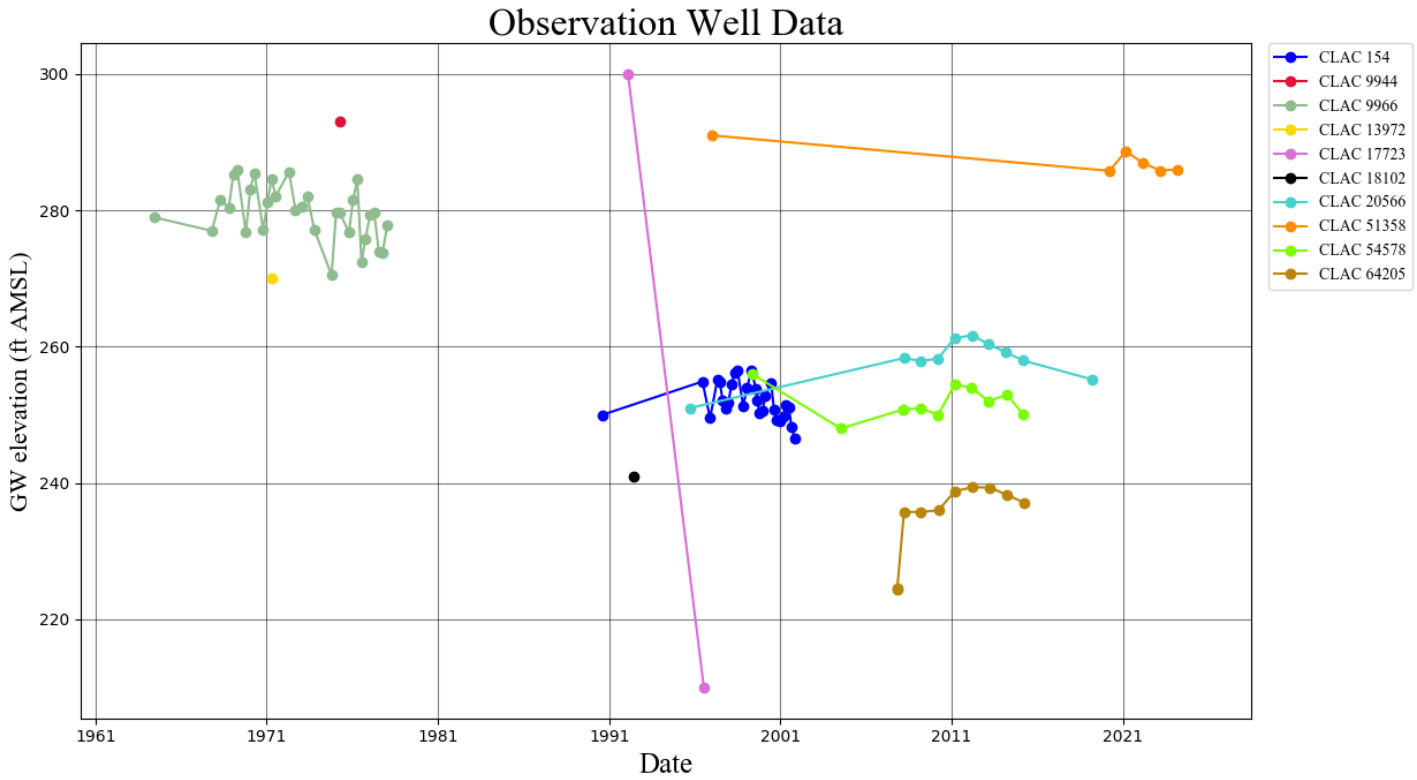
**Well Location Map**



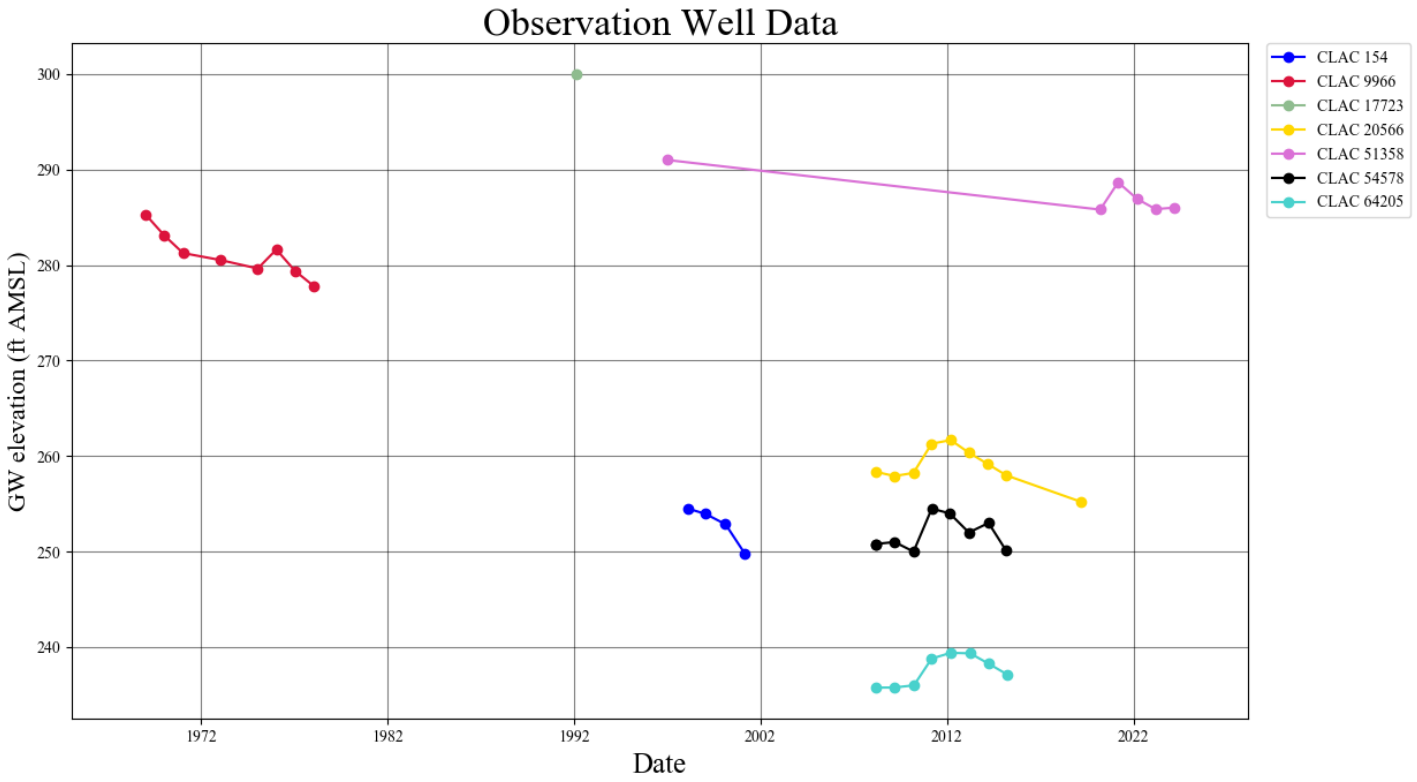
**Well Statistics**




**Water-Level Measurements in Nearby Wells – All Months**



**Water-Level Measurements in Nearby Wells – January to March Only**



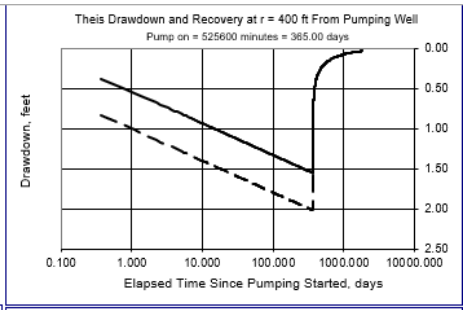

## Theis Interference Analysis

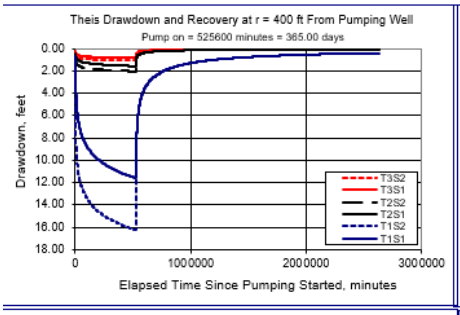
**Theis Time-Drawdown Workshee** v.3.00

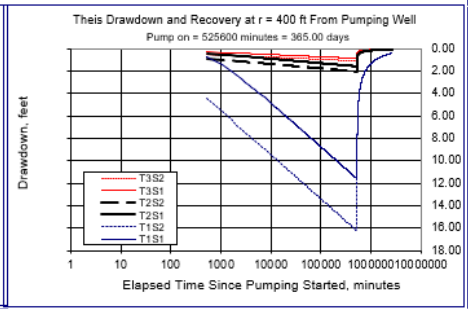
Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

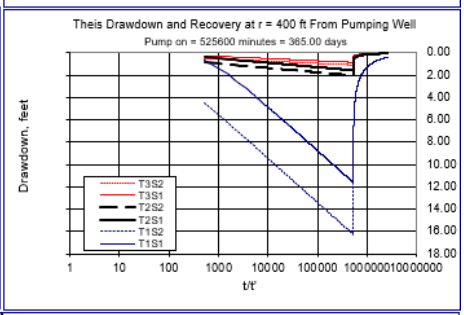
| Input Data: | Var Name | Scenario 1 | Scenario 2 | Scenario 3 | Units | |
|---|---|---|---|---|---|---|
| Total pumping time | t | | 365 | | d | |
| Radial distance from pumped well: | r | | 400 | | ft | Q conversions |
| Pumping rate | Q | | 0.125 | | cfs | 56.10 gpm |
| Hydraulic conductivity | K | 5 | 50 | 100 | ft/day | 0.13 cfs |
| Aquifer thickness | b | | 100 | | ft | 7.50 cfm |
| Storativity | S_1 | | 0.003 | | | 10,800.00 cfd |
| | S_2 | | 0.0002 | | | 0.25 af/d |
| Transmissivity Conversions | T_f2pd | 500 | 5000 | 10000 | ft2/day | |
| | T_ft2pm | 0.3472222 | 3.4722222 | 6.9444444 | ft2/min | Recalculate |
| | T_gpdpft | 3740 | 37400 | 74800 | gpd/ft | |

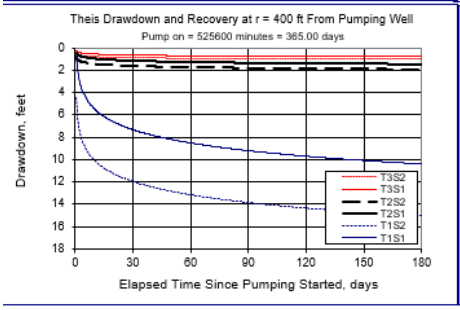
Use the Recalculate button if recalculation is set to manual

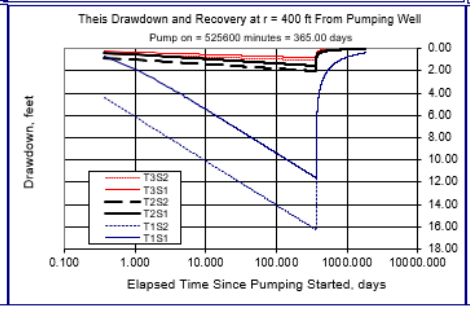


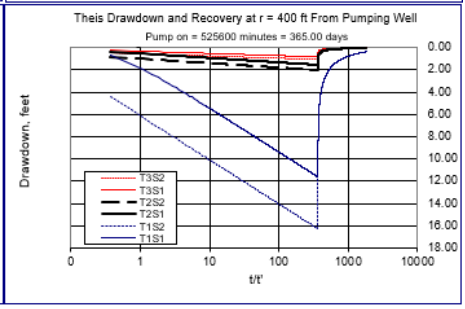



## Water Availability Tables

# Water Availability Analysis
## Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN
Water Availability as of 12/11/2024

Watershed ID #: 151 (Map)
Date: 12/11/2024

Exceedance Level: 80%
Time: 4:11 PM

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

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

| Month | Natural Stream Flow | Consumptive Uses and Storages | Expected Stream Flow | Reserved Stream Flow | Instream Flow Requirement | Net Water Available |
|---|---|---|---|---|---|---|
| JAN | 1,040.00 | 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 | 73.20 | 151.00 | 0.00 | 50.00 | 101.00 |
| JUL | 109.00 | 115.00 | -6.28 | 0.00 | 40.00 | -46.30 |
| AUG | 71.00 | 94.50 | -23.50 | 0.00 | 36.00 | -59.50 |
| SEP | 67.30 | 53.60 | 13.70 | 0.00 | 36.00 | -22.30 |
| 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 |

# Water Availability Analysis
## Detailed Reports

MOLALLA R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN
Water Availability as of 12/11/2024

Watershed ID #: 69796 (Map)
Date: 12/11/2024

Exceedance Level: 80%
Time: 4:21 PM

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

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

| Month | Natural Stream Flow | Consumptive Uses and Storages | Expected Stream Flow | Reserved Stream Flow | Instream Flow Requirement | Net Water Available |
|---|---|---|---|---|---|---|
| JAN | 1,870.00 | 155.00 | 1,720.00 | 0.00 | 500.00 | 1,220.00 |
| FEB | 2,010.00 | 145.00 | 1,870.00 | 0.00 | 500.00 | 1,370.00 |
| MAR | 1,830.00 | 113.00 | 1,720.00 | 0.00 | 500.00 | 1,220.00 |
| APR | 1,530.00 | 86.80 | 1,440.00 | 0.00 | 500.00 | 943.00 |
| MAY | 927.00 | 98.40 | 829.00 | 0.00 | 500.00 | 329.00 |
| JUN | 431.00 | 120.00 | 311.00 | 0.00 | 500.00 | -189.00 |
| JUL | 204.00 | 187.00 | 17.40 | 0.00 | 200.00 | -183.00 |
| AUG | 139.00 | 157.00 | -17.60 | 0.00 | 100.00 | -118.00 |
| SEP | 134.00 | 83.20 | 50.80 | 0.00 | 150.00 | -99.20 |
| OCT | 188.00 | 39.90 | 148.00 | 0.00 | 450.00 | -302.00 |
| NOV | 637.00 | 79.80 | 557.00 | 0.00 | 500.00 | 57.20 |
| DEC | 1,700.00 | 150.00 | 1,550.00 | 0.00 | 500.00 | 1,050.00 |
| ANN | 1,320,000.00 | 85,400.00 | 1,240,000.00 | 0.00 | 295,000.00 | 966,000.00 |