Groundwater Application Review Summary Form

Application # G- 19460

GW Reviewer Stacey Garrison Date Review Completed: 3/5/2025

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 **_March 5 2025_**

TO: **Application** G-**_19460_**

FROM: **GW:** **_Stacey Garrison_**
(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 3/5/2025

FROM: Groundwater Section Stacey Garrison
Reviewer's Name

SUBJECT: Application G- **19460** 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: **Clearlake Farms, LLC** County: **Marion**

A1. Applicant(s) seek(s) 2.88 cfs from 4 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)**:

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	MARI 17388	1	Alluvium	2.88	6S/3W-23 SE-NE	40' N, 580' W fr E ¼ cor S 23
2	MARI 5169	2	Alluvium	2.88	6S/3W-24 NW-NW	1,680' N, 40' E fr W ¼ cor S 24
3	PROP 600	3	Alluvium	2.88	6S/3W-23 NE-NE	1,040' S, 825' W fr NE cor S 23
4	MARI 5170	4	Alluvium	2.88	6S/3W-24 SW-NW	870' N, 310' E fr W 1.4 cor S 24

* 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	200	0 to 19	+1 to 200		120 to 150, 183 to 200	500		Air
2	140	0 to 20	0 to 140		80 to 139	700	33	Pump
3	360	0 to 20	0 to 360					
4	112	0 to 15	0 to 112		75 to 111	300	60	Pump

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[c]	**75**	**62**	**6/19/1991**	63.53[a]	3/7/2018
2	183[c]	**80**	**42**	**2/16/1971**	40.2[b]	3/21/2001
4	181[c]	**75**	**36**	**9/10/1958**	38.2[b]	3/21/2001

Use data from application for proposed wells.

A4. **Comments:** The proposed POU/POAs are immediately north of city limits for Keizer, Oregon.
[a] Reference level extrapolated from reference level for MARI 17388 set for application G-18341/permit G-17828.
[b] Reference levels extrapolated from nearby well MARI 5148
[c] Well head elevation estimated based on LIDAR measurements at proposed well locations (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 POAs are greater than 0.25 miles from the nearest surface water source. Per OAR 690-502-0240, the relevant 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) **7RLS, Large Water Use**;

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 POAs are located on 60 to 80 ft of fine-grained Missoula flood deposits, which overlies the 100 to 120 ft thick Willamette Aquifer that the POAs are likely to develop (O'Connor et al., 2001; Gannett and Caldwell, 1998). Within a mile of the POAs the sand and gravel water-bearing zones, WBZs, of the Willamette Aquifer are between 35 and 400 ft bls [-214 to 129 ft amsl] and range in thickness from 7 to 290 ft[a].

A review of statistics for nearby well records was completed and compared with the proposed rate of 2.88 cfs (~1,293 gpm) for this application (see Well Statistics). The median reported well yield is 50 gpm and the maximum reported well yield is 2,000 gpm; of the 754 wells included in the statistical review, only six wells are reported with yields exceeding 1,000 gpm. The proposed rate for this application is 2,585% of the median and 65% of the maximum reported yield. Within one mile of the POAs, the median well yield is 368 gpm and the maximum is 1,200 gpm. The three POAs that are developed (POA 1/MARI 17388, POA 2/MARI 5169, POA 4/MARI 5170) have significantly lower yields (500 gpm, 700 gpm, and 300 gpm, respectively) than the proposed rate of 2.88 cfs (~1,293 gpm), however, the proposed rate of use of 2.88 cfs (~1,293 gpm) is likely within the capacity of the groundwater resource.

Water levels are stable (see Water Level Measurements in Nearby Wells). Of the eleven observation wells within one-and-a-half miles of the POAs, four have records over the last five years: MARI 17269, MARI 68355, MARI 58798, and POA 1/MARI 17388. A couple of observation wells show declines between 20 and 30 years ago, however, more recent measurements indicate recovery of water levels since then. There are 57 POAs for 63 groundwater rights within one mile of the POAs, however, the overall steady water levels described above indicate that there is a low likelihood of interference with other groundwater users. The groundwater resource is not likely over-appropriated.

The nearest groundwater user to POA 1/Johnson Well (MARI 17388) is MARI 5080 (a POA on Claim GR 3285 with priority date 4/30/1950), located 556 ft southeast and at an elevation of 182 ft amsl. It is likely the proposed use would cause some degree of well-to-well interference with MARI 5080. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). **Results indicate that the proposed use is likely**

to cause well-to-well interference with MARI 5080 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Therefore, the proposed use is not in the capacity of the resource.
The nearest groundwater user to POA 2/Main Well (MARI 5169) is MARI 5110 (a POA on Certificate 55417 with priority date 6/13/1983), located 1,436 ft southeast and at an elevation of 177 ft amsl. It is likely the proposed use would cause some degree of well-to-well interference with MARI 5110. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). **Results indicate that the proposed use is likely to cause well-to-well interference with MARI 5110 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Therefore, the proposed use is not in the capacity of the resource.**
The nearest groundwater user to POA 3/Proposed New Well (PROP 600) is MARI 71298 (an exempt domestic well) located 972 ft southwest and at an elevation of 184 ft amsl. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). **Results indicate that the proposed use is likely to cause well-to-well interference with MARI 71298 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Therefore, the proposed use is not in the capacity of the resource.**
The nearest groundwater user to POA 4/CL Canyard Well (MARI 5170) is MARI 5110 (a POA on Certificate 55417 with priority date 6/13/1983), located 639 ft southeast and at an elevation of 177 ft amsl. It is likely the proposed use would cause some degree of well-to-well interference with MARI 5110. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). **Results indicate that the proposed use is likely to cause well-to-well interference with MARI 5110 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Therefore, the proposed use is not in the capacity of the resource.**

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely not within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.
NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

[a] Well logs within one mile utilizing confined alluvium: MARI 4878, MARI 4880, MARI 4902, MARI 4916, MARI 4991, MARI 5030, MARI 5059, MARI 5064, MARI 5078, MARI 5079, MARI 5084, MARI 5089, MARI 5110, MARI 5148, MARI 5164, MARI 5165, MARI 5167/5112/8106/5098, MARI 5169, MARI 5170, MARI 5180, MARI 5182/5099, MARI 5279, MARI 5280, MARI 17269, MARI 17319, MARI 17388, MARI 17870, MARI 51900, MARI 57704, MARI 58798, MARI 68355, MARI 70362, MARI 71120, MARI 71280, MARI 71298.

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	**Confined sand and gravel**	☒	☐
2	**Confined sand and gravel**	☒	☐
3	**Confined sand and gravel**	☒	☐
4	**Confined sand and gravel**	☒	☐

Basis for aquifer confinement evaluation: The three developed POAs (POA 1/MARI 17388, POA 2/MARI 5169, POA 4/MARI 5170) report static water levels (SWL) well above the top of the WBZ. There were 39 well logs identified within a mile of the POAs[a], of those, 32 in addition to the three developed POAs above reported a SWL higher than the top of the WBZ. The 60-to-80-ft-thick Missoula Flood Deposits mapped at the surface are a confining layer to the underlying sand and gravel WBZs.

[a] Well logs within one mile: MARI 4878, MARI 4880, MARI 4902, MARI 4911, MARI 4914, MARI 4916, MARI 4991, MARI 5030, MARI 5059, MARI 5064, MARI 5076, MARI 5078, MARI 5079, MARI 5080, MARI 5084, MARI 5089, MARI 5110, MARI 5148, MARI 5164, MARI 5165, MARI 5167/5112/8106/5098, MARI 5169, MARI 5170, MARI 5180, MARI 5182/5099, MARI 5279, MARI 5280, MARI 17269, MARI 17319, MARI 17388, MARI 17870, MARI 51900, MARI 57704, MARI 58798, MARI 68355, MARI 70362, MARI 71120, MARI 71280, MARI 71298.

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**	**Clear Lake/Claggett Creek**	**119-121**	**105-106**	**4,250**	☒	☐	☐	☐	☒
2	**1**	**Clear Lake/Claggett Creek**	**141**	**105-106**	**5,050**	☒	☐	☐	☐	☒
3	**1**	**Clear Lake/Claggett Creek**	**107-165[a]**	**105-106**	**4,210**	☒	☐	☐	☐	☒
4	**1**	**Clear Lake/Claggett Creek**	**145**	**105-106**	**5,200**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The groundwater elevation is above or coincident with the surface water elevation for SW 1 (Clear Lake/Claggett Creek), indicating groundwater discharges to surface water and the water table is between 120 and 140 ft amsl (O'Connor et al., 2001; Gannett and Caldwell, 1998). The surface water drainage of SW 1 (Clear Lake/Claggett Creek) has not incised below the elevation of the WBZs of the confined alluvial POAs. Hydraulic connection to SW 1 (Clear Lake/Claggett Creek) is likely but anticipated to be inefficient due to the horizontal distance and the low vertical permeability of the overlying fine-grained sediments.

a Well logs within one mile utilizing confined alluvium: MARI 4878, MARI 4880, MARI 4902, MARI 4916, MARI 4991, MARI 5030, MARI 5059, MARI 5064, MARI 5078, MARI 5079, MARI 5084, MARI 5089, MARI 5110, MARI 5148, MARI 5164, MARI 5165, MARI 5167/5112/8106/5098, MARI 5169, MARI 5170, MARI 5180, MARI 5182/5099, MARI 5279, MARI 5280, MARI 17269, MARI 17319, MARI 17388, MARI 17870, MARI 51900, MARI 57704, MARI 58798, MARI 68355, MARI 70362, MARI 71120, MARI 71280, MARI 71298.

Water Availability Basin the well(s) are located within: WILLAMETTE R>COLUMBIA R-AB MOLALLA R

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**	☐	☐	**MF182A**	**1500**	☐	**3830**	☐	**<25%**	☐

2	**1**	☐	☐	**MF182A**	**1500**	☐	**3830**	☐	**<25%**	☐
3	**1**	☐	☐	**MF182A**	**1500**	☐	**3830**	☐	**<25%**	☐
4	**1**	☐	☐	**MF182A**	**1500**	☐	**3830**	☐	**<25%**	☐

Comments: Potential depletion (interference with) SW 1 (Clear Lake/Claggett Creek) by proposed pumping at Well 3 (PROP 600) was estimated using Hunt 2003 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; 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). See attached "Stream Depletion Analysis" for the specific parameters used in the analysis. The Hunt 2003 analytical model results indicate that depletion of (interference with) SW 1 due to pumping of the proposed POA is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping.

Because only the distance is expected to vary between the POA and surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 3 and SW 1) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 3 and SW 1. Therefore, the interference of both proposed POA with all surface water sources within 1 mile are anticipated to result in much less than 25 percent of the well discharge at 30 days of continuous pumping.

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: N/A-Q is not distributed.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
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: N/A-streams within one mile evaluated above.

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 File: G-19460

Pumping Test Files: MARI 4160, MARI 4614, MARI 5368, MARI 5367, MARI 4792, MARI 17319, MARI 18339, MARI 18339, MARI 4510, MARI 3846, MARI 17870, MARI 58798, MARI 17388, MARI 60275, MARI 5079, MARI 4218, MARI 4218, MARI 4880, MARI 18338, MARI 54503

Well Reports: MARI 4878, MARI 4880, MARI 4902, MARI 4911, MARI 4914, MARI 4916, MARI 4991, MARI 5030, MARI 5059, MARI 5064, MARI 5076, MARI 5078, MARI 5079, MARI 5080, MARI 5084, MARI 5089, MARI 5110, MARI 5148, MARI 5164, MARI 5165, MARI 5167/5112/8106/5098, MARI 5169, MARI 5170, MARI 5180, MARI 5182/5099, MARI 5279, MARI 5280, MARI 17269, MARI 17319, MARI 17388, MARI 17870, MARI 51900, MARI 57704, MARI 58798, MARI 68355, MARI 70362, MARI 71120, MARI 71280, MARI 71298

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*, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

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.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

O'Connor, J.E., Sarna-Wojcick, A., Woznikak, K.C., Polette, D.J., Fleck, R.J., 2001, Origin, Extent, and Thickness of Quaternary Geologic Units in the Willamette Valley, Oregon; U.S. Geological Survey, Professional Paper 1620, 51 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 ground-water storage: American Geophysical Union transactions, v. 16, p. 519-524.

United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

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.**

Water Availability Tables

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 1/21/2025

Watershed ID #: 182 (Map)
Date: 1/21/2025

Exceedance Level: 80%
Time: 12:23 PM

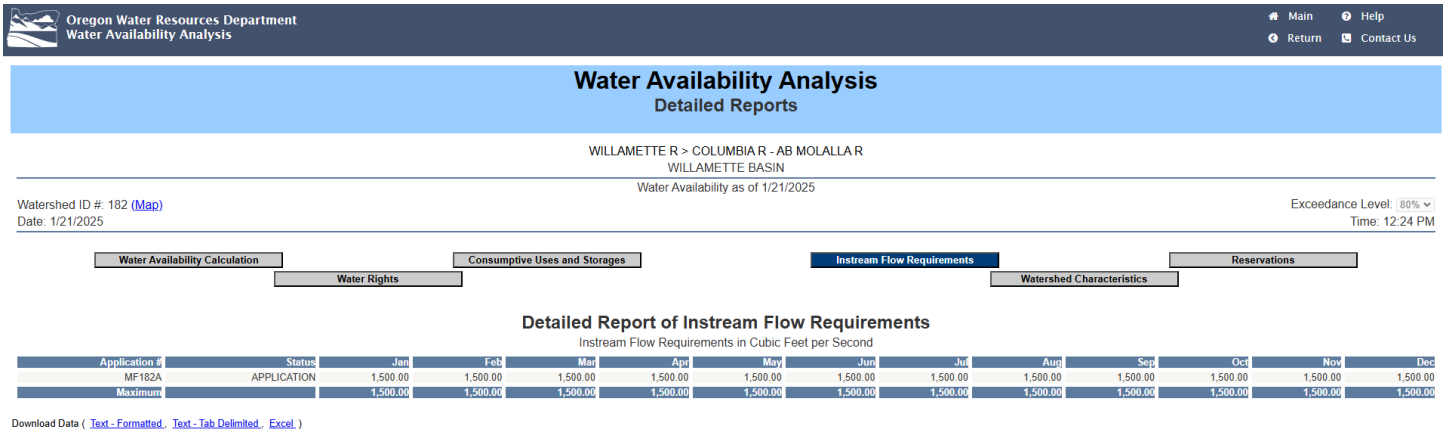
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Water Availability Calculation

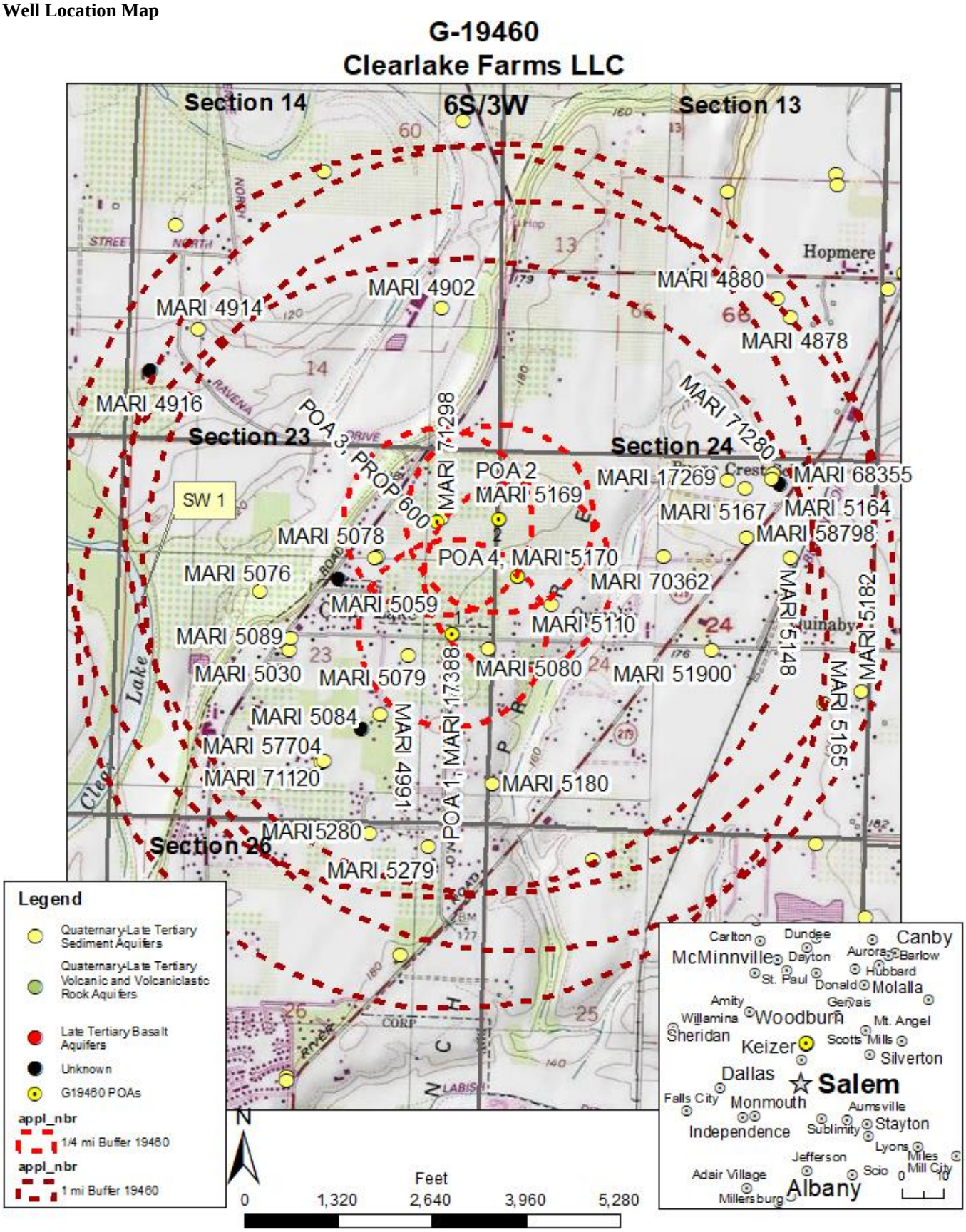
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	21,400.00	2,310.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,490.00	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	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,300.00	0.00	1,500.00	10,800.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	998.00
OCT	4,850.00	753.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	887.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	975.00	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	1,090,000.00	11,900,000.00

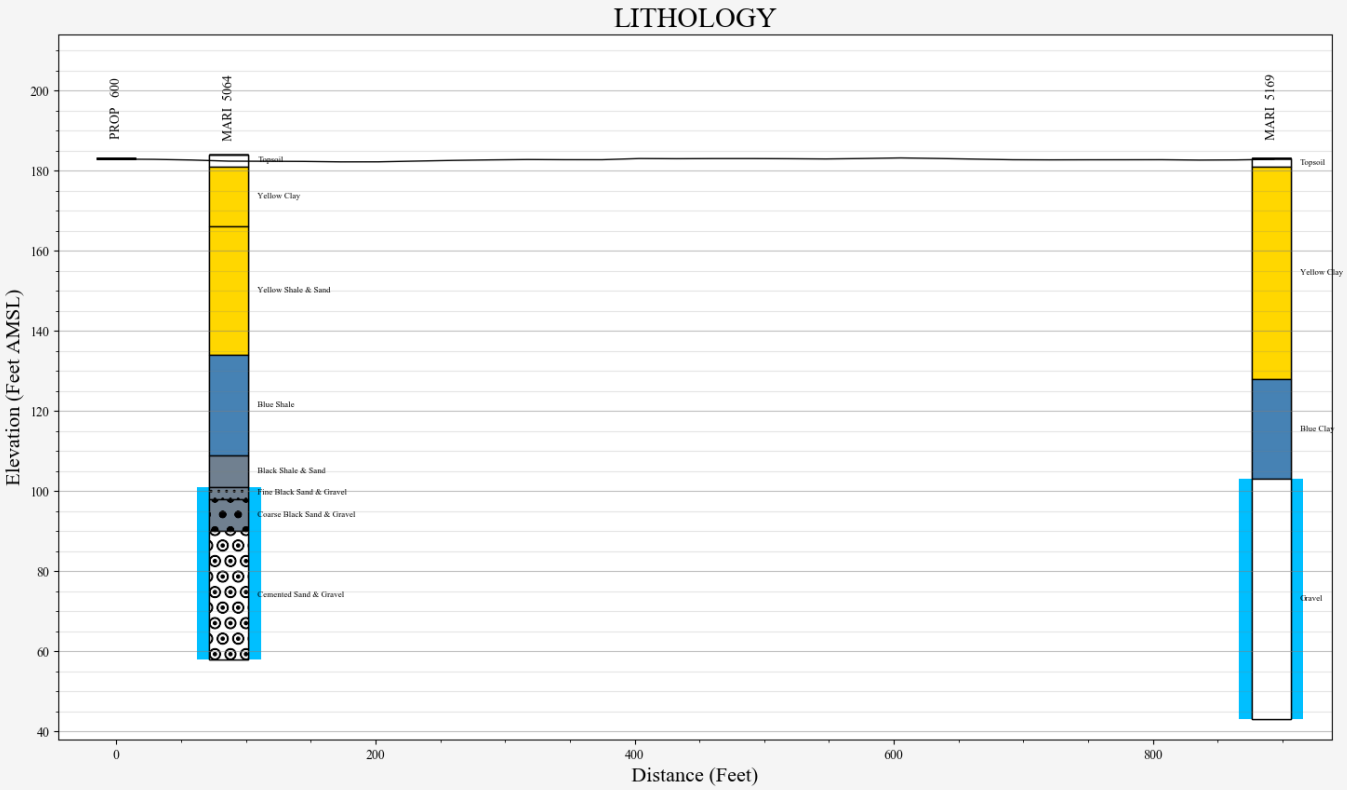
Download Data (Text - Formatted , Text - Tab Delimited , Excel)

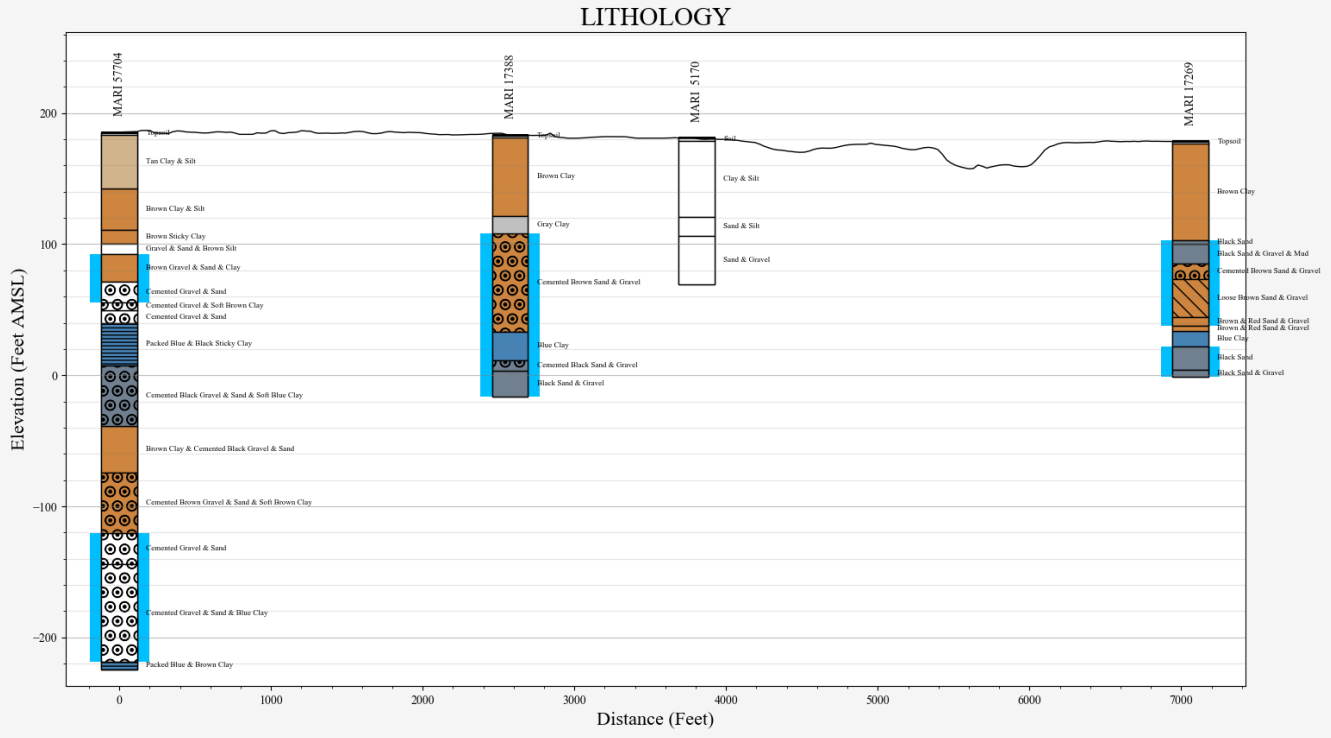


Well Location Map

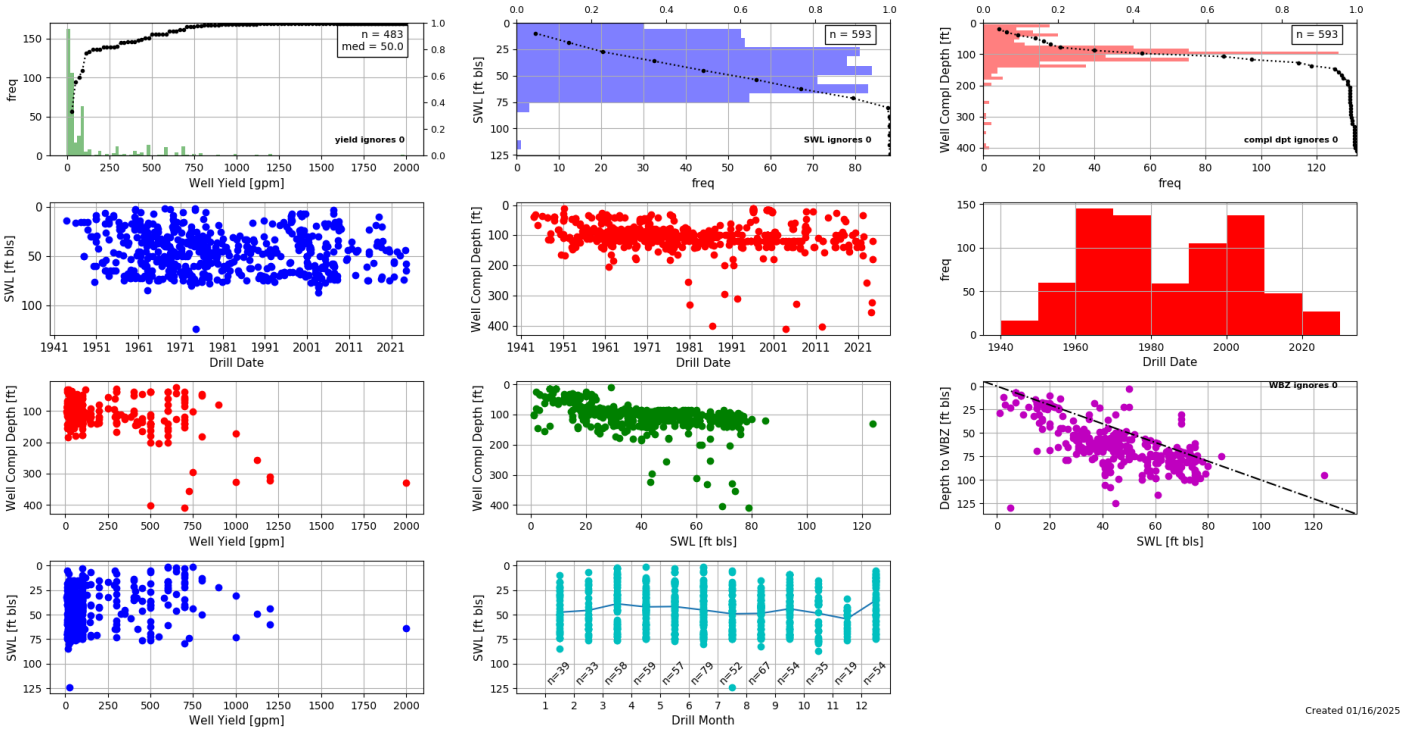


Cross-Section



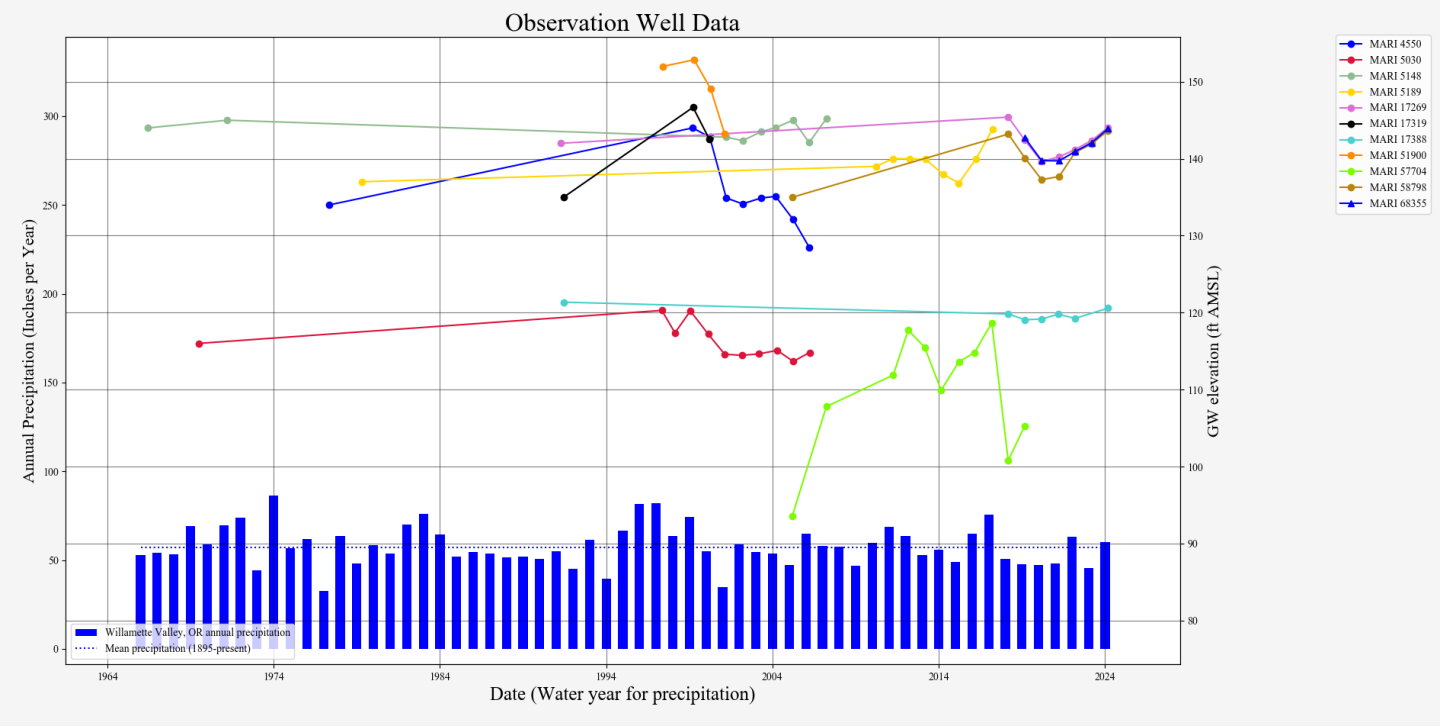


Well Statistics

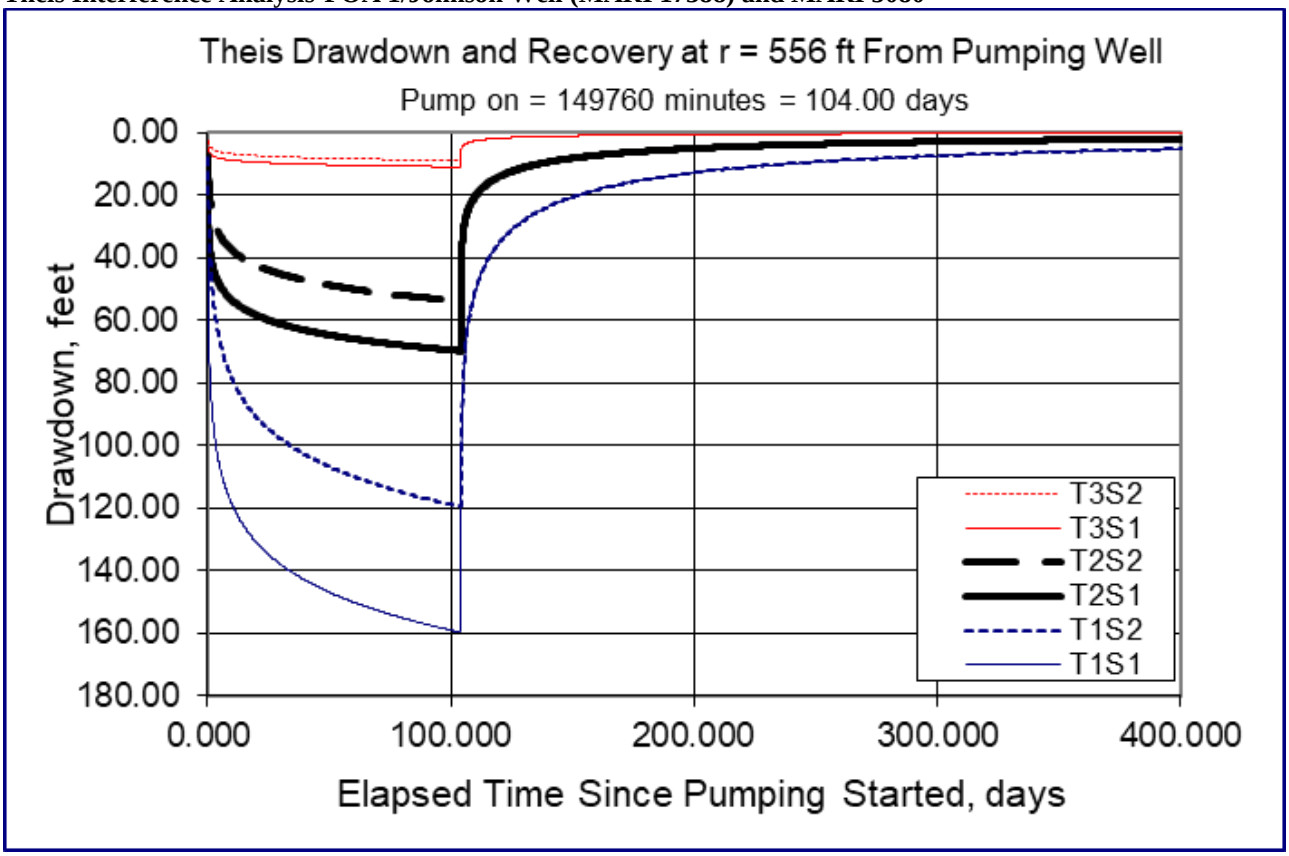


Created 01/16/2025

Water-Level Measurements in Nearby Wells



Theis Interference Analysis-POA 1/Johnson Well (MARI 17388) and MARI 5080



Radial distance from pumping well (r)=556 ft [estimated radial distance to nearest user, MARI 5080]

Pumping Rate (Q)= 3.1723 cfs (~1,423.8 gpm)

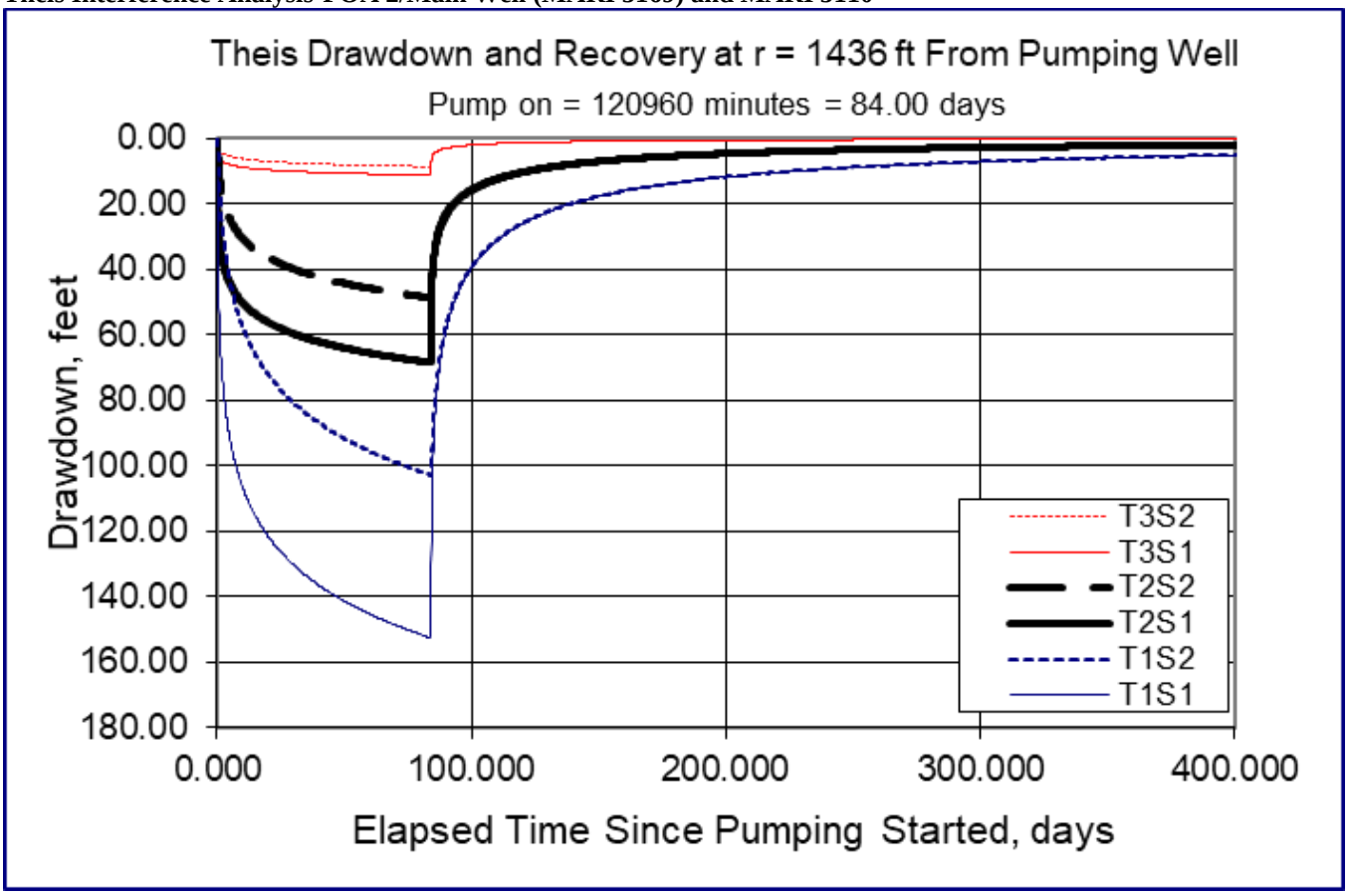
Aquifer Transmissivity (T1)= 9,350 gpd/ft (1,250 ft^2/day), (T2)= 23,562 gpd/ft (3,150 ft^2/day), (T3)= 179,520 gpd/ft (24,000 ft^2/day)

Storativity (s1) = 0.0001, (s2) = 0.001 [Conlon et al 2005, Table 1 and 2 values for MSU]

Total pumping time=104 days*

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 638.75 ac-ft maximum allowed duty. For the maximum allowed duty of 638.75 ac-ft, continuous pumping would occur for 104 days at a rate of 3.1723 cfs (~1,423.8 gpm).

Theis Interference Analysis-POA 2/Main Well (MARI 5169) and MARI 5110



Radial distance from pumping well (r)=1,436 ft [estimated radial distance to nearest user, MARI 5110]

Pumping Rate (Q)= 3.94 cfs (~1,768.3 gpm)

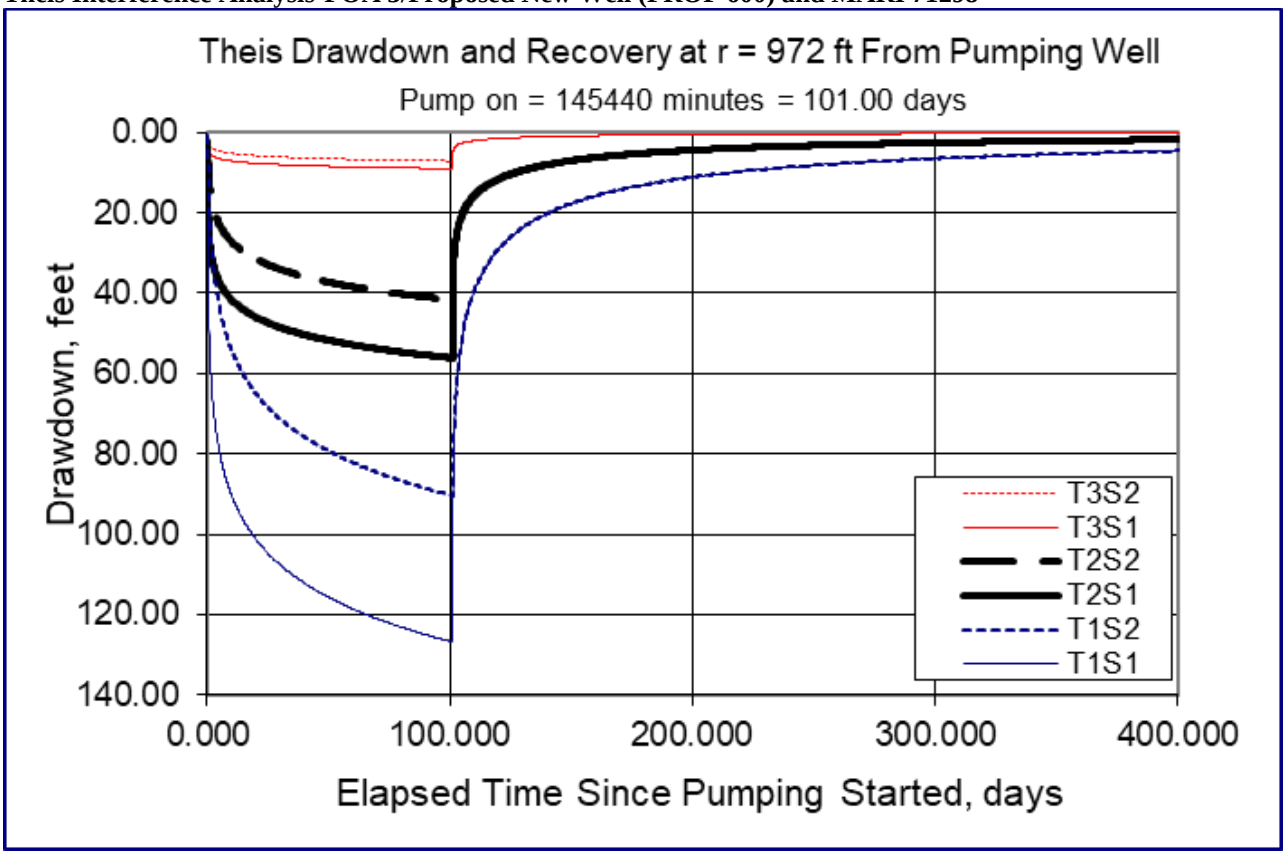
Aquifer Transmissivity (T1)= 9,350 gpd/ft (1,250 ft^2/day), (T2)= 23,562 gpd/ft (3,150 ft^2/day), (T3)= 179,520 gpd/ft (24,000 ft^2/day)

Storativity (s1) = 0.0001, (s2) = 0.001 [Conlon et al 2005, Table 1 and 2 values for MSU]

Total pumping time=84 days*

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 658.25 ac-ft maximum allowed duty. For the maximum allowed duty of 658.25 ac-ft, continuous pumping would occur for 84 days at a rate of 3.94 cfs (~1,768.3 gpm).

Theis Interference Analysis-POA 3/Proposed New Well (PROP 600) and MARI 71298



Radial distance from pumping well (r)=972 ft [estimated radial distance to nearest user, MARI 71298]

Pumping Rate (Q)= 2.88 cfs (~1,292.63 gpm)

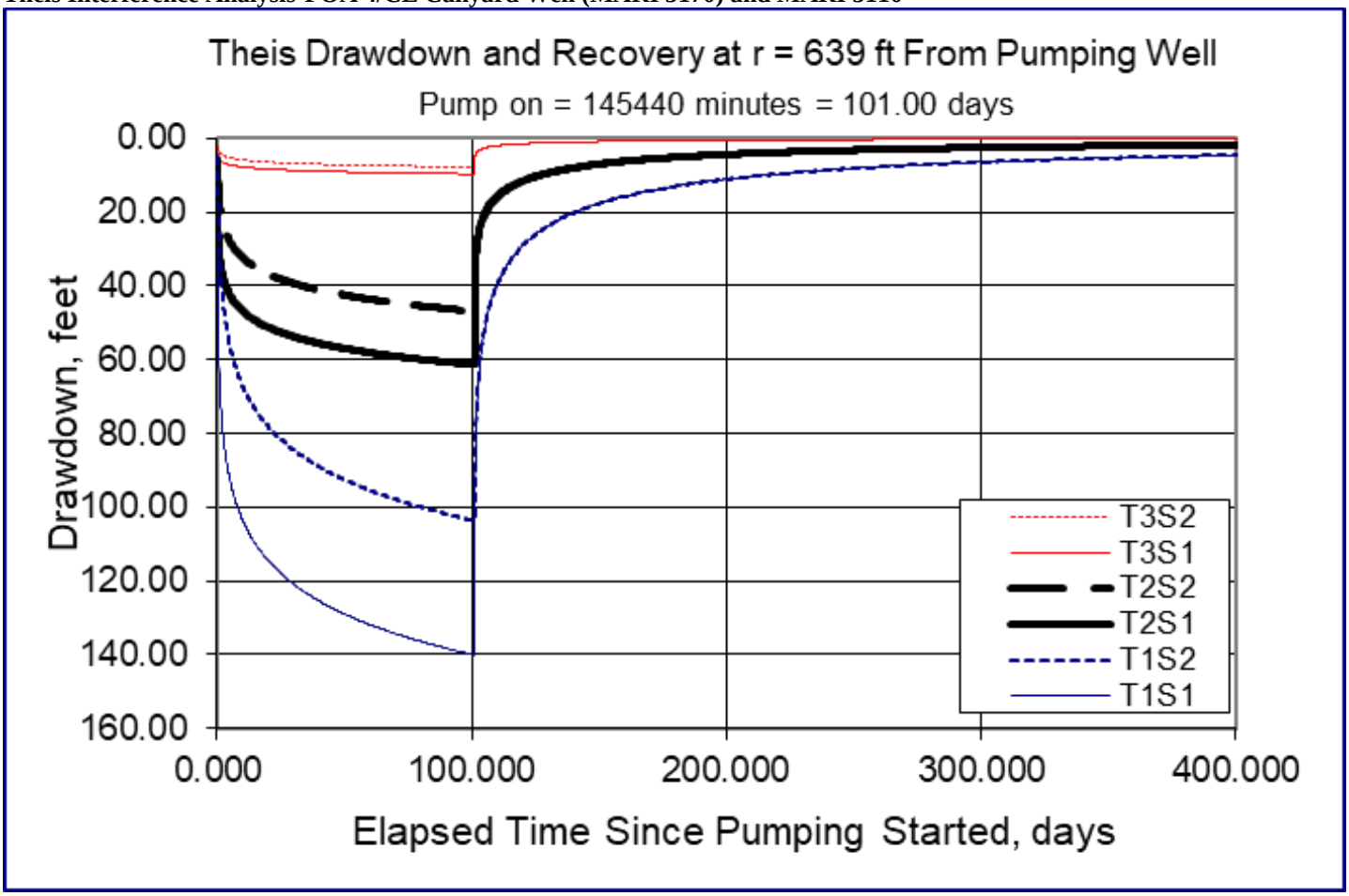
Aquifer Transmissivity (T1)= 9,350 gpd/ft (1,250 ft^2/day), (T2)= 23,562 gpd/ft (3,150 ft^2/day), (T3)= 179,520 gpd/ft (24,000 ft^2/day)

Storativity (s1) = 0.0001, (s2) = 0.001 [Conlon et al 2005, Table 1 and 2 values for MSU]

Total pumping time=101 days*

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 576.5 ac-ft maximum allowed duty. For the maximum allowed duty of 576.5 ac-ft, continuous pumping would occur for 101 days at a rate of 2.88 cfs (~1,292.63 gpm).

Theis Interference Analysis-POA 4/CL Canyard Well (MARI 5170) and MARI 5110



Radial distance from pumping well (r)=639 ft [estimated radial distance to nearest user, MARI 5110]

Pumping Rate (Q)= 2.88 cfs (~1,292.63 gpm)

Aquifer Transmissivity (T1)= 9,350 gpd/ft (1,250 ft^2/day), (T2)= 23,562 gpd/ft (3,150 ft^2/day), (T3)= 179,520 gpd/ft (24,000 ft^2/day)

Storativity (s1) = 0.0001, (s2) = 0.001 [Conlon et al 2005, Table 1 and 2 values for MSU]

Total pumping time=101 days*

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 576.5 ac-ft maximum allowed duty. For the maximum allowed duty of 576.5 ac-ft, continuous pumping would occur for 101 days at a rate of 2.88 cfs (~1,292.63 gpm).

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19460
Well number:	3
Stream Number:	1
Pumping rate (cfs):	0.796312
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	4210	4210	4210	ft
Aquifer transmissivity	T	24000	3150	1250	ft2/day
Aquifer storativity	S	0.001	0.0005	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	11	11	11	ft
Aquitard thickness below stream	babs	2	2	2	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	265	265	265	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	2	5	5	5	6	6	7	7	7	8	8	9	9
Depletion (cfs)	0.02	0.04	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07