Groundwater Application Review Summary Form

Application # G- 19433

GW Reviewer Stacey Garrison Date Review Completed: 5/13/2025

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 **_May 13 2025_**

TO: **Application** G-**_19433_**

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 May 13, 2025
FROM: Groundwater Section Stacey Garrison
Reviewer's Name
SUBJECT: Application G- **19433** 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: **John David Appel** County: **Marion**

A1. Applicant(s) seek(s) 0.1[a] cfs from 2 well(s) in the Willamette Basin, Molalla-Pudding subbasin

A2. Proposed use Nursery (containerized) 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 2242	1	Alluvial	0.1[a]	5S/2W-2 SW-NE	155' N, 1100' E fr C1/4 S2[a]
2	MARI 71275[b]	2	Alluvial	0.1[a]	5S/2W-2 SW-NE	800' N, 720' E fr C1/4 S2[a]

* Alluvium, CRB, Bedrock

[a] For POA 2 (MARI 71275), there is an existing Department location based on GPS coordinates from a well inspection used in this review; the metes-and-bounds and mapped locations are 90 ft southwest and 50 ft west of the Department location, respectively.

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	127	0 to 19	0 to 127		125 to 127	100	83	Air
2	208	0 to 60	+2 to 164	124 to 208	165 to 175, 195 to 205	100 gpm		Air

Use data from application for proposed wells.

A4. **Comments:** The POAs/POU are located 2.5 miles northwest of Woodburn, Oregon. Applicant proposes to irrigate 10.5 ac of nursery stock at the containerized allocation of 5 AF/ac at a variable rate[a] with a maximum annual volume of 52.5 AF.
[a] Applicant proposes a variable rate to avoid PSI with Case Creek in the Champoeg Creek WAB. The applicant's rounded up rates have been adjusted to match the 1 percent of the 80 percent Natural Flow for May, August and September: November through April 0.1 cfs (44.9 gpm); May 0.0615 cfs (27.6 gpm); June 0.030 cfs (13.5 gpm); July 0.029 cfs (13 gpm); August 0.0188 cfs (8.4 gpm); September 0.0108 cfs (4.85 gpm); October 0.010 cfs (4.5 gpm).
[b] Application submitted April 30 2024 indicated POA 2 was not yet constructed and would have a 6 inch casing diameter from surface to 150 ft bls, sealed to 20 ft bls, and max depth of 150 ft bls. MARI 71275 was drilled on June 7 2024 to a depth of 208 ft bls, sealed to 60 ft bls, and cased to 164 ft bls with 6 inch casing in the approximate location indicated on application maps for POA 2. The Department has correlated MARI 71275 as POA 2 for this application.

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 POA is anticipated to develop a confined aquifer. Per OAR 690-502-0240, the relevant basin rules (OAR 690-502-0120) 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) **7RLN (Small water use reporting)**;

ii. ☐ The permit should be conditioned as indicated in item 2 below.

iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;

c. ☒ **Condition** to allow groundwater production only from the **alluvial** groundwater reservoir ~~between approximately _____ ft. and _____ ft. below land surface;~~

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** The POAs/POU are located on terrace underlain by Missoula Flood deposits also known as the Willamette Silt. (Tolan, 2000; Hampton, 1972). The Willamette Silt in this area is approximately 100 to 120 ft thick, and the maximum thickness of clay and silt confining layers recorded in nearby wells is 126 ft[a] (Woodward et al., 1998). This is consistent with the yellow and blue clays recorded in nearby well logs[a] as the Willamette Silt is typified as blue and yellow sand, silt, and clay (Hampton, 1972; Conlon et al., 2005). The fine-grained clays and silts encase relatively thin beds of sand and gravel which do not appear to be continuous over a wide area. The water table occurs at a shallow depth in the Willamette Silt, which acts as a leaky confining layer for the more productive sands and gravels at depth. The water-bearing zone, WBZ, of POA 1 (MARI 2242) and POA 2 (MARI 71275) utilize the underlying Willamette Aquifer, which is part of the Middle Sedimentary Unit (Woodward et al., 1998; Gannett & Caldwell, 1998; Conlon et al., 2005). The thickness of the Willamette Aquifer in this area is reportedly less than 20 ft, but in POAs 1 (MARI 2242) and 2 (MARI 71275) the WBZ is 55 and 112 ft thick, respectively. The thickness of WBZs using the MSU of the Willamette Aquifer in surrounding wells varies from 5 to 247 feet in thickness[a]. There is a wide variability in hydraulic characteristics of the Willamette aquifer, owing to the variety of compositions and degree of consolidation (O'Connor et al., 2001). The limited thickness of the water-bearing layers, discontinuous geometry and confined conditions suggest that the aquifer system could be vulnerable to long term drawdown and/or interference.

A review of statistics for nearby well records was completed and compared with the proposed maximum rate of 0.1 cfs (44.9 gpm) for this application (see Well Statistics). The median reported well yield is 52.5 gpm, and the maximum reported yield is 3,000 gpm. The proposed rate for this application is 44.9% of the median and 1% of the maximum reported yield. Within a

mile of the proposed POA, well yields range from 18 to 1,250 gpm with a median of 100 gpm. The proposed maximum rate of 0.1 cfs (44.9 gpm) is likely within the capacity of the groundwater resource.
Water level trends for wells that utilize alluvial aquifers within a mile of the POA appear to be stable (see Water Levels Measurements in Nearby Wells). Although notable declines occurred in multiple wells in 2001 and again in 2005, water levels have since recovered and remain stable. There are 42 groundwater POAs on 42 water rights within 1 mile of the subject POAs. However, the steady trends in water levels indicate that the groundwater resource is not likely over appropriated and the proposed use is within the capacity of the resource.
The nearest groundwater user to one of the POAs is MARI 18407, located 288 ft northeast of POA 1 (MARI 2242), at an elevation of 177 ft amsl. It is likely the proposed use would cause some degree of well-to-well interference with MARI 18407. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with MARI 18407 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.
Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use will likely be available in the amounts requested and within capacity of the resource. The conditions specified 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] MARI 52993, MARI 2211, MARI 2220, MARI 2284, MARI 2291, MARI 2293, MARI 2307, MARI 2310, MARI 2231, MARI 2233, MARI 19776, MARI 1755, MARI 2203, MARI 2241, MARI 52949, MARI 53178, MARI 54047, MARI 17629, MARI 1404, MARI 1412, MARI 2285, MARI 18407, MARI 71275, MARI 2242, MARI 52068, MARI 2243, MARI 2257, MARI 17537, MARI 17548, MARI 17572, MARI 17899, MARI 18613, MARI 20817, MARI 50247, MARI 50248, MARI 50249, MARI 51440, MARI 57994.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Alluvial**	☒	☐
	Alluvial	☒	☐

Basis for aquifer confinement evaluation: The SWL is above the WBZ in 38 wells within a mile of the POAs. There is an unconfined alluvial WBZ recorded in some wells within one mile of the POAs, but the POAs (MARI 2242, MARI 71275) utilize the confined alluvial WBZ overlain by clays and silts that range in thickness from 22 to 126 ft[a].
[a] MARI 52993, MARI 2211, MARI 2220, MARI 2284, MARI 2291, MARI 2293, MARI 2307, MARI 2310, MARI 2231, MARI 2233, MARI 19776, MARI 1755, MARI 2203, MARI 2241, MARI 52949, MARI 53178, MARI 54047, MARI 17629, MARI 1404, MARI 1412, MARI 2285, MARI 18407, MARI 71275, MARI 2242, MARI 52068, MARI 2243, MARI 2257, MARI 17537, MARI 17548, MARI 17572, MARI 17899, MARI 18613, MARI 20817, MARI 50247, MARI 50248, MARI 50249, MARI 51440, MARI 57994.

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[b]	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Case Creek**	**137.6**	**150-165**	**4,390**	☒	☐	☐	☐	☒
2	**1**	**Case Creek**	**143.5**	**142-165**	**3,780**	☒	☐	☐	☐	☒
1	**2**	**Senecal Creek**	**137.6**	**159-169**	**2,452**	☒	☐	☐	☐	☒
2	**2**	**Senecal Creek**	**143.5**	**158-167**	**3,100**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater SWL in nearby wells range from 102 to 166 ft amsl[a] and the reported regional water table elevation is approximately 160 ft amsl. (Gannett and Caldwell, 1998; Woodward et al., 1998). POAs 1 (MARI 2242) and 2 (MARI 71275) report SWLs of 137.6 and 143.5 ft amsl, respectively. These SWLs were collected in the summer.The streambed of SW 1 (Case Creek) is between 142 and 165 ft amsl within a mile of the POAs, and between 158 and 169 ft amsl for SW 2 (Senecal Creek) within a mile of the POAs. The groundwater elevation is coincident with or above both SW 1 (Case Creek) and SW 2 (Senecal Creek). The streambeds of SW 1 (Case Creek) and SW 2 (Senecal Creek) have not incised below the elevation of the WBZs of the confined alluvial aquifer. The proposed POAs are located near the groundwater divide between SW 1(Case Creek) and SW 2 (Senecal Creek). Both creeks have their headwaters in the terrace underlain by the Willamette Silt; as these stream drainages traverse towards the northeast, they progressively cut into the Willamette Silt until they intersect the water table, at which point they transition from intermittent to perennial streams. This is consistent with published water level maps which indicate that groundwater in the alluvial aquifer system flows toward and discharges into perennial SW 1 (Case Creek) and SW 2 (Senecal Creek). Hydraulic connection to SW 1 (Case Creek) and SW 2 (Senecal Creek) is likely but anticipated to be inefficient due to the low vertical permeability of the overlying fine-grained sediments.
[a] Groundwater elevation calculated from static water level reported in well logs and/or static water level(s) reported for MARI 52993, MARI 2211, MARI 2220, MARI 2284, MARI 2291, MARI 2293, MARI 2307, MARI 2310, MARI 2231, MARI 2233, MARI 19776, MARI 1755, MARI 2203, MARI 2241, MARI 52949, MARI 53178, MARI 54047, MARI 17629, MARI 1404, MARI 1412, MARI 2285, MARI 18407, MARI 71275, MARI 2242, MARI 52068, MARI 2243, MARI 2257, MARI 17537, MARI 17548, MARI 17572, MARI 17899, MARI 18613, MARI 20817, MARI 50247, MARI 50248, MARI 50249, MARI 51440, MARI 57994.
[b] Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

Water Availability Basin the well(s) are located within:
SW 1 (Case Creek): CHAMPOEG CR>WILLAMETTE R-AT MOUTH
SW 2 (Senecal Creek): MILL CR>PUDDING R-AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	**1**	☐	☐			☐	Nov-Apr: 10.1 May: 6.15 Jun: 3.04 Jul: 2.94 Aug: 1.88 Sep: 1.08 Oct: 1.00	☐	**<25%**	☐
2	**1**	☐	☐			☐	Nov-Apr: 10.1 May: 6.15 Jun: 3.04 Jul: 2.94 Aug: 1.88 Sep: 1.08 Oct: 1.00	☐	**<25%**	☐
1	**2**	☐	☐			☐	Nov-Apr: 6.05 May: 13.7 Jun: 8.72 Jul: 3.79 Aug: 2.09 Sep: 1.88 Oct: 2.39	☒	**<25%**	☒
2	**2**	☐	☐			☐	Nov-Apr: 6.05 May: 13.7 Jun: 8.72 Jul: 3.79 Aug: 2.09 Sep: 1.88 Oct: 2.39	☒	**<25%**	☒

Comments: The proposed variable rate for the November to April period is 0.1 cfs, however, the 80% Natural Flow for SW 2 (Senecal Creek) for this period of time is 6.05 cfs and 1% of this is 0.0605 cfs. **The proposed maximum rate 0.1 cfs (44.9 gpm) is greater than 1 percent (0.0605 cfs, 27.1 gpm) of the 80 percent Natural Flow (6.05 cfs) for SW 2 (Senecal Creek). The variable rate for all other periods of time is less than the 1% of the 80% Natural Flow for SW 2 (Senecal Creek). The applicant may revise the proposed maximum rate for the November to April period of time to less than or equal to 0.0605 cfs (27.1 gpm) to avoid triggering PSI with SW 2 (Senecal Creek) on this basis without the need for a new groundwater review.**

Potential depletion (interference with) SW 2 (Senecal Creek) by proposed pumping at POA 2 (MARI 71275) 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 2 due to pumping of POA 2 (MARI 71275) 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 2 and SW 2) 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 2 and SW 2. Therefore, the interference of the 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 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-impacts to streams within 1 mile assessed 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:** **The proposed maximum rate 0.1 cfs (44.9 gpm) is greater than 1 percent (0.0605 cfs, 27.1 gpm) of the 80 percent Natural Flow (6.05 cfs) for SW 2 (Senecal Creek). The applicant may revise the proposed maximum rate for the November to April period of time to less than or equal to 0.0605 cfs (27.1 gpm) to avoid triggering PSI with SW 2 (Senecal Creek) on this basis without the need for a new groundwater review.**

References Used:

Application File: G-19433

Pumping Test Files: MARI 52993, MARI 54047, MARI 1386, MARI 2211, MARI 2365, MARI 2360, MARI 1270, MARI 2310, MARI 2489, MARI 2011, MARI 17630, MARI 52215, MARI 54550, MARI 55427, MARI 55956, MARI 56347, MARI 56348, MARI 17330, MARI 59508, MARI 60011, MARI 60041, MARI 59731, MARI 17296, MARI 59361, MARI 18489

Well Reports: MARI 52993, MARI 2211, MARI 2220, MARI 2284, MARI 2291, MARI 2293, MARI 2307, MARI 2310, MARI 2231, MARI 2233, MARI 19776, MARI 1755, MARI 2203, MARI 2241, MARI 52949, MARI 53178, MARI 54047, MARI 17629, MARI 1404, MARI 1412, MARI 2285, MARI 18407, MARI 71275, MARI 2242, MARI 52068, MARI 2243, MARI 2257, MARI 17537, MARI 17548, MARI 17572, MARI 17899, MARI 18613, MARI 20817, MARI 50247, MARI 50248, MARI 50249, MARI 51440, MARI 57994

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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.

Hampton, E.R. 1972. Geology and Ground Water of the Molalla-Salem Slope Area, Northern Willamette Valley, Oregon. USGS Water Supply Paper 1997.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

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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

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

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Water Availability Analysis

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MILL CR > PUDDING R - AT MOUTH
WILLAMETTE BASIN
Water Availability as of 10/4/2024

Watershed ID #: 30200901 (Map)
Date: 10/4/2024

Exceedance Level: 80%
Time: 4:40 PM

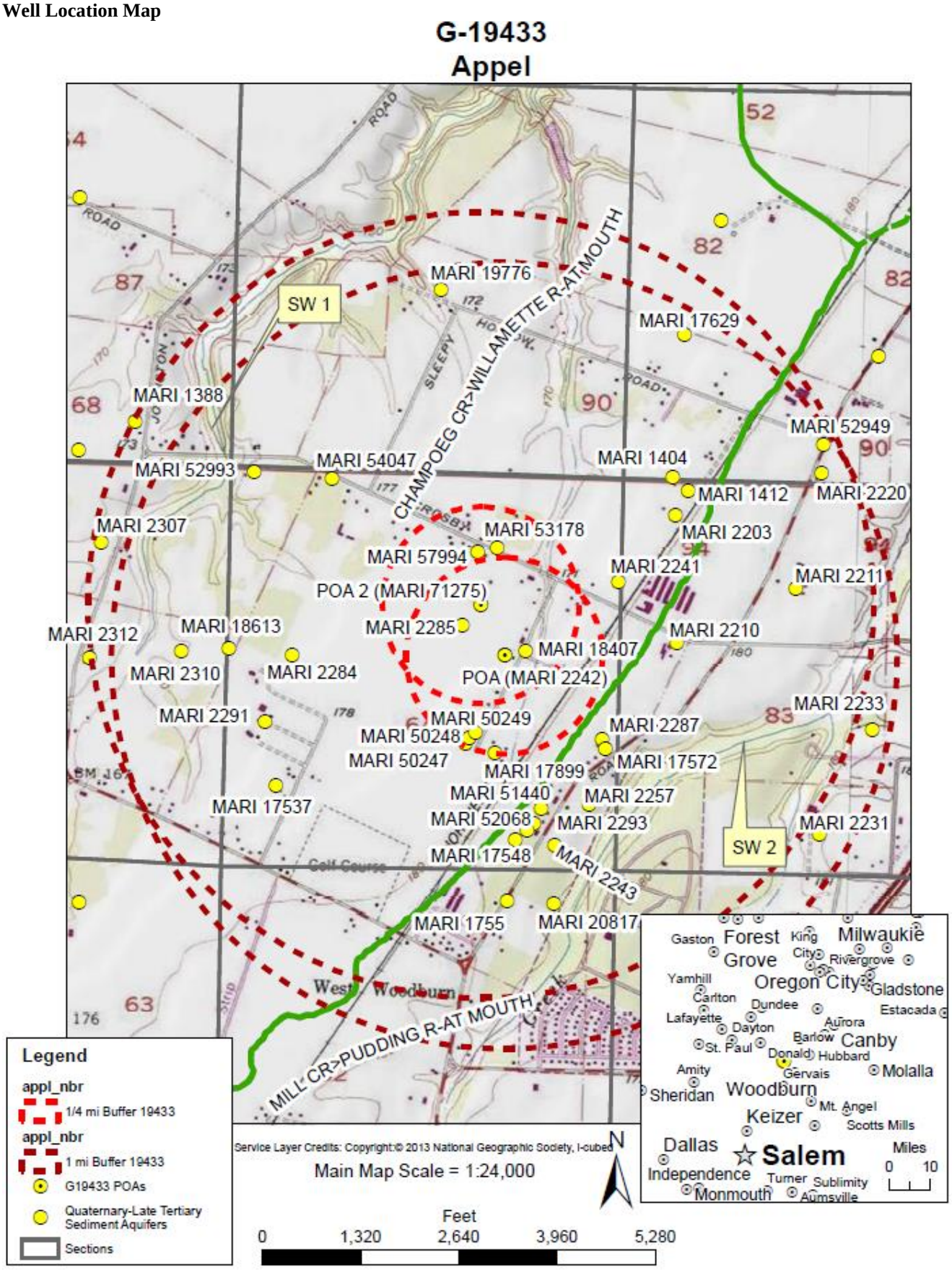
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Water Availability Calculation

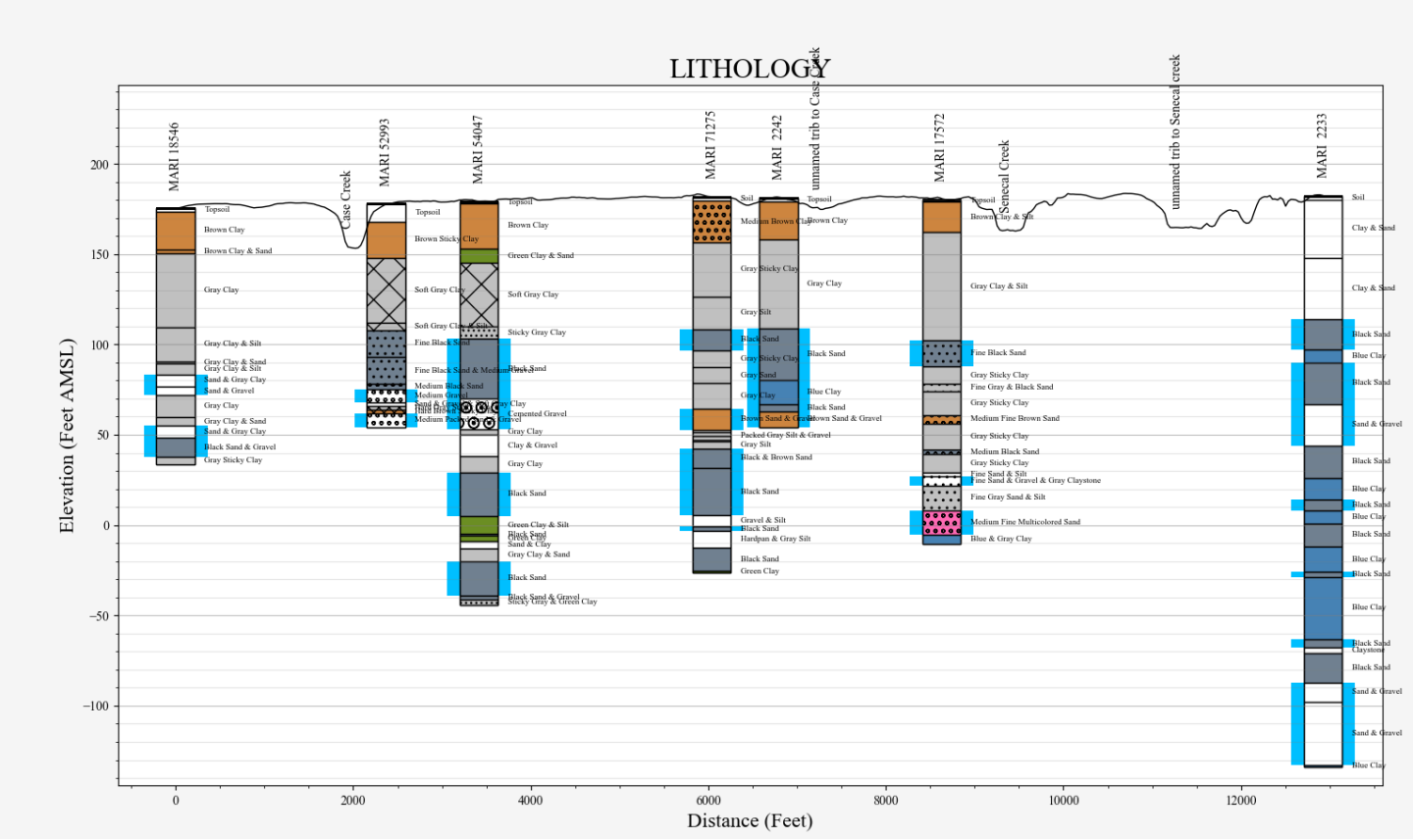
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	39.20	9.74	29.50	0.00	0.00	29.50
FEB	53.90	9.88	44.00	0.00	0.00	44.00
MAR	38.40	9.47	28.90	0.00	0.00	28.90
APR	27.60	7.10	20.50	0.00	0.00	20.50
MAY	13.70	5.73	7.97	0.00	0.00	7.97
JUN	8.72	7.06	1.66	0.00	0.00	1.66
JUL	3.79	10.80	-7.05	0.00	0.00	-7.05
AUG	2.09	8.81	-6.72	0.00	0.00	-6.72
SEP	1.88	4.81	-2.93	0.00	0.00	-2.93
OCT	2.39	1.25	1.14	0.00	0.00	1.14
NOV	6.05	7.23	-1.18	0.00	0.00	-1.18
DEC	25.90	9.56	16.30	0.00	0.00	16.30
ANN	30,000.00	5,520.00	25,300.00	0.00	0.00	25,300.00

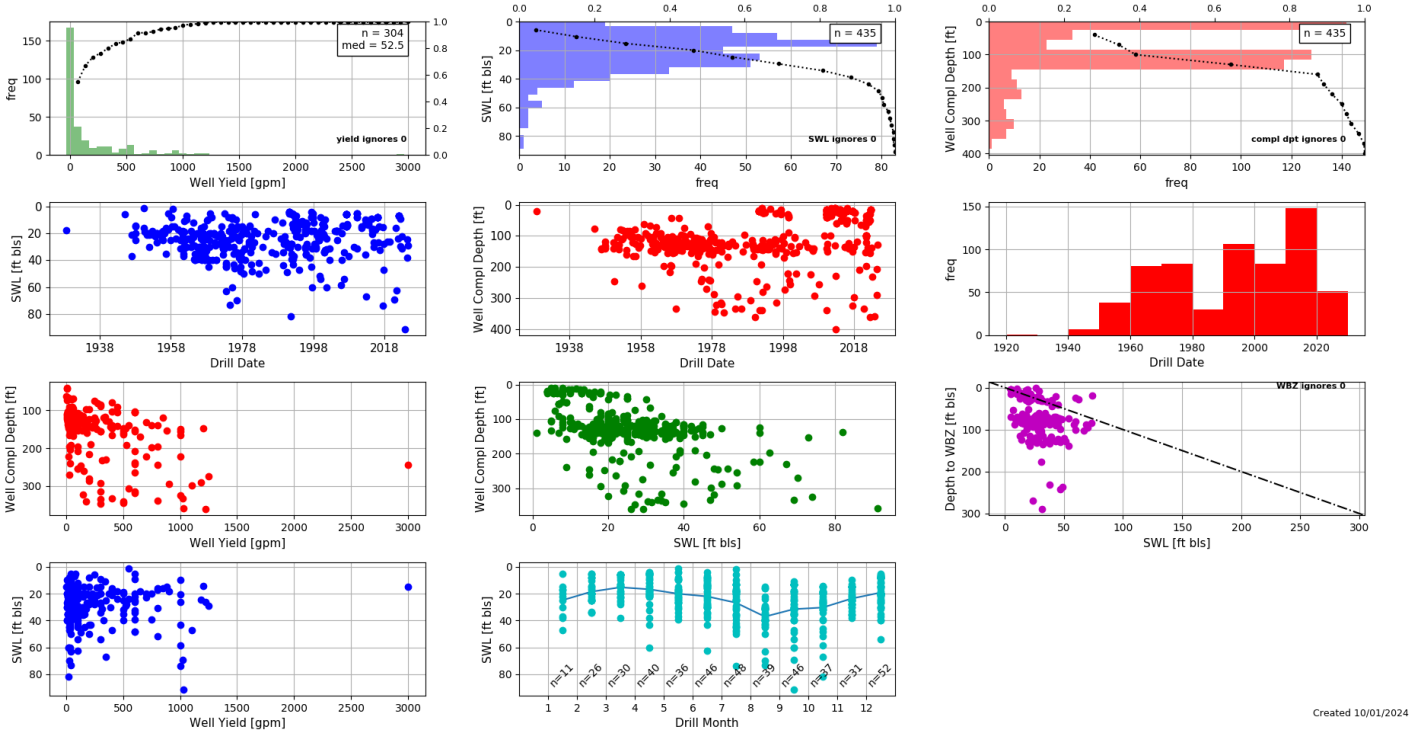
Well Location Map



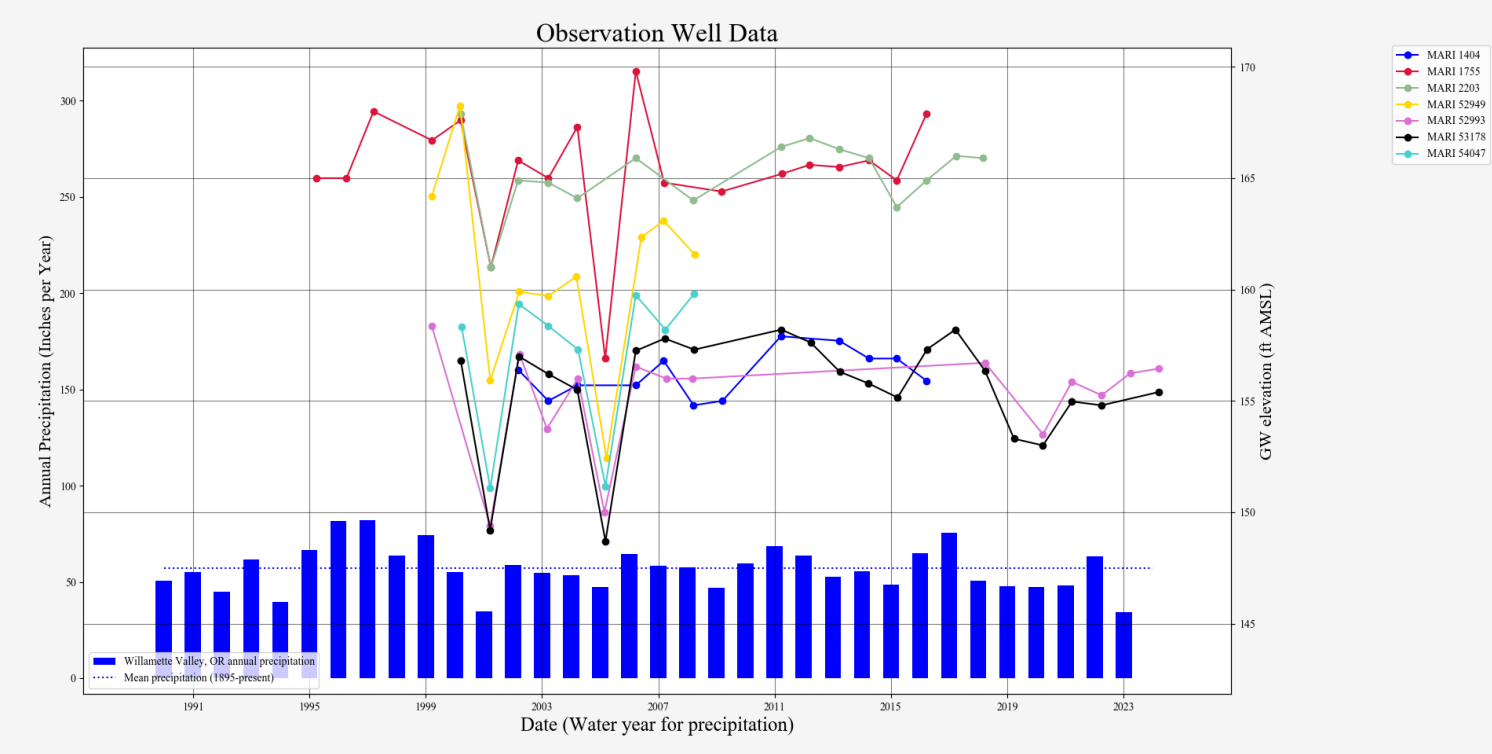
Cross-Section



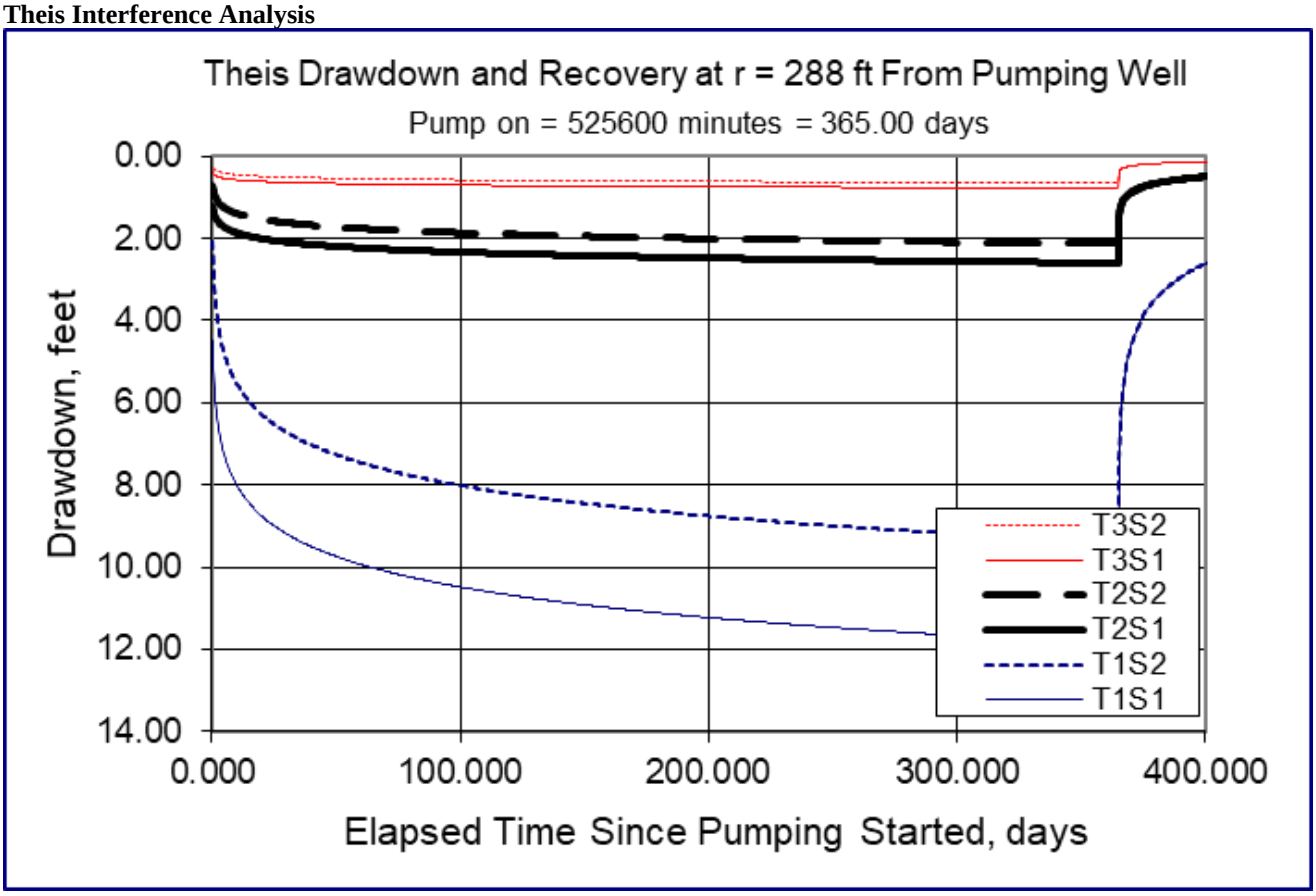
Well Statistics



Water-Level Measurements in Nearby Wells



Theis Interference Analysis



Radial distance from pumping well (r)=288 ft [estimated radial distance to nearest user, MARI 18407]

Pumping Rate (Q)= 0.1 cfs (~ 44.9gpm)

Aquifer Transmissivity (T1)= 4,787 gpd/ft (640 ft^2/day), (T2)= 25,133 gpd/ft (3,360 ft^2/day), (T3)= 92,752 gpd/ft (12,400 ft^2/day)

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

Total pumping time=365 days [Year-round nursery]

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19433
Well number:	2
Stream Number:	2
Pumping rate (cfs):	0.1
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	2452	2452	2452	ft
Aquifer transmissivity	T	640	3360	12400	ft2/day
Aquifer storativity	S	0.0001	0.1	0.05	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	90	90	90	ft
Aquitard thickness below stream	babs	90	90	90	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	20	20	20	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0	0
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00