Groundwater Application Review Summary Form

Application # G- _19414_

GW Reviewer _Aaron Orr_ Date Review Completed: _10/30/2024_

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 **_October 30, 2024_**

TO: **Application** G-**_19414_**

FROM: **GW:** **_Aaron Orr_**
(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 10/30/2024
FROM: Groundwater Section Aaron Orr
Reviewer's Name
SUBJECT: Application G- **19414** 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: **Westwood Farms, Inc.** County: **Marion**

A1. Applicant(s) seek(s) 0.47 cfs from 1 well(s) in the Willamette Basin, Mainstem Willamette subbasin

A2. Proposed use Irrigation Seasonality: 3/1 – 10/31 (37.79 acres; 94.4 acre-feet)

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 4811	Well 2	Alluvial	0.47	T6S/R3W-3 SE-SE	1,140' S, 1,570' W fr NW cor DLC 38

* 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	60	0 - 20	0 - 60	N/A	30 - 59	500	5	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	120	N/A	20	4/12/1967	18.21	3/28/2017 (MARI 64375)

Use data from application for proposed wells.

A4. **Comments:** The proposed POA is approximately 4 miles north of Keizer, OR. Land surface elevation at well was determined by LiDAR imagery.

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: Surface water sources are greater than ¼-mile from the POA. Therefore, the provisions of the Willamette Basin rules do not apply (OAR 690-502-0240).

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area:
Comments: N/A

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) **7RLA, large 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

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:** POA 1 (MARI 4811) is completed in alluvial floodplain deposits ("Qalc") of the Willamette Valley (O'Connor et al., 2001). Deposits are Holocene in age and are characterized by discontinuous sand and loose gravel (O'Connor et al., 2001). The equivalent hydrogeologic unit is the Upper Sedimentary Unit of the Willamette Aquifer, which is approximately 50-feet thick within 1-mile of the POA (Conlon et al., 2005). These deposits are porous and highly transmissive, with modeled hydraulic conductivity estimates reaching 600 feet/day (Woodward et al., 1998). Coincident with the Upper Sedimentary Unit is the Willamette Silt unit, which is approximately 60-feet thick in the vicinity of the POA (Gannett and Caldwell, 1998). These deposits are typically micaceous silts and clays characterized by rhythmic bedding patterns associated with the Missoula floods (O'Connor et al., 2001; Conlon et al., 2005). Confining conditions created by the Willamette Silt unit is likely localized and not laterally continuous due to the geomorphology of the Willamette River and further evidenced by the occurrence of oxbow lakes in the study area (Wallick et al., 2013).

The nearest stream is The Willamette River to the northwest. Water generally flows west-northwest towards the river. Recharge in the Willamette Basin is predominantly from the infiltration of precipitation into the groundwater system (Conlon et al., 2005). Alluvial wells with water level data within 2 miles of the proposed POA show generally stable water level trends (Figure 5). The range of static waters is 16 feet across the selected 4 wells. Variations in static water levels year over year is likely tied to the hydraulic connection between the wells and the Willamette River (Conlon et al., 2005).

There are 40 wells completed within approximately 1 mile of POA 1. Of these 40 wells, 21 are irrigation wells. Median reported yield for wells completed within 1 mile of the proposed POA is 100 gpm. Median reported yield for irrigation wells completed within 1 mile of the proposed POA is 600 gpm, with a maximum of 800 gpm. Most of these wells appear to be completed in locally confined aquifers. The requested rate of 0.47 cfs (211 gpm) is within the range of yields for wells within one mile of the POA and is therefore likely within the capacity of the groundwater resource. The combined rate from this application (G-19414) and the concurrent transfer T-14395 is 0.93 cfs (417 gpm), which is also likely within the capacity of the resource.

Two pumping rates were reviewed for potential well interference: (1) the proposed rate of 0.47 cfs from this application, G-19414, and (2) the combined rate ot 0.93 cfs from this application and concurrent transfer T-14395 with the same proposed

POA (0.47 cfs + 0.46 cfs). The closest water well with a water right not owned by the applicant is MARI 4814, 2,000 feet north-northwest from POA 1. (1) Given a rate of 0.47 cfs, MARI 4814 is estimated to experience between 0.6 and 1.8 feet of drawdown over the course of the irrigation season. (2) Given a combined rate of 0.93 cfs, MARI 4814 is estimated to experience between 1.1 and 3.5 feet of drawdown over the course of the irrigation season. Breakdowns of each parameter are described in the **Theis Interference Analysis** section of the appendix.

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**	☐	☒

Basis for aquifer confinement evaluation: POA 1 (**MARI 4811**) is screened in the unconsolidated sand and gravel water bearing zone of the Holocene floodplain deposits. Some wells in the area appear to exhibit localized confining layers with static water and first water level differences of approximately 10 feet. However, a continuous confining layer is not likely given the geomorphology of the Willamette River (Wallick et al., 2013). Therefore, the POA likely develops an unconfined aquifer.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? **YES NO ASSUMED**			Potential for Subst. Interfer. Assumed? **YES NO**	
1	**1**	**Willamette River**	**[a]96 - 112**	**[b]81 - 96**	**6,300**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: [a]Groundwater static water levels in nearby wells ranges from 96 to 112 feet msl based on the range of static water levels of the wells in the attached hydrograph (Figure 5). The reported static water level of the POA is 100 feet above mean sea level (20 feet below ground surface; wellhead elevation is 120 feet msl). The reported regional water table elevation within 1-mile of the POA is also approximately 100 feet above mean sea level (Gannett and Caldwell, 1998; Woodward et al., 1998).
[b]The water level of the Willamette River near the POA is between 81 and 96 feet msl, and the Willamette River has good hydraulic connection to the upper sedimentary unit (Conlon et al., 2005). The 15-foot reported range of seasonal water level elevations at the Willamette River is supported by data of the Willamette River Stream Gage at Salem, OR – 14191000.

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?
		☐	☐			☐		☐		☐

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

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
1	**1**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Well Q as CFS				**0.47**	**0.47**	**0.47**	**0.47**	**0.47**	**0.47**	**0.47**	**0.47**		
Interference CFS				**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**		
(A) = Total Interf.													
(B) = 80 % Nat. Q		**21,400**	**23,200**	**22,400**	**19,900**	**16,600**	**8,740**	**4,980**	**3,830**	**3,890**	**4,850**	**10,200**	**19,300**
(C) = 1 % Nat. Q		**214**	**232**	**224**	**199**	**166**	**87.4**	**49.8**	**38.3**	**38.9**	**48.5**	**102**	**193**
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**

Non-Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	**1**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Well Q as CFS				**0.93**	**0.93**	**0.93**	**0.93**	**0.93**	**0.93**	**0.93**	**0.93**		
Interference CFS				**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**		
(A) = Total Interf.													
(B) = 80 % Nat. Q		**21,400**	**23,200**	**22,400**	**19,900**	**16,600**	**8,740**	**4,980**	**3,830**	**3,890**	**4,850**	**10,200**	**19,300**
(C) = 1 % Nat. Q		**214**	**232**	**224**	**199**	**166**	**87.4**	**49.8**	**38.3**	**38.9**	**48.5**	**102**	**193**
(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: 1% of the 80%-exceedance natural flows for the WAB are much greater than the proposed rate(s). Therefore, any interference calculated using stream depletion modeling would be insignificant.

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:** N/A

References Used:

Application File: G-19414
Application Review: G-19397
Pumping Test File: MARI 4792
Well Logs: MARI 4811 (POA 1), MARI 4801, MARI 4809, MARI 4814, MARI 4815, MARI 4837, YAMH 7729
GWIS Measured Water Levels: MARI 4781, MARI 4816, MARI 64375, MARI 64903

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.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

McFarland, W.D., and D.S. Morgan, 1996, "Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington." USGS Numbered Series. Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington. Water Supply Paper. Washington D.C.: U. S. Geological Survey, 1996. B3. GW Library. https://doi.org/10.3133/wsp2470A.

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.

Wallick, J.R., Jones, K.L. O'Connor, J.E., Keith, M.K., Hulse, David, and Gregory, S.V., 2013, Geomorphic and vegetation processes of the Willamette River floodplain, Oregon—Current understanding and unanswered questions: U.S. Geological Survey Open-File Report 2013-1246., 70 p.

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

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 8/12/2024

Watershed ID #: 182 (Map)
Date: 8/12/2024

Exceedance Level: 80%
Time: 2:58 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	2,300.00	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	997.00
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

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 8/12/2024

Watershed ID #: 182 (Map)
Date: 8/12/2024

Exceedance Level: 80%
Time: 2:59 PM

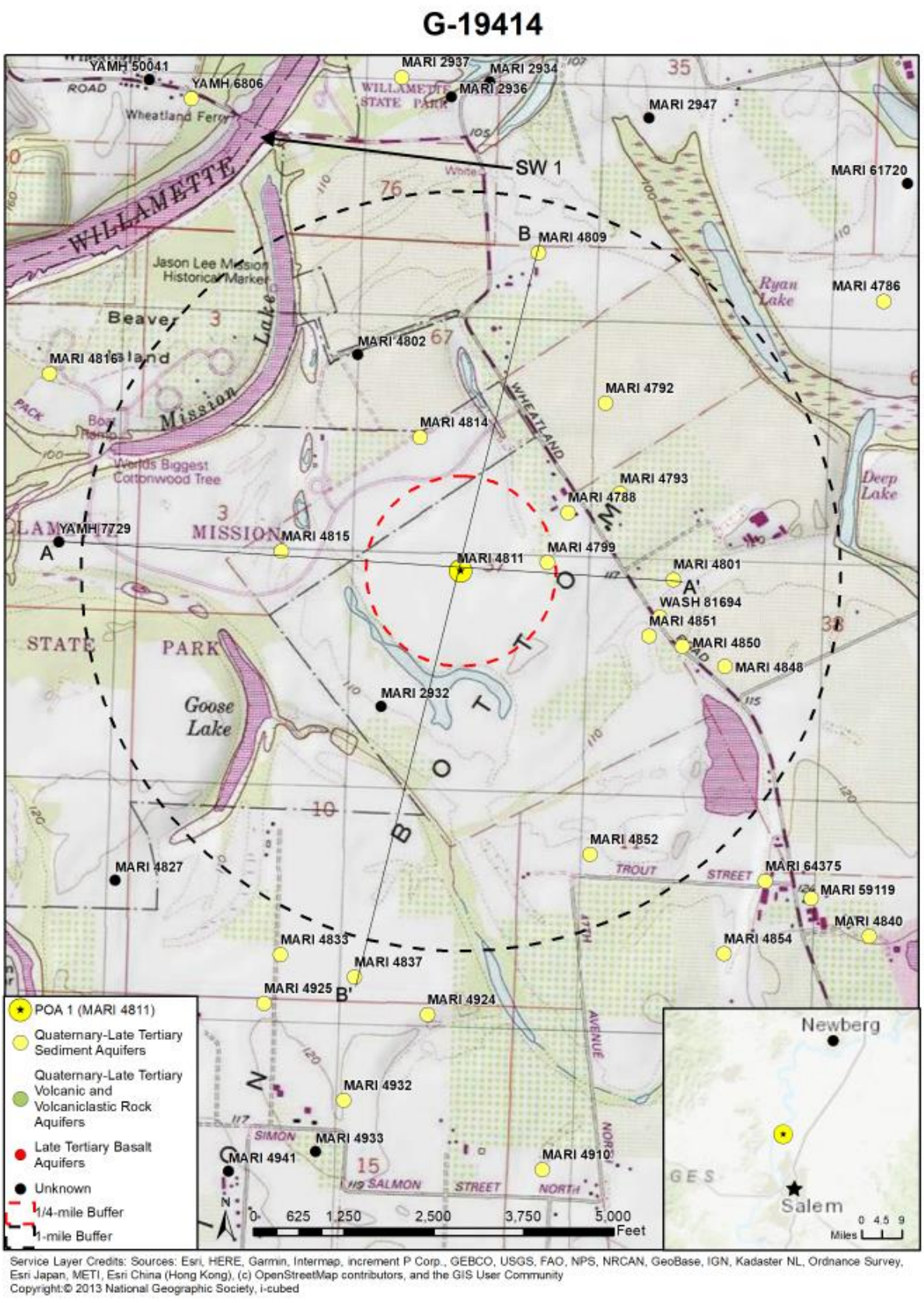
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF182A	APPLICATION	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Maximum		1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00

Well Location Map



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Cross-Sections

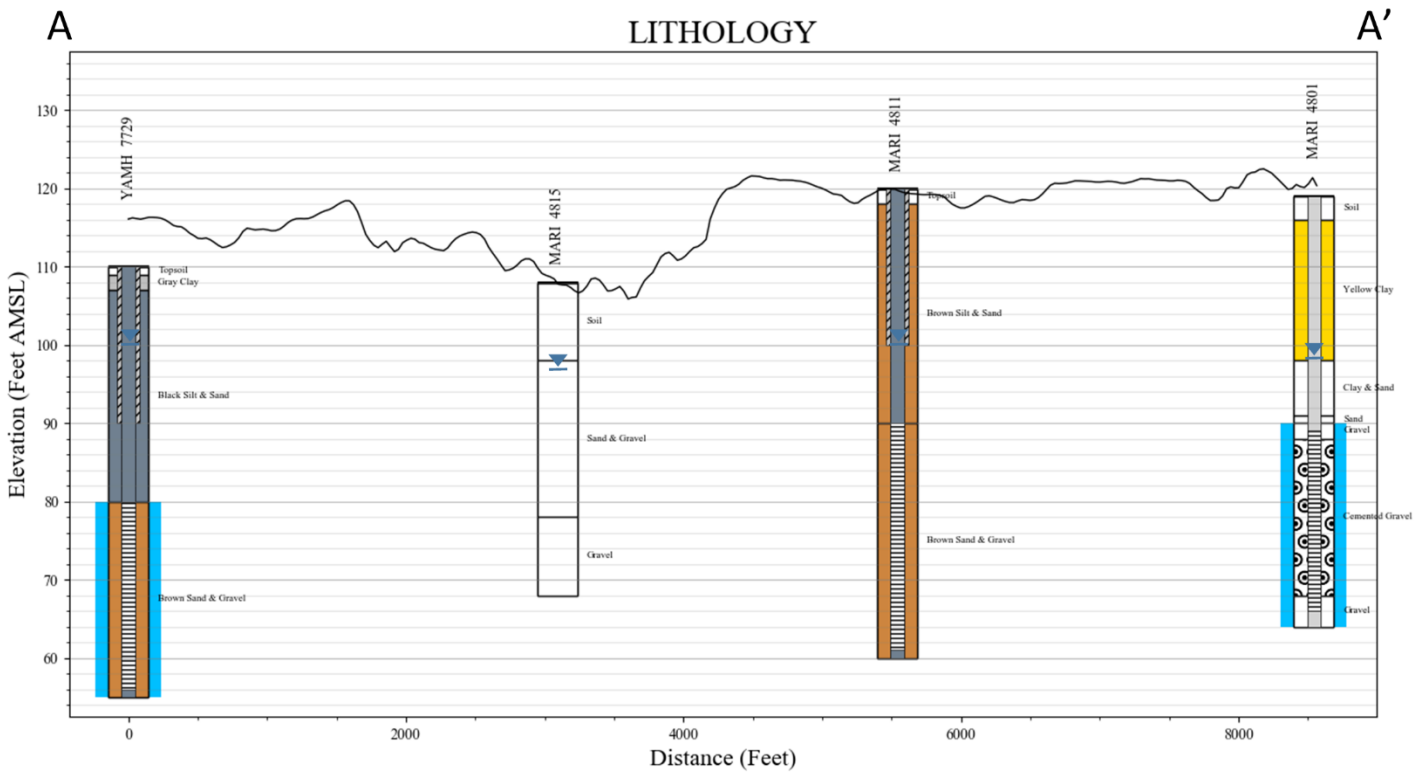

Figure 1. Cross Section A-A' (West-East)

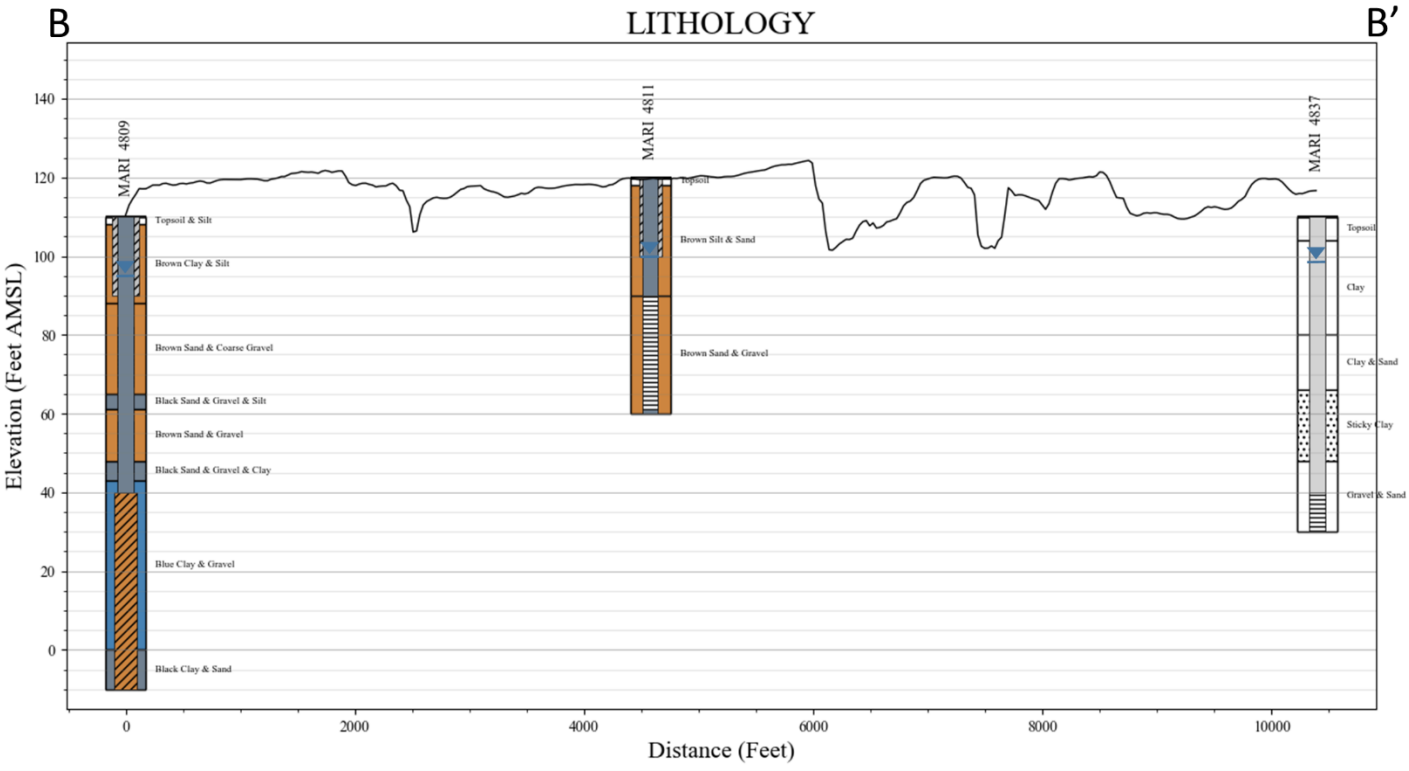

Figure 2. Cross Section B-B' (North-South)

Well Statistics (T6S/R3W Sections 2, 3, 10, 11)

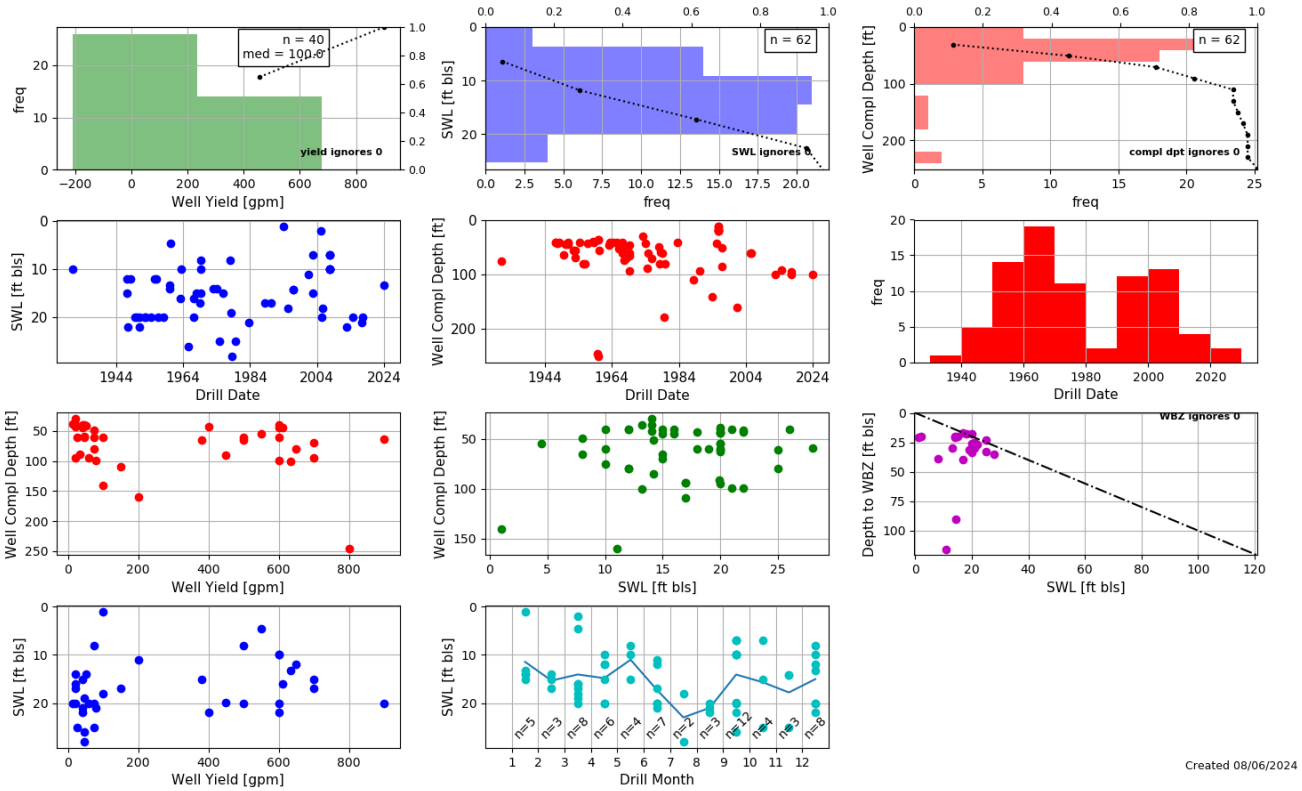

Figure 3. All wells within 1-mile of POA 1.

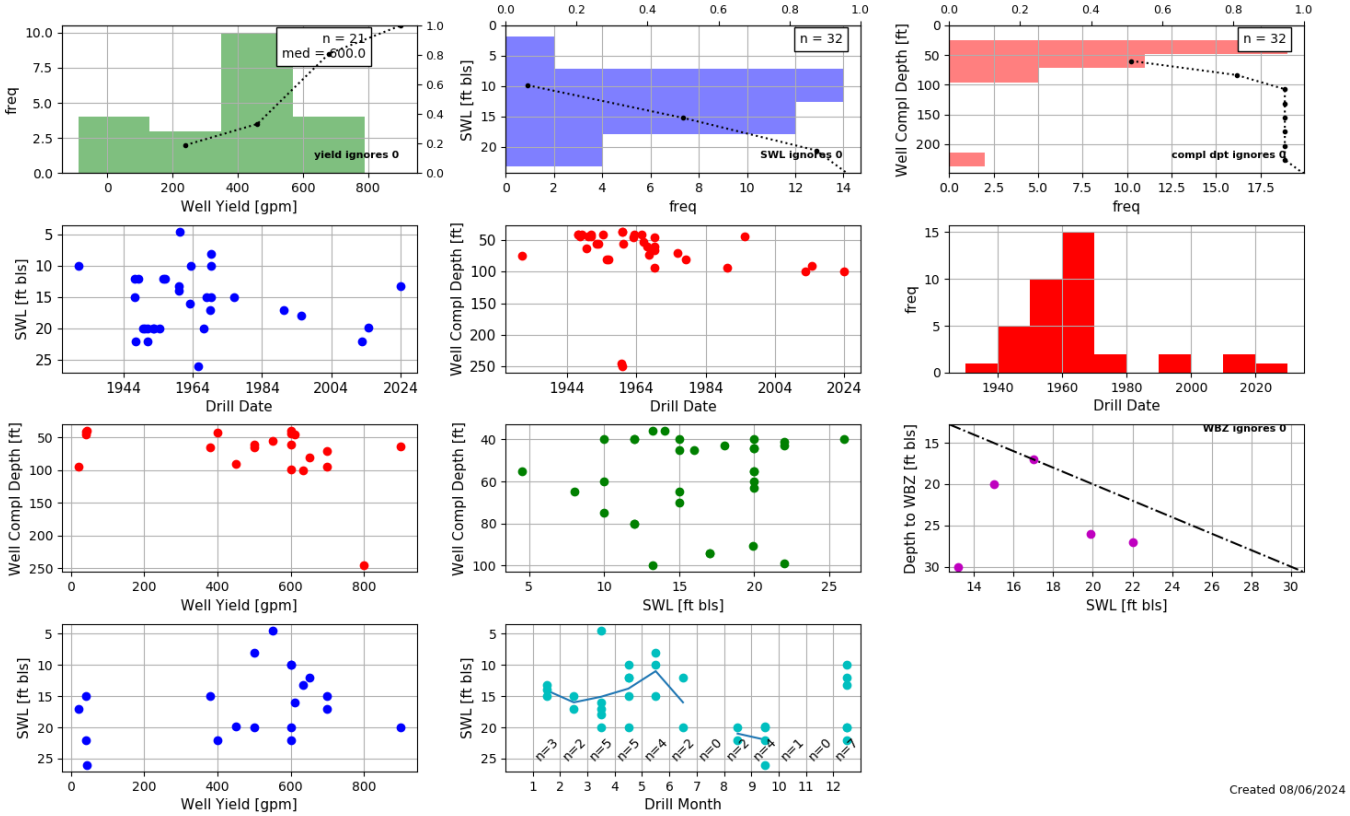

Figure 4. All irrigation wells within 1-mile of POA 1.

Water-Level Measurements in Nearby Wells

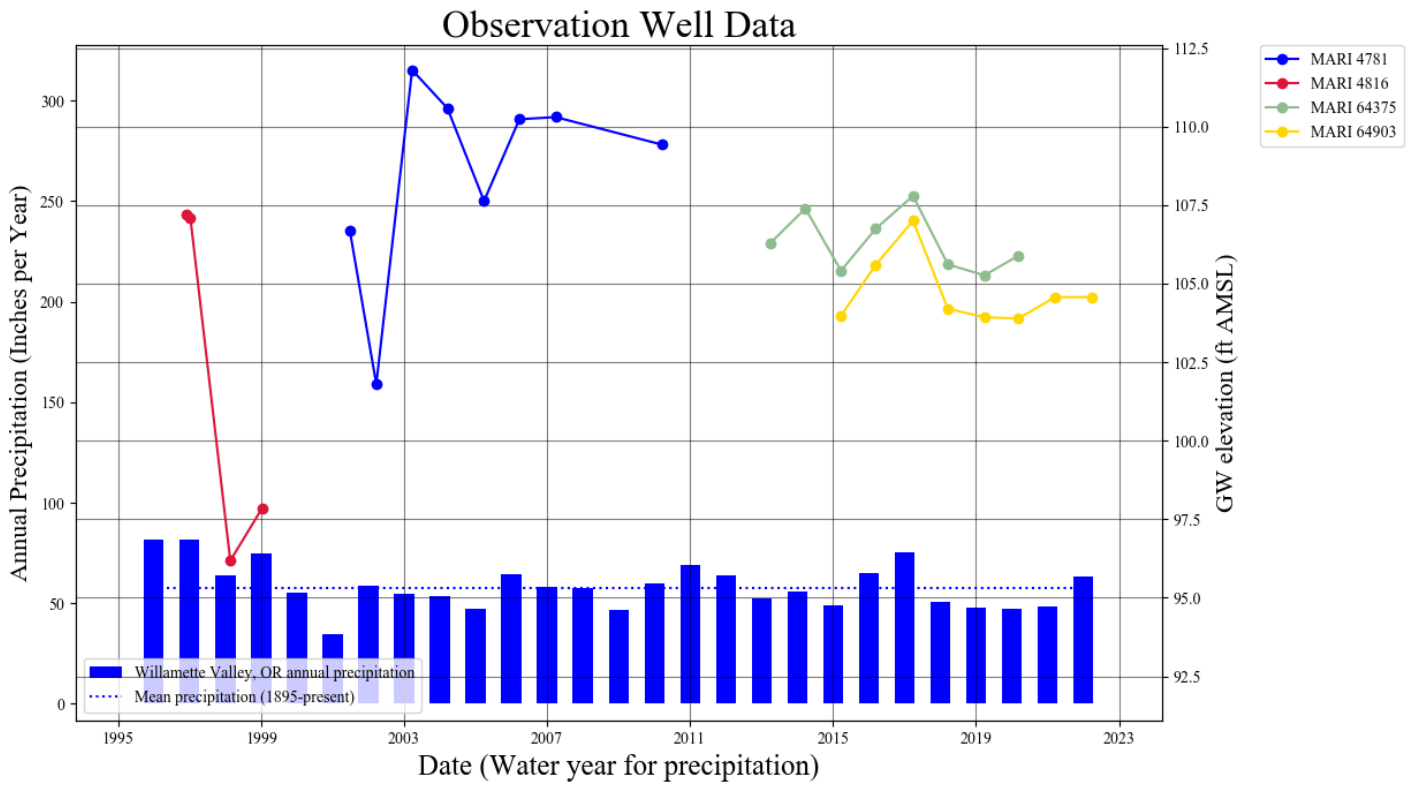

Figure 5. Hydrograph of alluvial wells within 2-miles of POA 1.

Gage Height for USGS 14191000

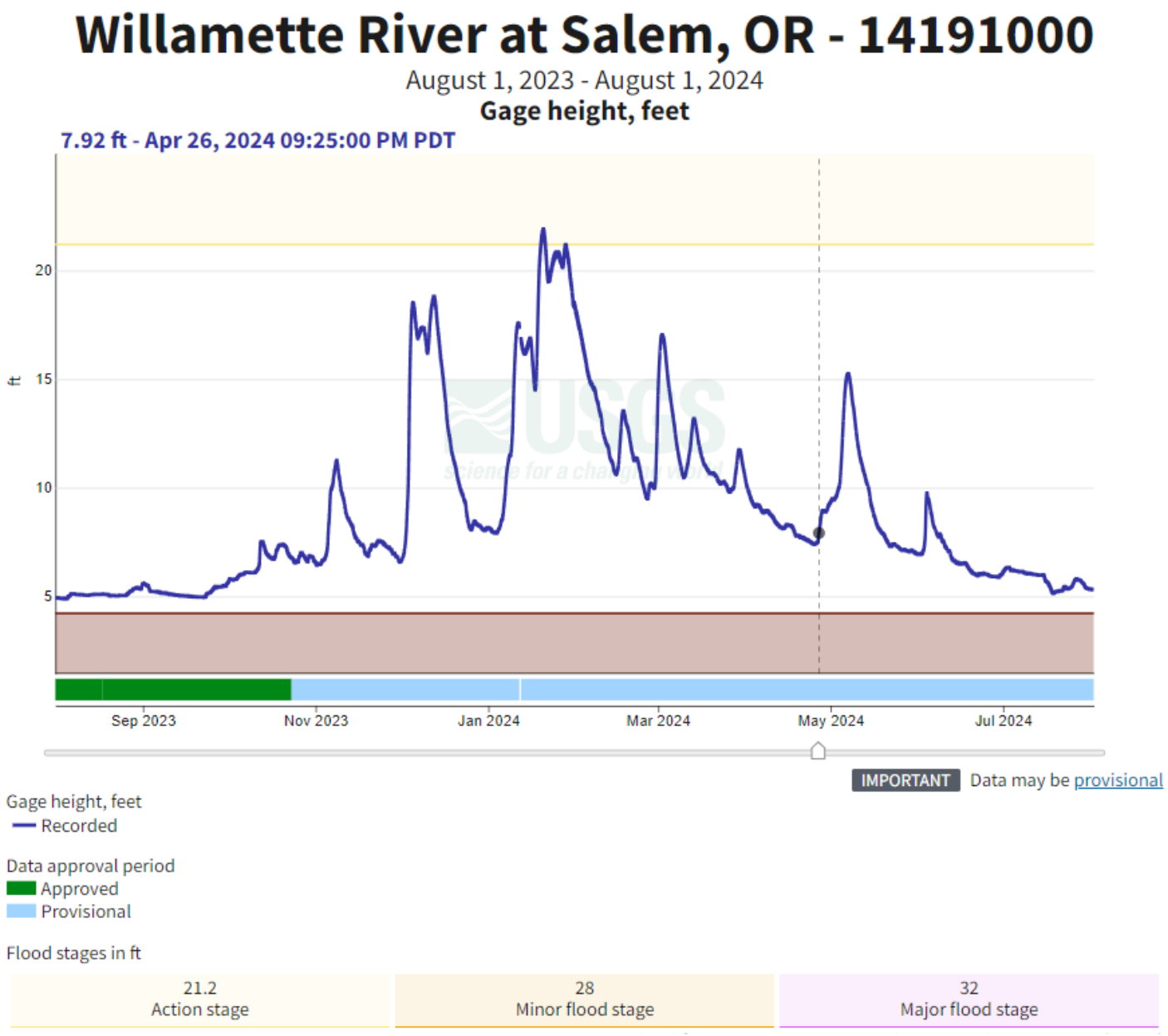

Figure 6. Gage height over one year at the Willamette River Stream Gage in Salem, OR

Theis Interference Analysis

Hydraulic Conductivity: Values ranged from 140 ft/day (McFarland and Morgan, 1996) to 600 ft/day (Woodward et al., 1998). The final transmissivity estimates of 4,740, 9,090, and 13,950 were the 1st, 2nd, and 3rd quartiles from 200-model runs using a range of the previously stated hydraulic conductivity values. Hydraulic conductivity from the pump test for MARI 4792, 3,300 feet from the POA, was 155 feet day, which is within the range of values used for time-drawdown modeling.

Storativity: 0.003 to 0.2 (McFarland and Morgan, 1996; Conlon et al., 2005, Table 1). The final storativity estimates of 0.051 and 0,15 are the 1st and 3rd quartiles from 200-model runs using this range of storativity values.

Time: 245 days (Irrigation Season).

Rate: (1) 0.0.47 cfs (G-19414 Rate); **(2)** 0.93 cfs (G-19414 Rate + T-14395 Rate)

Distance: 2,000 feet from POA 1 to MARI 4184

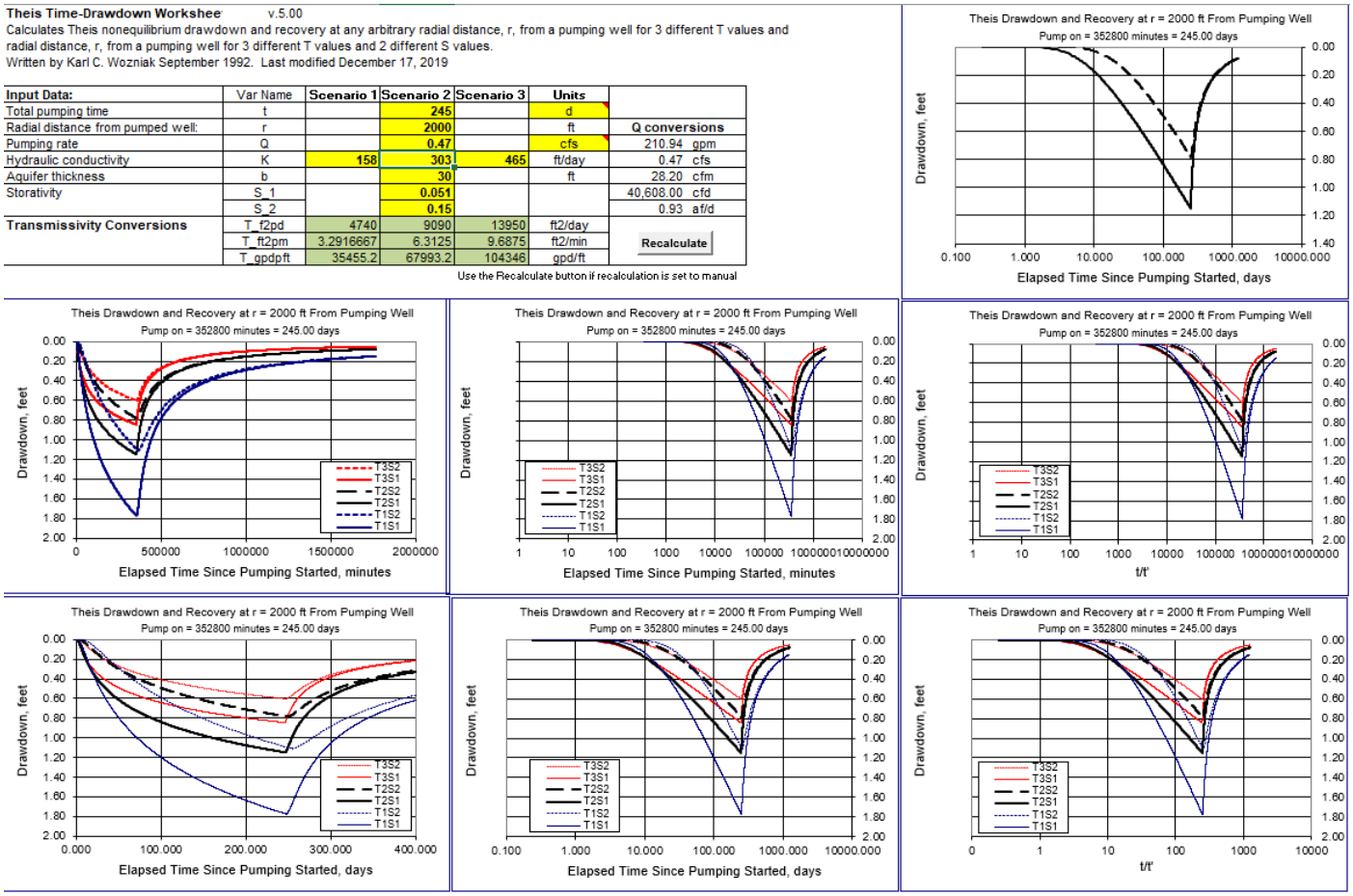

Figure 7. Application rate (1) of 0.47 cfs

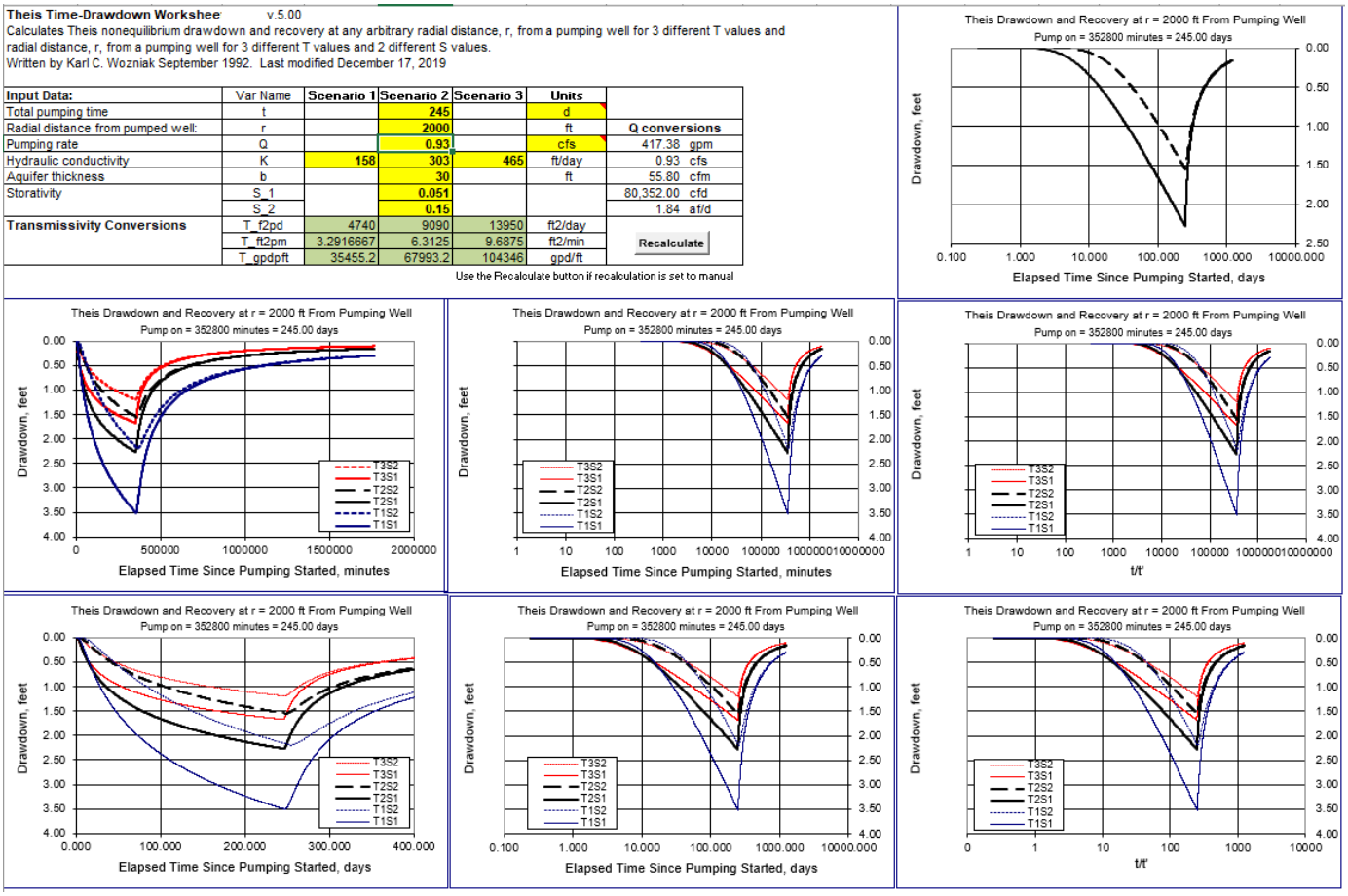

Figure 8. Combined application and transfer rate (2) of 0.93 cfs