Groundwater Application Review Summary Form

Application # G- 19404

GW Reviewer Stacey Garrison Date Review Completed: 6/28/2024

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 **_June 28 2024_**

TO: **Application** G-**_19404_**

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 6/28/2024
FROM: Groundwater Section Stacey Garrison
Reviewer's Name
SUBJECT: Application G- **19404** 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: **Richard Hari, Hari Farm and Nursery** County: **Marion**

A1. Applicant(s) seek(s) 0.646 cfs from 1 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 6514	1	Alluvial	0.646	7S/2W-3 NW-NW	840' S. 3230' W fr NE cor DLC 47[a]

* Alluvium, CRB, Bedrock

[a] The metes-and-bounds description for the POA associated with Certificate 60430 and in the map for this application include the northeast corner of DLC 49 as the landmark. However, there is no DLC 49 in the vicinity. There are two DLCs identified as 47 in the PLSS GIS layer used by the Department and on the USGS topographic map. DLC 47 has been included here. There is a discrepancy between the mapped location of the POA as indicated on the applicant's map and the metes-and-bounds description using the Department's PLSS projection. The mapped location is 104 ft west of the Department's existing location for POA 1 (MARI 6514), the metes-and-bounds location is 91 ft southeast of the Department's existing location; the Department's existing location is used.

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	160	25	160		98 to 158	490	22.7	Pump

Use data from application for proposed wells.

A4. **Comments:** The POA/POU are located 6 miles northeast of Salem, Oregon. Applicant proposes to irrigate 107.7 ac of Nursery (in ground) at 0.64 cfs (289.94 gpm) with a maximum annual volume of 269.25 AF. MARI 6514 is also authorized for the same POU of 107.7 ac for Irrigation at 0.699 cfs (314.18 gpm) with a maximum annual volume of 269.25 AF under Certificate 60430 with priority date 3/30/1979. The POA (MARI 6514) will therefore be assessed at a total combined rate of **1.346 cfs** (604 gpm) with a maximum annual volume of **538.5 AF**.

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: There are no surface water sources within ¼ mile and the POA develops 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 (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 ~~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 POA/POU are located on Missoula Flood deposits also known as the Willamette Silt. (Tolan, 2000; Hampton, 1972). The Willamette Silt in this area is approximately 80 ft thick which is consistent with the maximum thickness of 86 ft for confining layers recorded in nearby wells[a], and the underlying Troutdale Formation is approximately 180 ft thick (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 POA (MARI 6514) utilizes WBZs in the Willamette Aquifer of the Middle Sedimentary Unit, with reported layers of sandy clay overlying the utilized WBZs (Gannett & Caldwell, 1998; Conlon et al., 2005). 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 thickness of WBZs using the MSU of the Willamette Aquifer in surrounding wells varies from 58 to 151 feet in thickness[a].

A review of statistics for nearby well records was completed and compared with the proposed rate of 1.346 cfs (604 gpm) for this application (see Well Statistics). The median reported well yield is 50 gpm, and the maximum reported yield is 1,100 gpm. The proposed rate for this application is 1,208% of the median and 55% of the maximum reported yield. The pump test supplied with the application does not demonstrate that the POA (MARI 6514) is capable of yielding the proposed rate of use of 1.346 cfs (604 gpm) as the pump test was completed at a maximum of 490 gpm, 81% of the requested rate. However, two wells within a mile of the POA have demonstrated yields near the requested rate: MARI 6516 at 680 gpm and MARI 6501 at 600 gpm. These two wells are slightly deeper than the POA (MARI 6514) but appear to utilize the same WBZ as the POA. The proposed rate of use of 1.346 cfs (604 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). There are 37 groundwater POAs on 32 water rights within 1 mile of the subject POA (MARI 6514). 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 the POA is MARI 6511 (POA for Permit G-11940 with priority date 6/24/1992 and Certificate 46795 with priority date 12/2/1974), with an estimated location 800 ft southeast of the POA, at an elevation of 197 ft amsl. MARI 6511 is completed to a depth of 205 ft bls (-8 ft amsl). It is likely the proposed use would cause some degree of well-to-well interference with MARI 6511. 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 6511 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 6513, MARI 6515, MARI 6937, MARI 6564, MARI 6558, MARI 6528, MARI 17101, MARI 18385, MARI 18468, MARI 6511, MARI 6516, MARI 6501, MARI 62060, MARI 4725, MARI 6514, MARI 56560, MARI 66858, MARI 6913, MARI 66797.

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: The SWL is above the WBZ in the POA (**MARI 6514**). There is an unconfined alluvial WBZ recorded in some wells within one mile of the POA, but the deeper wells including the POA utilize the confined alluvial WBZ overlain by layers clays and silts that range in thickness from 16 to 86 ft[a]. There is a 79 ft thick clay layer that starts near the surface in the POA (**MARI 6514**). The POA utilizes a confined aquifer.
[a] MARI 6513, MARI 6515, MARI 6937, MARI 6564, MARI 6558, MARI 6528, MARI 17101, MARI 18385, MARI 18468, MARI 6511, MARI 6516, MARI 6501, MARI 62060, MARI 4725, MARI 6514, MARI 56560, MARI 66858, MARI 6913, MARI 66797.

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 [a]	SW Elev ft msl[b]	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Little Pudding River**	**146-166**	**136-146**	**1,745**	☒	☐	☐	☐	☒
1	**2**	**Fruitland Creek**	**146-166**	**146-150**	**2,175**	☒	☐	☐	☐	☒
1	**3**	**West Fork Little Pudding River**	**146-166**	**146-152**	**2,175**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater SWL in nearby wells range from 146 to 166 ft amsl and the reported regional water table elevation is between 140 and 160 ft amsl. (Gannett and Caldwell, 1998; Woodward et al., 1998). The streambed of SW 1 (Little Pudding River) is between 136 and 146 ft amsl within a mile of the POA. The WBZ of the POA (MARI 6514) is 81 to 160 ft bls [45 to 124 ft amsl]. The elevation of SW 1 (Little Pudding River) is lower than the groundwater SWL, indicating the local groundwater is likely discharging to this SW. The streambeds of SW 2 (Fruitland Creek) and SW 3 (West Fork Little Pudding River) are coincident with the local groundwater elevation. The surface water sources have not incised below the elevation of the WBZs of the confined alluvial aquifer. Hydraulic connection to SW 1, SW 2, and SW 3 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 6513, MARI 6515, MARI 6937, MARI 6564, MARI 6558, MARI 6528, MARI 17101, MARI 18385, MARI 18468, MARI 6511, MARI 6516, MARI 6501, MARI 62060, MARI 4725, MARI 6514, MARI 56560, MARI 66858, MARI 6913, MARI 66797 and well head elevations estimated based on LIDAR measurements at existing well locations (Watershed Sciences, 2009).
[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: PUDDING R>MOLALA 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**	☐	☐			☐	**67.3**	☐	**<25%**	☐
1	**2**	☐	☐			☐	**67.3**	☐	**<25%**	☐
1	**3**	☐	☐			☐	**67.3**	☐	**<25%**	☐

Comments: Potential depletion (interference with) SW 1 (Little Pudding River) by proposed pumping at the POA (MARI 6514) 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 1 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 1 and SW 1. 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:** _____

References Used: _____

Application File: G-19404

Pumping Test Files: MARI 4492, MARI 4716, MARI 6499, MARI 51214, MARI 58904, MARI 65741, MARI 6528, MARI 18385, MARI 6495, MARI 6489.

Well Reports: MARI 6513, MARI 6515, MARI 6937, MARI 6564, MARI 6558, MARI 6528, MARI 17101, MARI 18385, MARI 18468, MARI 6511, MARI 6516, MARI 6501, MARI 62060, MARI 4725, MARI 6514, MARI 56560, MARI 66858, MARI 6913, MARI 66797

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.

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.

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.

Tolan, T.L. and Beeson, M.H. Digital Database By DuRoss, C.B. 2001. Geologic Map and Database of the Salem East and Turner 7.5-Minute Quadrangles, Marion County, Oregon: A Digital Database: U.S. Geological Survey Open-file Report 00-351, https://pubs.usgs.gov/of/2000/0351/.

Tolan, T.L., Beeson, M.H., Wheeler, K. L. 1999. Geologic Map of the Scotts Mills, Silverton, and Stayton Northeast 7.5 Minute Quadrangles, Northwest Oregon: A Digital Database: U. S. Geological Survey Open-File Report 99-141, 11 pp., https://pubs.usgs.gov/of/1999/0141/.

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

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN
Water Availability as of 6/26/2024

Watershed ID #: 151 (Map)
Date: 6/26/2024

Exceedance Level: 80%
Time: 4:08 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	36.00	879.00
FEB	1,180.00	114.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.50	934.00	0.00	36.00	898.00
APR	787.00	52.40	735.00	0.00	36.00	699.00
MAY	425.00	51.00	374.00	0.00	36.00	338.00
JUN	224.00	73.10	151.00	0.00	36.00	115.00
JUL	109.00	115.00	-6.14	0.00	36.00	-42.10
AUG	71.00	94.30	-23.30	0.00	36.00	-59.30
SEP	67.30	53.50	13.80	0.00	36.00	-22.20
OCT	91.60	11.50	80.10	0.00	36.00	44.10
NOV	363.00	48.50	314.00	0.00	36.00	278.00
DEC	957.00	118.00	839.00	0.00	36.00	803.00
ANN	706,000.00	56,300.00	650,000.00	0.00	26,100.00	626,000.00

Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN
Water Availability as of 6/26/2024

Watershed ID #: 151 (Map)
Date: 6/26/2024

Exceedance Level: 80%
Time: 4:09 PM

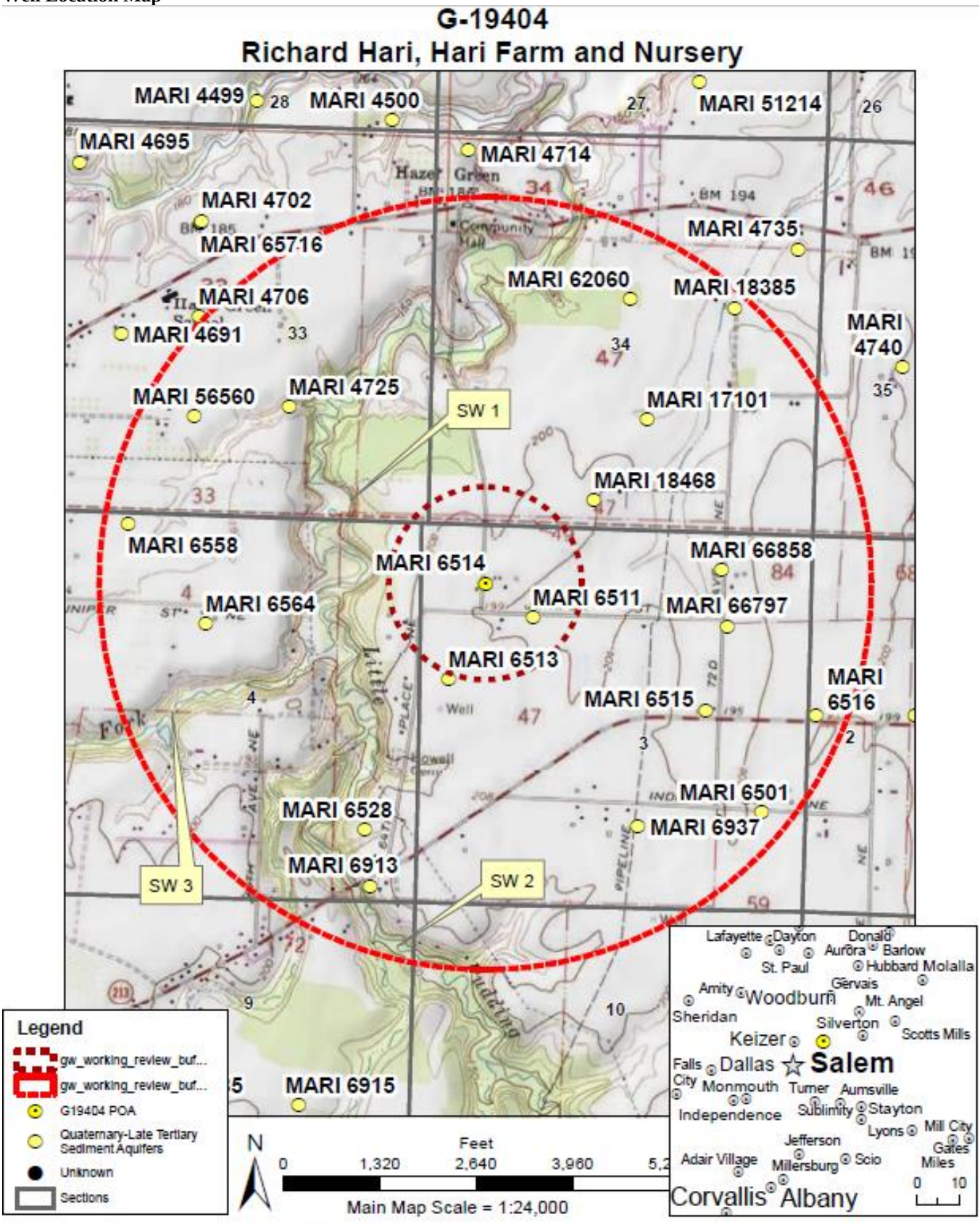
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

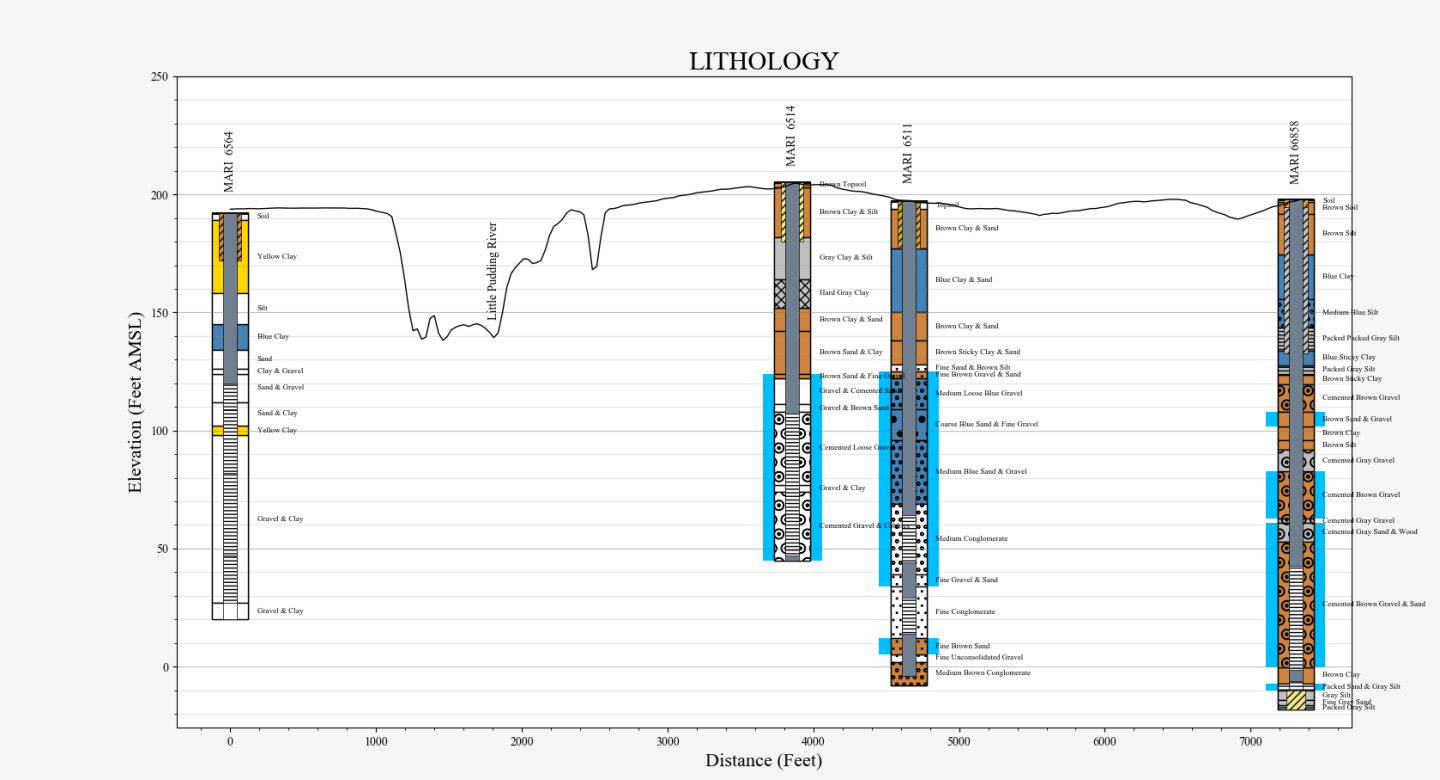
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF151A	CERTIFICATE	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
IS73532B	CERTIFICATE	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00
IS73533A	CERTIFICATE	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
IS73534A	CERTIFICATE	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
Maximum		36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00

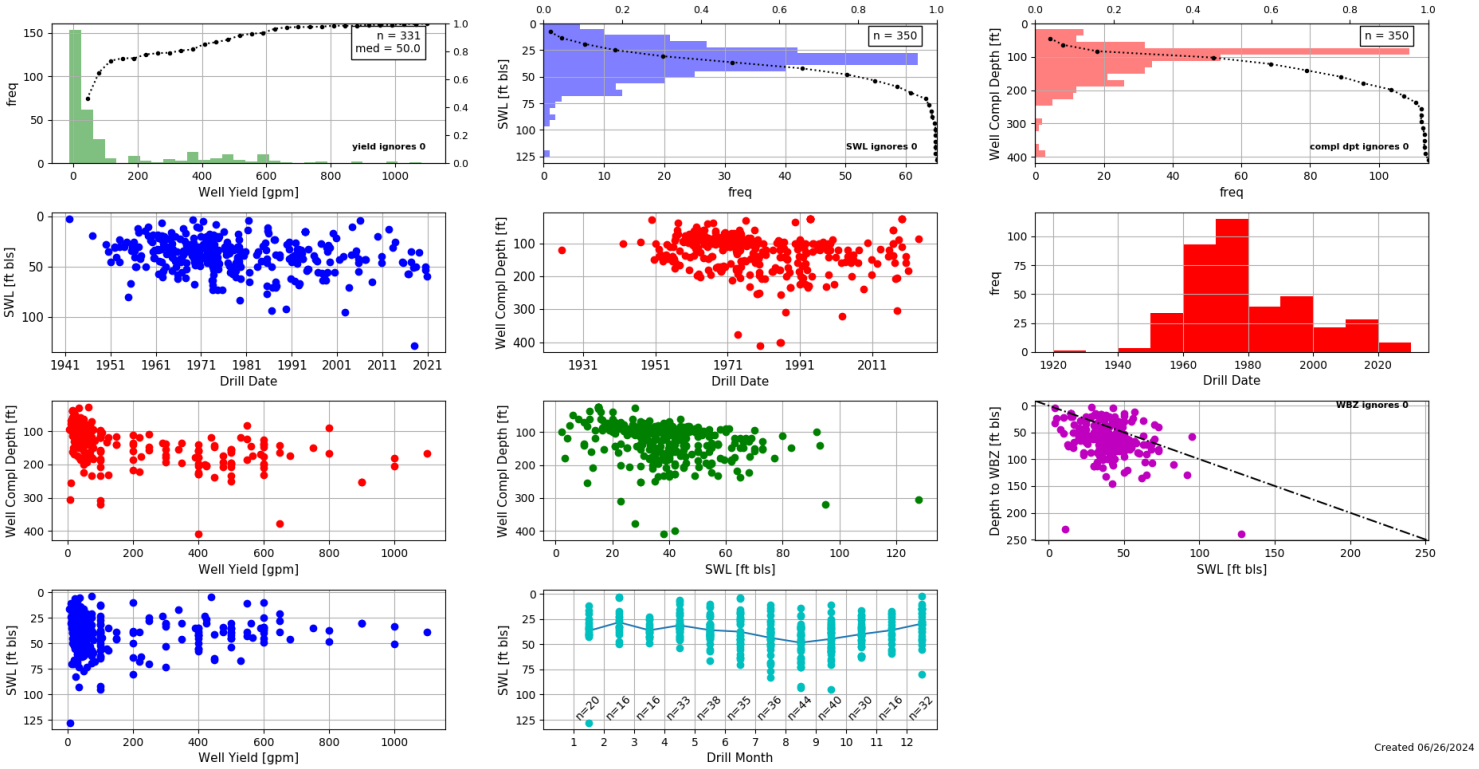
Well Location Map



Cross-Section

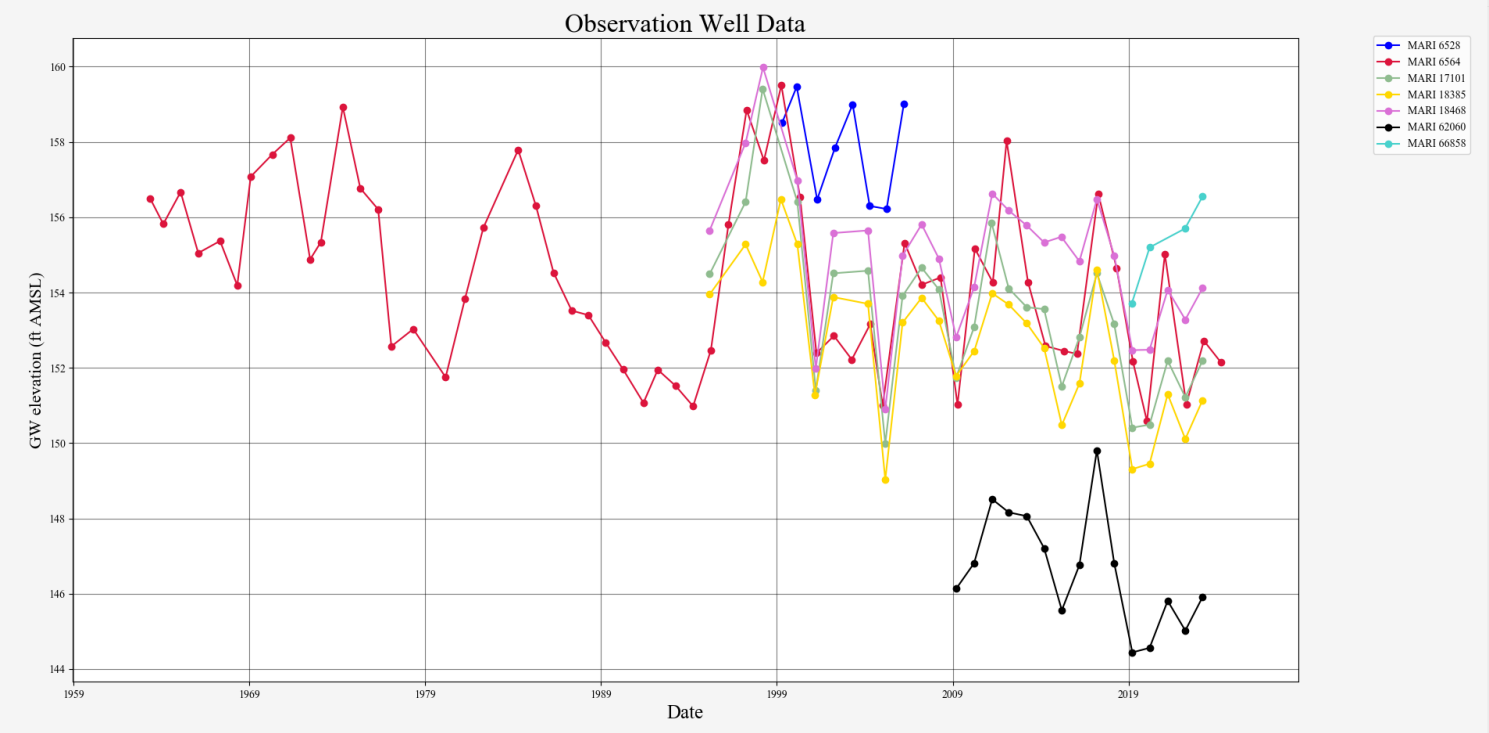


Well Statistics

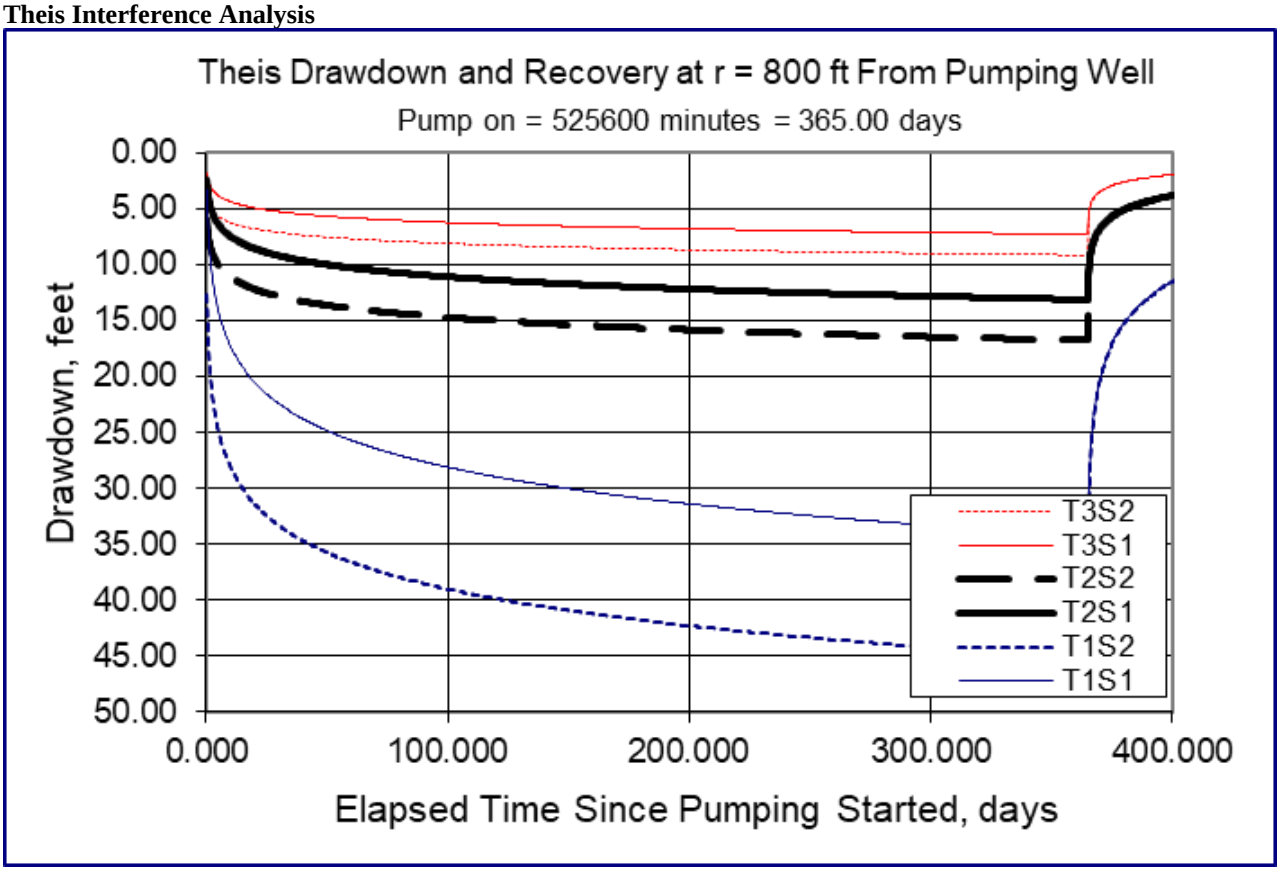


Created 06/26/2024

Water-Level Measurements in Nearby Wells



Theis Interference Analysis



Radial distance from pumping well (r)=800 ft [estimated radial distance to nearest user, MARI 6511]
Pumping Rate (Q)= 0.74 cfs (~333.85 gpm)*
Aquifer Transmissivity (T1)= 8,078 gpd/ft (1,080 ft^2/day), (T2)= 24,235 gpd/ft (3,240 ft^2/day), (T3)= 47,124 gpd/ft (6,300 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 Use]

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 538.5 ac-ft maximum allowed duty. For the maximum allowed duty of 538.5 ac-ft, continuous pumping would occur for 365 days at a rate of 0.744 cfs (~333.85 gpm).

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19404
Well number:	1
Stream Number:	1
Pumping rate (cfs):	1.34577
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1745	1745	1745	ft
Aquifer transmissivity	T	1080	3240	6300	ft2/day
Aquifer storativity	S	0.0001	0.0005	0.001	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	54	54	54	ft
Aquitard thickness below stream	babs	67	67	67	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	50	50	50	ft