

Groundwater Application Review Summary Form

Application # G- 19379

GW Reviewer Dennis Orłowski Date Review Completed: November 9, 2023

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

November 9, 2023

TO: **Application G- 19379**

FROM: **GW: Dennis Orłowski**
 (Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

NO

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 November 9, 2023
 FROM: Groundwater Section Dennis Orlovski
 Reviewer's Name
 SUBJECT: Application G- 19379 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: Primo Water North America County: Multnomah

A1. Applicant(s) seek(s) 1.0 cfs from one well(s) in the Columbia Basin,

 subbasin

A2. Proposed use Commercial Seasonality: Year-round (302 acre-feet)

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

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	Proposed	1	Alluvium	1.0	T1N/R2E-14 SW-SE	1025'N, 2400' W fr SE cor S 14

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	25	TBD	TBD	TBD	580	0-485	0-580	--	500-575	TBD	TBD	TBD

Use data from application for proposed wells.

A4. **Comments:** This application is for using groundwater pumped from a single well for commercial uses, with a proposed maximum instantaneous pumping rate of 1.0 cfs (~450 gpm) and annual volume of 302 acre-feet. The POA/POU location is in a heavily commercialized portion of Multnomah County, about 250 feet from the Columbia River and just over one mile east of I-205. The application states that the targeted aquifer is the Sand and Gravel Aquifer (SGA), one of several discrete aquifer systems in the Portland Basin (Swanson and others, 1993).

A5. **Provisions of the Columbia River** 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 directly applicable provisions of the Columbia River Basin Program Rules (OAR 690-519) for this application.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: None.
 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) (1) Large water-use reporting; (2) 7N (annual measurements);
 - 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 Sand and Gravel Aquifer groundwater reservoir ~~between approximately~~ _____ ft. and _____ ft. below land surface;
 - d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

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

- B3. **Groundwater availability remarks:** The proposed POA location is within the Portland Basin, an area of thick accumulations of alluvial sediments marked by the presence of several major aquifer systems (listed from shallowest to deepest): Unconsolidated Sedimentary Aquifer (USA), Troutdale Gravel Aquifer (TGA), Troutdale Sandstone Aquifer (TSA), and the Sand and Gravel Aquifer (SGA). In this area the three deeper aquifers are separated by significant confining units: Confining Unit 1 (CU1) and Confining Unit 2 (CU2) (Swanson and others, 1993; Morgan and McFarland, 1996; Woodward and others, 1998). The SGA, the deepest of the Portland Basin aquifers, is very prolific and serves as a groundwater source for several municipalities. This proposed POA is also targeting the SGA as its source. Historic groundwater levels in the SGA near the proposed POA location are very stable, only recently showing a modest declining trend during the past few years of drought conditions (see attached hydrograph).

Groundwater development in the area is relatively low, with the exception of periodic municipal pumping by the Portland Water Bureau. The location is within the Bureau's Columbia South Shore Wellfield, and one municipal well (MULT 1122) is located approximately 2000 feet east of the proposed POA. Most of the PWB wells within the wellfield obtain groundwater from the SGA; however, these groundwater sources serve as a backup to the PWB's primary surface water source (Bull Run Reservoir), and are thus only pumped periodically. There are also several nearby commercial and industrial groundwater users, but these either obtain groundwater from a different aquifer (e.g., the TGA for MULT 52396 (certificate 41556) and/or are non-consumptive ground-source heat pump wells (e.g., the USA for MULT 105704, permit G-17033).

The Theis distance-drawdown analytical solution was used to evaluate potential injury to MULT 1122, the nearest of the PWB wells. The results from this analysis, using aquifer parameters derived from local pumping tests and literature values (Freeze and Cherry, 1979) and a very conservative pumping operation scenario (24/7 pumping), indicates that from about 5-10 feet of additional drawdown might be expected at MULT 1122. This additional drawdown at MULT 1122 and other similarly-constructed nearby wells is not expected to cause injury to those wells.

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	Sand and Gravel Aquifer	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The targeted aquifer, SGA, is overlain by several hundred feet of alluvial sediments, including both confining units CU1 and CU2. Furthermore, the PWB well MULT 1122 that is completed in the SGA periodically experiences flowing artesian conditions. These factors indicate strongly confined conditions for the SGA.

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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Columbia River (mainstem)	Est 15-30	8-12	260	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Columbia Slough	Est 15-30	10-12	1700	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: As noted previously regarding water-level data from the nearby PWB well MULT 1122, conditions in the SGA can range from flowing artesian (above ground) to levels at ~10-20 ft bls. However, despite the similar estimated elevations for both SGA groundwater and nearby surface water bodies, which implies a possible hydraulic connection, it is probable that any such connection between the SGA and surface water is highly inefficient at most, given the several hundred feet of overlying sediments and two confining units (CU1 and CU2) separating the two water sources. Thus, while perhaps strictly meeting the definition of “hydraulic connection” (i.e., “water can move between a surface water source and an adjacent aquifer” (OAR 690-009-0020 (6))), it is highly unlikely that the proposed use will impact the listed surface water sources to any appreciable extent.

Water Availability Basin the well(s) are located within: None (a WAB has not been established for the mainstem Columbia River or Columbia Slough).

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	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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?
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Neither SW1 (Columbia River) or SW2 (Columbia Slough) are associated with an OWRD WAB, and thus a Division 9 evaluation is not applicable.

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: Not applicable.

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:** None.

References Used: Application G-19379 file

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

McFarland, W.D., and Morgan, D.S., 1996, *Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington*, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

Morgan, D.S., and McFarland, W.D., 1996, Simulation analysis of the ground-water flow system in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Supply Paper 2470-B, 83 p.

Swanson, R.D., McFarland, W.D., Gonthier, J.B., and Wilkinson, J.M., 1993, A description of hydrogeologic units in the Portland basin, Oregon and Washington: U.S. Geological Survey Water-Resources Investigations Report 90-4196, 56p.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, *American Geophysical Union Transactions*, vol. 16, p. 519-524.

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

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

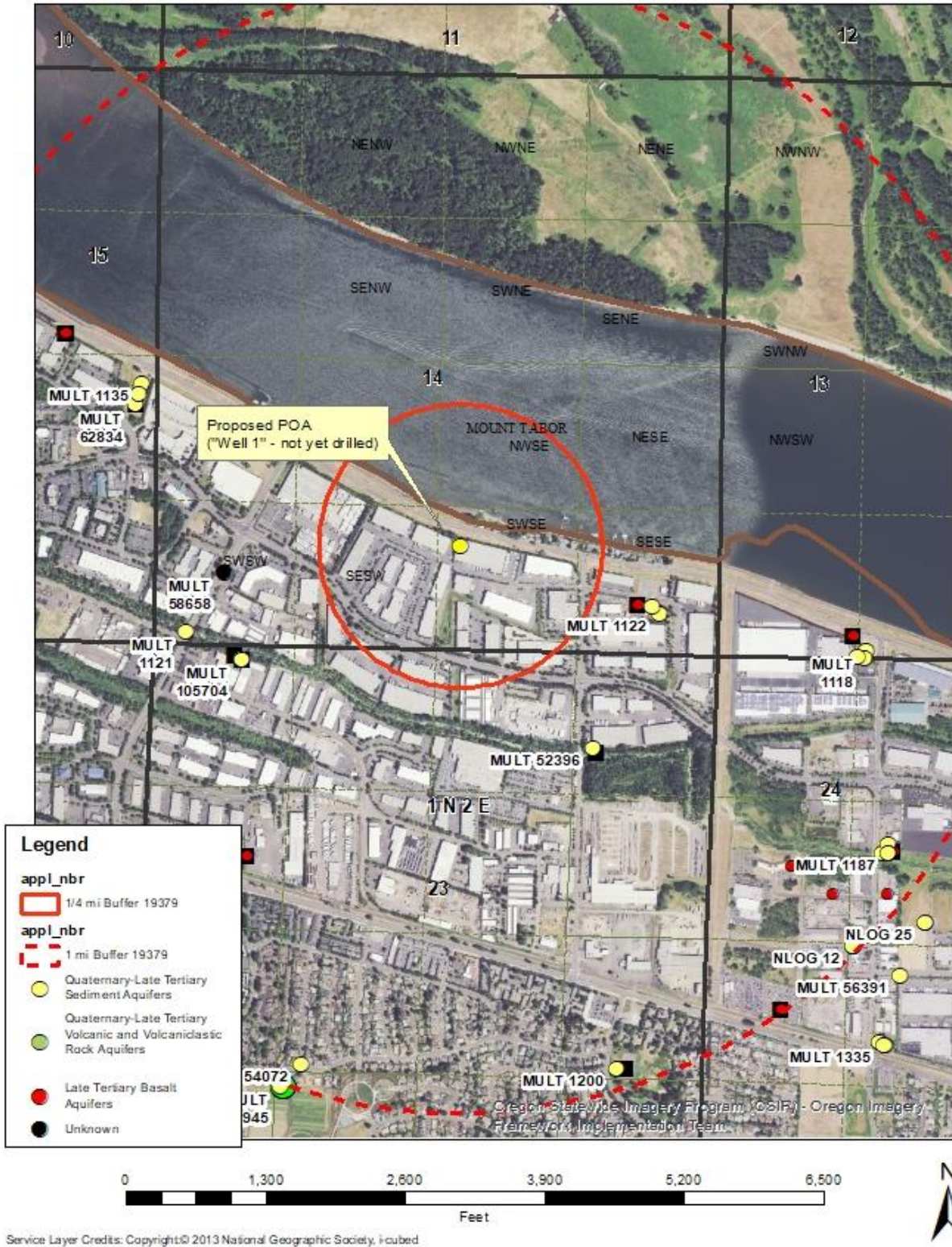
- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

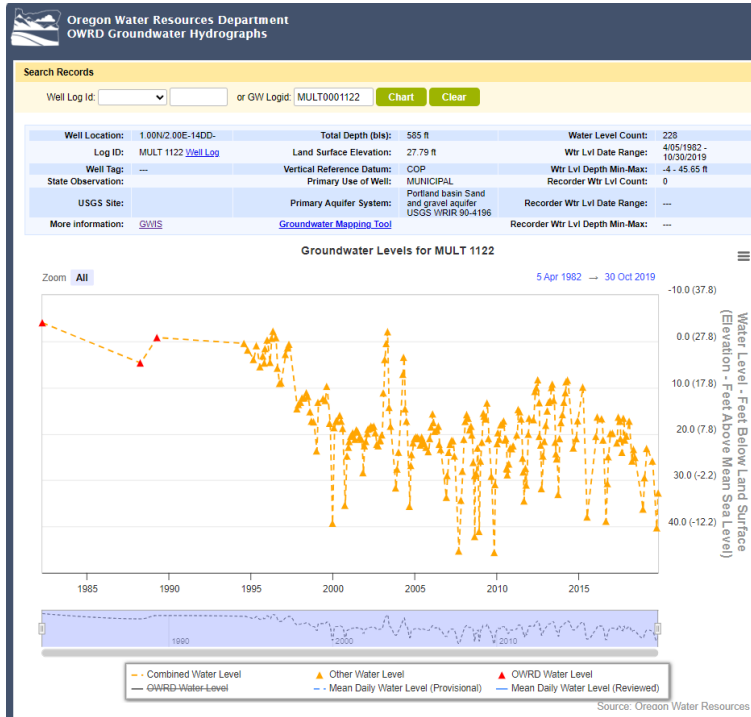
D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map

Application G-19379 Primo Water North America T1N, R2E, Section 14



Water-Level Measurements in Nearby SGA Well MULT 1122



This Interference Analysis – Proposed Well 1 to PWB well MULT 1122

This Time-Drawdown Worksheet v.5.00
 Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
 Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		152		d	
Radial distance from pumped well:	r		2000		ft	Q conversions
Pumping rate	Q		1		cfs	448.80 gpm
Hydraulic conductivity	K	50	100	1000	ft/day	1.00 cfs
Aquifer thickness	b		100		ft	60.00 cfm
Storativity	S_1		0.001			86,400.00 cfd
	S_2		0.0005			1.98 af/d
Transmissivity Conversions	T_ftpd	5000	10000	100000	ft ² /day	Recalculate
	T_ft2pm	3.472222	6.944444	69.44444	ft ² /min	
	T_gpdft	37400	74800	748000	gpd/ft	

Use the Recalculate button if recalculation is set to manual

