

Groundwater Application Review Summary Form

Application # G- 19313

GW Reviewer Mitra Khadka/Travis Brown Date Review Completed: 12/5/2023

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

12/5/2023

TO: Application G- 19313

FROM: GW: Mitra Khadka/Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO 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 12/5/2023
 FROM: Groundwater Section Mitra Khadka/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19313 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: Oregon Aquatics Inc. County: Lane

A1. Applicant(s) seek(s) 0.18 cfs from 1 well(s) in the Willamette Basin,
Upper Willamette 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	LANE 73396 ^a	1	Alluvium	0.18	17S/4W-S4	320'S, 350'W fr NE cor S 4

* 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	85	0-19	-1.5-84.5	NA	NA	120	NA	Air

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	~375 ^b	17	14	14	8.2	3/7/2001

Use data from application for proposed wells.

A4. **Comments:** The proposed POA and POU are located about 6 miles northwest of Eugene, Oregon. Applicant requests to pump 0.18 cfs groundwater from an existing well LANE 73396 for nursery use of 7.3 acres with maximum annual volume of 36.5 AF.

^a The proposed POA is also a proposed APOA for pending temporary transfer application T-14289.

^b Land surface elevation at well is estimated from LIDAR image (Watershed Sciences, 2009).

^c See attached Table 1 for reference level estimate.

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 likely develops an unconfined aquifer, however, there are no surface water sources within 0.25 miles. Therefore, per OAR 690-502-0240 the relevant Willamette Basin Rules (OAR 690-502-0050) 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) 7RLA (see attached Table 1), medium 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:** Proposed POA (LANE 73396) is completed to a depth of 85 ft bls and will produce groundwater from the Willamette Aquifer, which is composed of unconsolidated sands and gravels of Quaternary terrace deposits in the area (Gannett and Caldwell, 1998; Conlon et al., 2005; McClaughry et al. 2010). Locally, the aquifer is unconfined, highly permeable, about 180-200 ft thick, and is underlain by ~100 ft of mostly fine-grained, low permeable alluvial sediments (Gannett and Caldwell, 1998).

Reported well yields in the area (17S/4W-S 3&4 and 16S/4W-S 33&34) have a wide range from 10 to 750 gpm with a median value of 60 gpm (see attached Well Stat). The requested pumping rate 0.18 cfs (~81 gpm) is higher than median value, however within the range of the reported yields in the area. Reported well yield for the proposed POA (LANE 73396) is 120 gpm.

Groundwater level data from nearby wells for the last 20-25 years indicate reasonably stable groundwater conditions (see attached Hydrographs).

The nearest groundwater user to the proposed POA appears to be an exempt domestic well LANE 55105, located ~ 305 ft south in Tax Lot 400. Interference with LANE 55105 was quantitatively estimated using a Theis drawdown analysis model. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2005). The analysis estimates maximum drawdown to be ~5 ft at LANE 55105 after 365 days of continuous pumping at the maximum requested rate (see attached Well to Well Interference). Results indicate that the proposed use of groundwater is not likely to cause Substantial and Undue Interference with neighboring wells that meets a definition of well-to-well injury.

The available hydrogeological and groundwater levels data indicate that the proposed groundwater reservoir is not over-appropriated and is within the capacity of resources in the area. However, in order to monitor and protect the resources and

other groundwater rights in the area, the conditions specified in Item B1(d) and B2(c) are recommended for any permit issued pursuant to this application.

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	Alluvium	☐	☒

Basis for aquifer confinement evaluation: Wells penetrating shallow alluvial deposits in the Willamette Valley typically encounter unconfined aquifer conditions; additionally, wells in the area report shallow SWLs regardless of depths indicating a single, unconfined aquifer system.

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	Flat Creek	360-380	~370-380	~4,100	☒	☐	☐	☐	☒
1	2	Spring Creek	360-380	~370	~6,160	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Most recent (3/2/2023) SWL at nearby well, LANE 57266 was ~358 ft amsl, and the regional water table is between 360 and 380 ft amsl (Gannett and Caldwell 1998). Groundwater elevations are coincident with or above surface water elevations for SW 1 (Flat Creek), and SW 2 (Spring Creek), indicating groundwater discharges to surface water. The local streambeds have not incised into the QLTS aquifer but are flowing on Holocene floodplain deposits (McClaghry et al 2010). Based on well logs recording SWLs coincident with nearby streambed elevations, there is a single, unconfined alluvial aquifer. Hydraulic connection to nearby streams is likely and expected to be efficient.

Water Availability Basin the well(s) are located within: WID #302002321 WILLAMETTE R>COLUMBIA R-AB PERIWINKLE CR AT GAGE 14174

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?	Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	☐	☐	NA	NA	☐	2540	☐	<25%	☐

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 #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐

Comments: The anticipated interference with SW 1 due to the proposed use was quantitatively estimated using the Hunt (1999) model. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2005) or are within a typical range of values for the given parameter within the hydrogeologic regime (Freeze and

Cherry, 1979). Results indicate that interference with SW 1 is not anticipated to exceed 25 percent of the rate of withdrawal within the first 30 days of continuous pumping.

- 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: _____

- 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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

- C6. **SW / GW Remarks and Conditions:** The proposed POA will produce from an unconfined aquifer and hydraulically connected to Flat Creek, at a distance of over ¼ mile. The proposed rate is less than 1% of the pertinent streamflow values and the estimated interference is less than 25% at 30 days, so there is no finding that the proposed use would have the Potential for Substantial Interference with surface water.

References Used:

Application File: G-19313

Pumping Test Files: LANE 63753, LANE 8061, LANE 64556, LANE 72693, LANE 58762

Well Reports: LANE 73396, LANE 57266, LANE 5332

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.

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

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

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: *Ground Water*, v. 37, no. 1, p. 98-102.

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

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.

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) _____

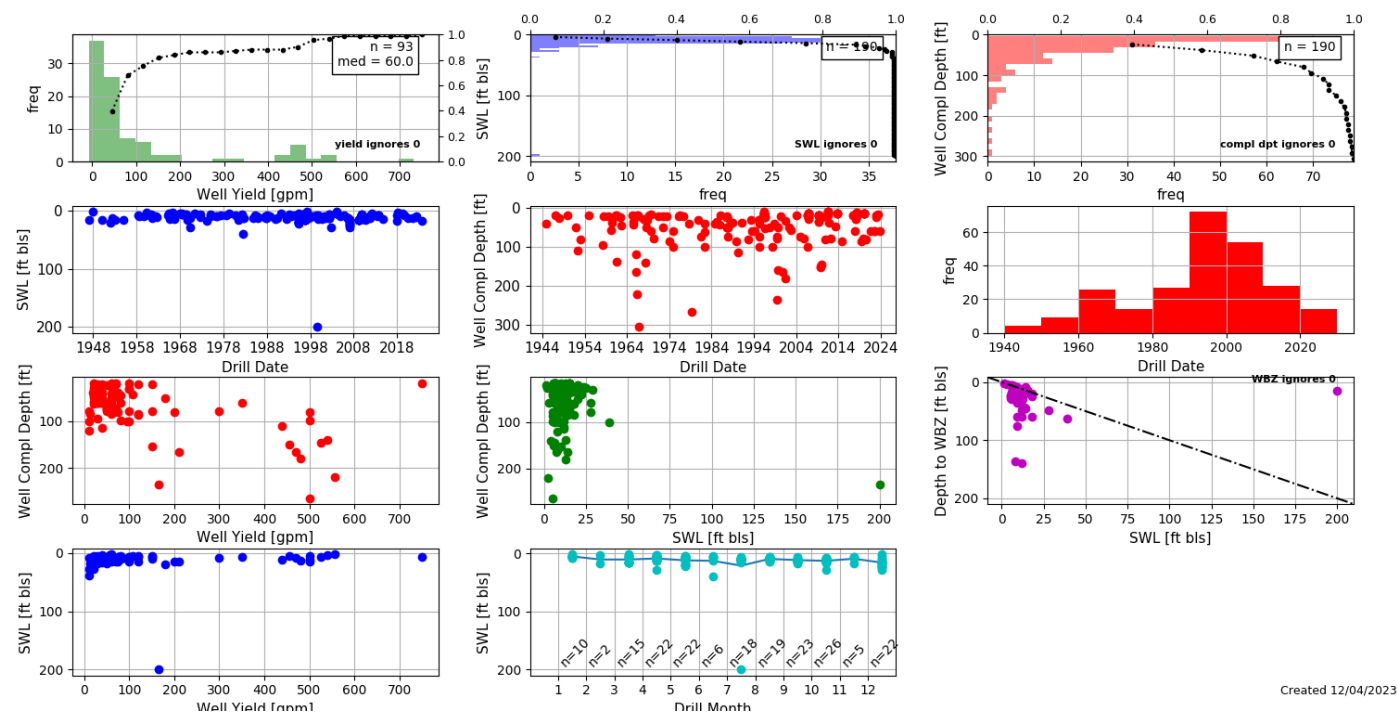
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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

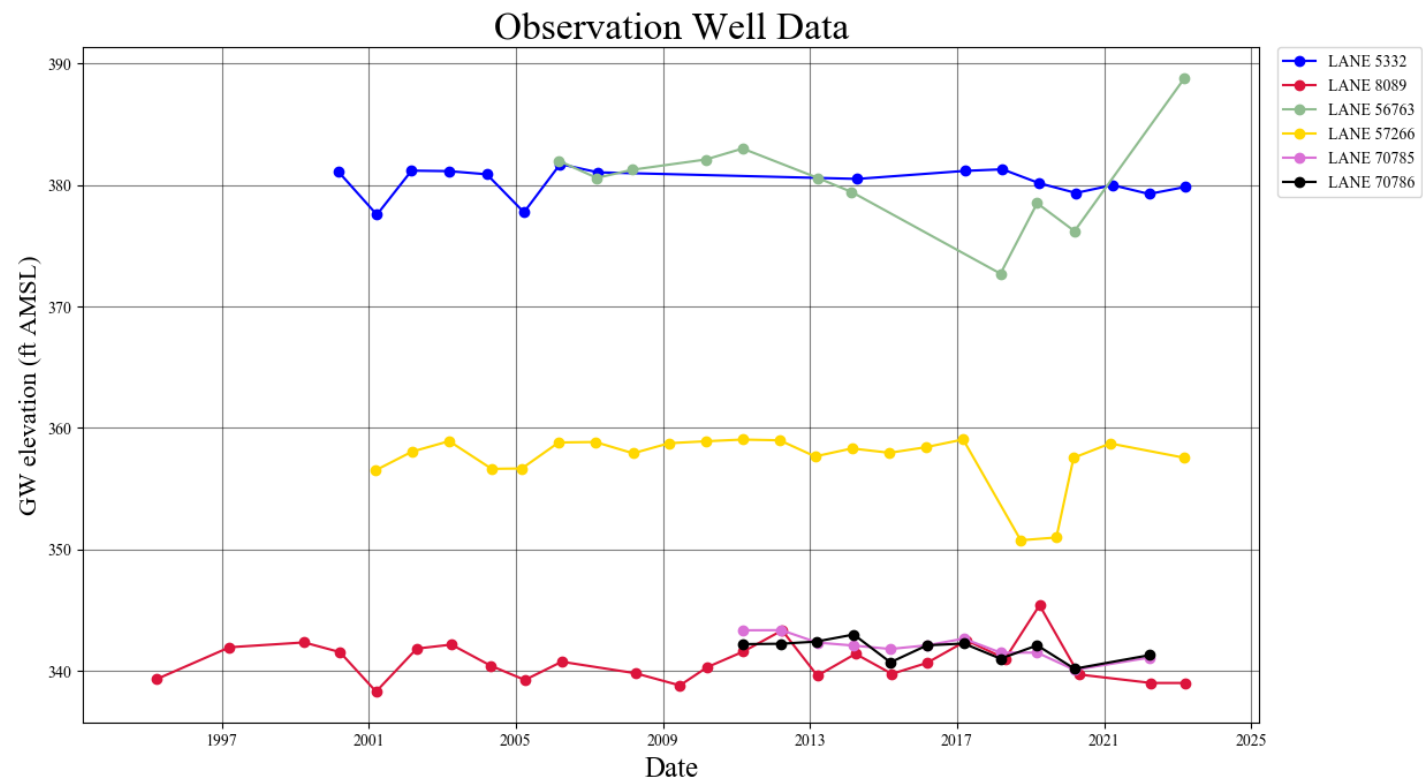
G-19313



Well Statistics



Water-Level Measurements in Nearby Wells

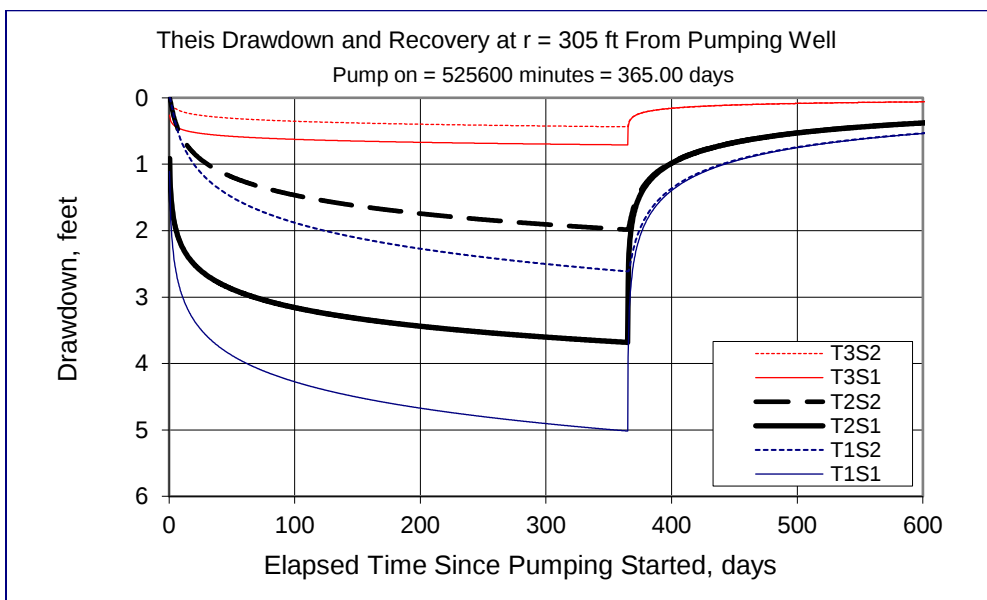


Theis Interference Analysis**Theis Time-Drawdown Worksheet** v.5.00

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		365		d	
Radial distance from pumped well:	r		305		ft	Q conversions
Pumping rate	Q		0.18		cfs	80.78 gpm
Hydraulic conductivity	K	12	17	106	ft/day	0.18 cfs
Aquifer thickness	b		180		ft	10.80 cfm
Storativity	S 1		0.003			15,552.00 cfd
	S 2		0.2			0.36 af/d
Transmissivity Conversions	T f2pd	2160	3060	19080	ft ² /day	Recalculate
	T ft2pm	1.5	2.125	13.25	ft ² /min	
	T_gpdpft	16156.8	22888.8	142718.4	gpd/ft	



Water Availability Tables

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB PERIWINKLE CR AT GAGE 14174
WILLAMETTE BASIN
Water Availability as of 12/4/2023

Watershed ID #: 30200321 [\(Map\)](#)
Date: 12/4/2023

Exceedance Level: 80%
Time: 10:21 PM

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

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	10,100.00	1,370.00	8,730.00	0.00	1,750.00	6,980.00
FEB	11,600.00	4,290.00	7,310.00	0.00	1,750.00	5,560.00
MAR	11,000.00	4,560.00	6,440.00	0.00	1,750.00	4,690.00
APR	9,760.00	4,260.00	5,500.00	0.00	1,750.00	3,750.00
MAY	8,430.00	2,560.00	5,870.00	0.00	1,750.00	4,120.00
JUN	5,360.00	856.00	4,500.00	0.00	1,750.00	2,750.00
JUL	3,270.00	666.00	2,600.00	0.00	1,750.00	854.00
AUG	2,560.00	604.00	1,960.00	0.00	1,750.00	206.00
SEP	2,540.00	517.00	2,020.00	0.00	1,750.00	273.00
OCT	2,860.00	270.00	2,590.00	0.00	1,750.00	840.00
NOV	4,170.00	355.00	3,810.00	0.00	1,750.00	2,060.00
DEC	8,150.00	381.00	7,770.00	0.00	1,750.00	6,020.00
ANN	7,460,000.00	1,240,000.00	6,230,000.00	0.00	1,270,000.00	4,960,000.00

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19313
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.18
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	4100	4100	4100	ft
Aquifer transmissivity	T	2100	2980	19100	ft ² /day
Aquifer storativity	S	0.003	0.01	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		20	20	20	
Aquitard thickness below stream	babs	10	10	10	ft
Not used		0.2	0.2	0.2	
Stream width	ws	50	50	50	ft

Stream depletion for Scenario 2:													
Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	0	3	7	10	12	14	16	18	20	21	22	24	25
Depletion (cfs)	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04

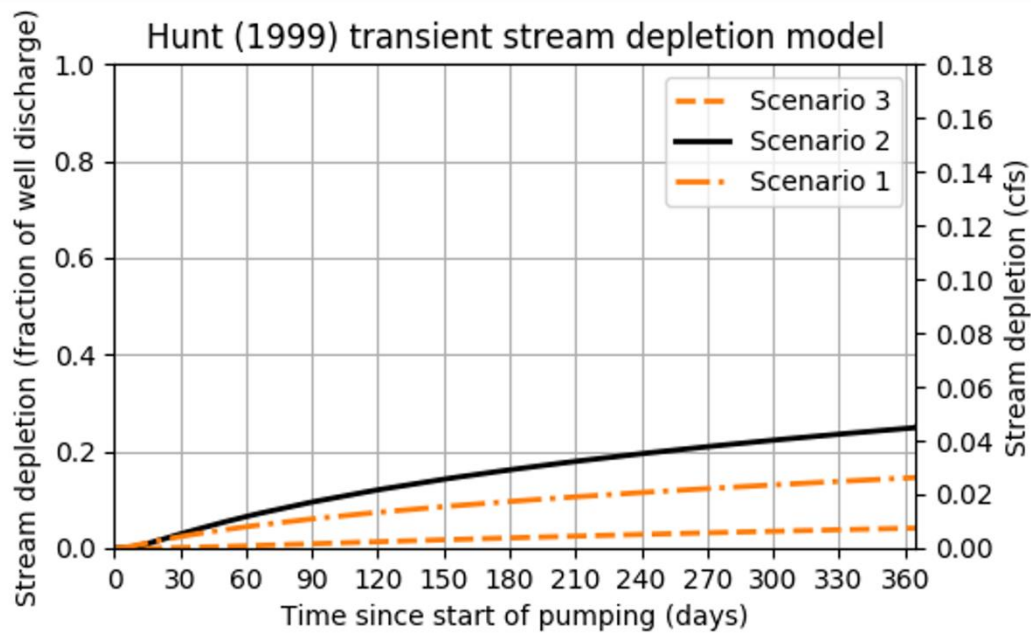


Table 1. Reference level estimate for proposed POA LANE 73396

Reference level from			
Well	Date	Water level (ft bls)	Water level (ft amsl)
LANE 57266	3/7/2001	8.5	356.6

Head gradient estimate					
Well	Date	Water level (ft amsl)	water level diff (ft)	Dist between wells (miles)	Head gradient (ft/mile)
LANE 5332	45001	379.84	22.29	2.36	9.44
LANE 57266	44987	357.55			

Reference level at LANE 73396

Dist. between LANE 57266 and LANE 73396 = 0.54 mile

Local head gradient = 9.44 ft/mile

Head difference between LANE 57266 and LANE 73396 = 5.09 ft

Estimated groundwater level at LANE 73396 on 3/7/2001 = 366.78 ft amsl

Estimate groundwater level at LANE 73396 on 3/7/2001 = 8.2 ftbls