Groundwater Application Review Summary Form

Application # G- 19199

GW Reviewer James Hootsmans/Travis Brown Date Review Completed: October 24, 2022

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 24, 2022_**

TO: **Application** G-**_19199_**

FROM: **GW: _James Hootsmans/Travis Brown_**
(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 10/24/2022
FROM: Groundwater Section James Hootsmans/Travis Brown/Justin Iverson
Reviewer's Name
SUBJECT: Application G- **19199** Supersedes review of 4/6/2022
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: **Jesse and Polligaia Pavia Gooch** County: **Clackamas**

A1. Applicant(s) seek(s) 0.67 cfs from 3 well(s) in the Willamette Basin, Molalla-Pudding subbasin

A2. Proposed use Irrigation (34.9), Pond Maintenance[a] Seasonality: March 1 – October 31 (Irrigation), July 1 – October 31[a] (Pond Maintenance)

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	Alluvial[b]	0.67	5S/1E-18 NW-SE	405' S, 1280' E fr C1/4 Cor S 18
2	PROPOSED	2	Alluvial[b]	0.67	5S/1E-18 NW-SE	405' S, 1015' E fr C1/4 Cor S 18
3	PROPOSED	3	Alluvial[b]	0.67	5S/1E-18 NW-SE	805' S, 90' E fr C1/4 Cor S 18

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl[c]	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	182				350	0-75	0-350					
2	190				350	0-75	0-350					
3	202				350	0-75	0-350					

Use data from application for proposed wells.

A4. **Comments:** The proposed POA are ~5.25 miles east of the City of Woodburn, Oregon. The maximum annual volume of appropriation for the proposed irrigated acreage is 87.25 af based on the applicable duty of 2.5 af/acre.

[a] The application proposes to use pumped groundwater to maintain the water level in an on-channel reservoir (pond) during the "Non-Storage Season", presumed to extend from July 1 through October 31 based on nearby storage rights (see Permit R-14882). Due to the on-channel nature of the reservoir (on an intermittent stream), the reservoir will require a separate storage right to store surface water during the storage season, which is presumed to extend from November 1 through June 30 based on similar nearby storage rights (see Permit R-14882, OAR 690-502-0040 4a). It is recommended that the proposed use of groundwater for pond maintenance not be approved until an accompanying storage right has been approved.

[b] The application lists a proposed source aquifer as "Alluvial". Therefore, based on geologic mapping in the area (Hampton, 1972; Gannett and Caldwell, 1998; O'Connor et al, 2001; Conlon et al, 2005) and the proposed well depths, the proposed POA would develop water within the Willamette Confining Unit (Lower Troutdale Formation)

[c] LIDAR ground surface elevation at proposed POA locations (Watershed Sciences, 2009).

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 proposed POA are greater than ¼ mile from the nearest perennial surface water source and would produce water from a confined aquifer; therefore, per OAR 690-502-0240, the relevant Willamette Basin rules (690-502-0120) do not apply

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **NA**
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) **7n (annual measurement), 7t (measuring tube), 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): Not applicable

B3. **Groundwater availability remarks:**

Screen or perforation depths are not provided for the 3 proposed POA, only approximate total depths. Based on the approximate total depths and geologic mapping in this area, it appears that the proposed POA will produce water from the Willamette Confining Unit (Lower Troutdale Formation), In this area, the aquifer is >1000 feet thick and is overlain by ~100 ft of fine-grained Willamette Silt Unit, which acts as a leaky confining unit (Hampton, 1972; Gannett and Caldwell, 1998). Regional groundwater elevations reside within the Willamette Silt Unit, generally within ~10 ft of land surface, and closely follow the elevations of surface water features, with larger streams such as Rock Creek downcutting into the upper Willamette Silt Unit (Hampton, 1972; Gannett and Caldwell, 1998; Woodward et al., 1998). Because the Willamette Confining Unit is confined, pumping impacts will propagate rapidly to the aquifer boundaries including Rock Creek to the east of the proposed POAs.

The nearest known water well completed in the alluvial aquifer system is CLAC 2538, a domestic well ~620 ft north of the proposed POA #3.

A Theis (1935) drawdown analysis was conducted to assess the potential well-to-well interference with CLAC 2538 due to pumping of the proposed POA in the amounts requested. Hydraulic parameters used for the analyses were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2003, 2005; Iverson, 2002; Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979).

Results indicate that the proposed use is not likely to cause well-to-well interference with CLAC 2538 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

Reported yields from regional wells range from less than 1 to ~600 gpm, with a median of 50 gpm (see attached Well Statistics). The requested rate of 300 gpm (~0.67 cfs) therefore represents ~600 percent of the median yield reported for water wells in this area, but less than the maximum reported yield. If the requested rate is assumed to be equally distributed amongst the 3 proposed POA (i.e. a rate of 100 gpm for each well), then the per-POA rate would represent ~200 percent of the median yield reported for water wells in this area. An analysis of pump tests from wells within the TRS 5S 1E Section 18 indicates yields ranges from 9 to 225 gpm from pumping durations ranging 1 to 240 hours and drawdowns ranging from 15 to 110 feet.
Although it may be unlikely that the applicant will be able to achieve the requested maximum rate with the proposed POA, it does appear possible.

In order to protect senior users and the groundwater resource, the conditions specified in B1(d)(i) 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 (Willamette Confining Unit)**	☒	☐

Basis for aquifer confinement evaluation: Nearby well logs note static water levels above water bearing zones, indicating that the aquifer is confined [CLAC 71406 (former CLAC 2555), CLAC 56198, CLAC 74534] (see attached Well Statistics).

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**	**Rock Creek**	**140**	**136**	**~3,500[a]**	☒	☐	☐	☐	☒
2	**1**	**Rock Creek**	**140**	**136**	**~3,600**	☒	☐	☐	☐	☒
3	**1**	**Rock Creek**	**140**	**136**	**~4,600**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The elevation of groundwater in nearby observation wells with comparable construction to the proposed POA is similar to the elevation of nearby surface water (see Hydrograph, attached). Groundwater surface mapping in this area indicates that groundwater is generally flowing towards the small streams and reservoirs which drain into Rock Creek (Gannett and Caldwell, 1998).

[a] Distance to estimated point of hydraulic connection (based on surface and groundwater elevations).

Water Availability Basin the well(s) are located within: SW-1 & 2: PUDDING R > MOLALLA R – AB MILL CR (WILLAMETTE BASIN)

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**	☐	☐	**NA**	**NA**	☐	**67.3**	☐	**<25**	☐
2	**1**	☐	☐	**NA**	**NA**	☐	**67.3**	☐	**<25**	☐
3	**1**	☐	☐	**NA**	**NA**	☐	**67.3**	☐	**<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 #		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: **C3a**: The proposed rate of appropriation (0.67) is just below 1 percent (0.673 cfs) of the natural flow that is equaled or exceeded 80 percent of the time (67.3 cfs) for the PUDDING R > MOLALLA R – AB MILL CR Water Availability Basin (WAB) (see Water Availability Tables, attached).

Potential depletion of SW 1 due to pumping of the proposed POA was estimated using the Hunt 2003 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (Pumping Test Reports, OWRD Well Log Query Report, Conlon et al., 2003, 2005; Iverson, 2002. Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Weight, 2008). See the attached Stream Depletion Analyses for the specific parameters used in the analyses.

The Hunt 2003 analytical model results indicate that the depletion of (interference with) SW 1 due to pumping of the proposed POA is anticipated to be less than 25 percent of the well discharge at 30 days of continuous pumping.

C3b: 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:**

References Used:

G-19199 Review completed 4/6/2022

Application File: G-19199

Pump Test Reports: CLAC 2538, CLAC 2549, CLAC 2550, CLAC 2555, CLAC 56198, CLAC 60296, CLAC 71009, CLAC 71406

Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D.A. and Constantz, Jim, eds., Heat as a tool for studying the movement of groundwater near streams: U.S. Geological Survey Circular 1260, chapter 5, p. 29-34.

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

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., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

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.

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.

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: Portland, OR, May 27.

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:** _____

_____

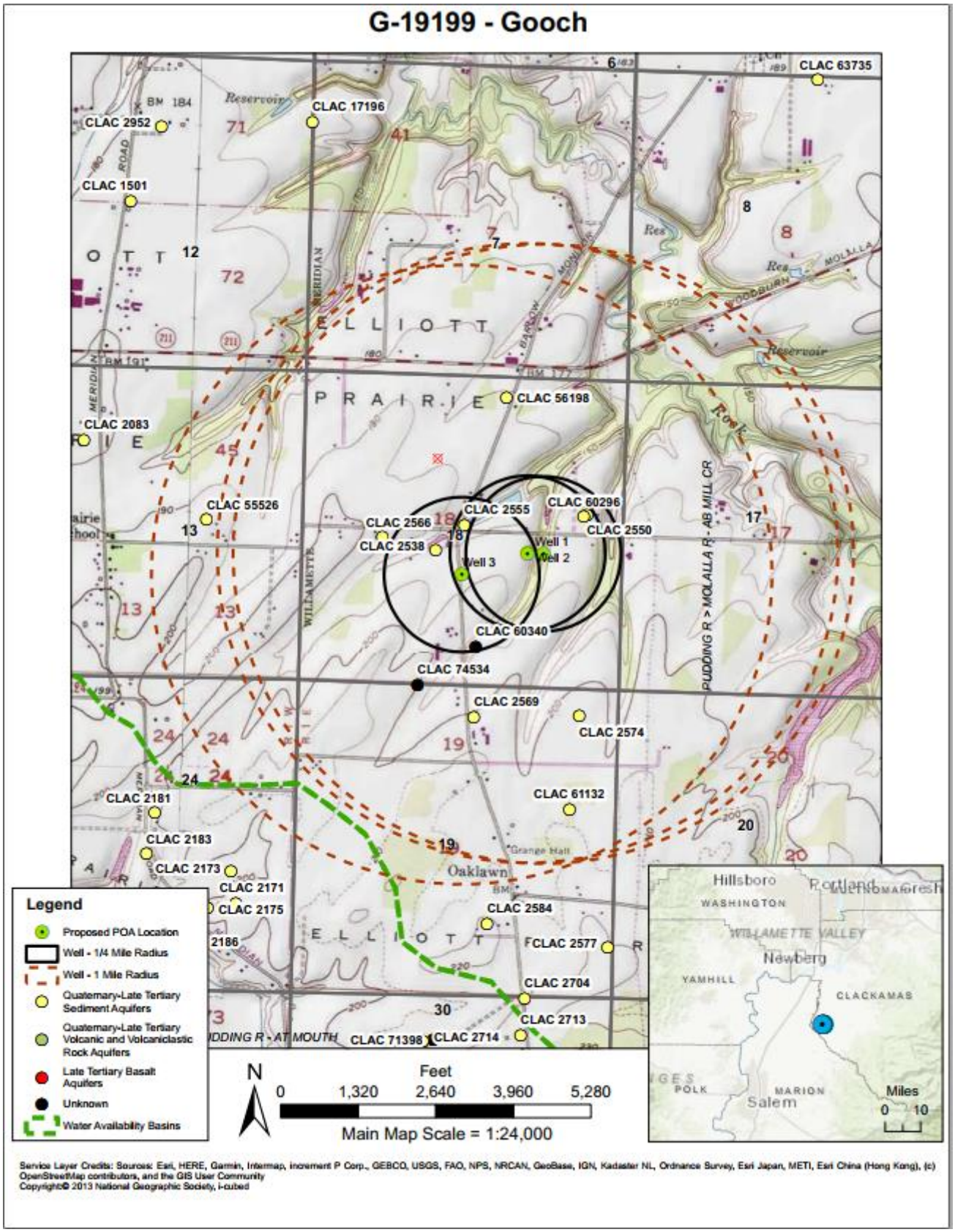
_____

_____

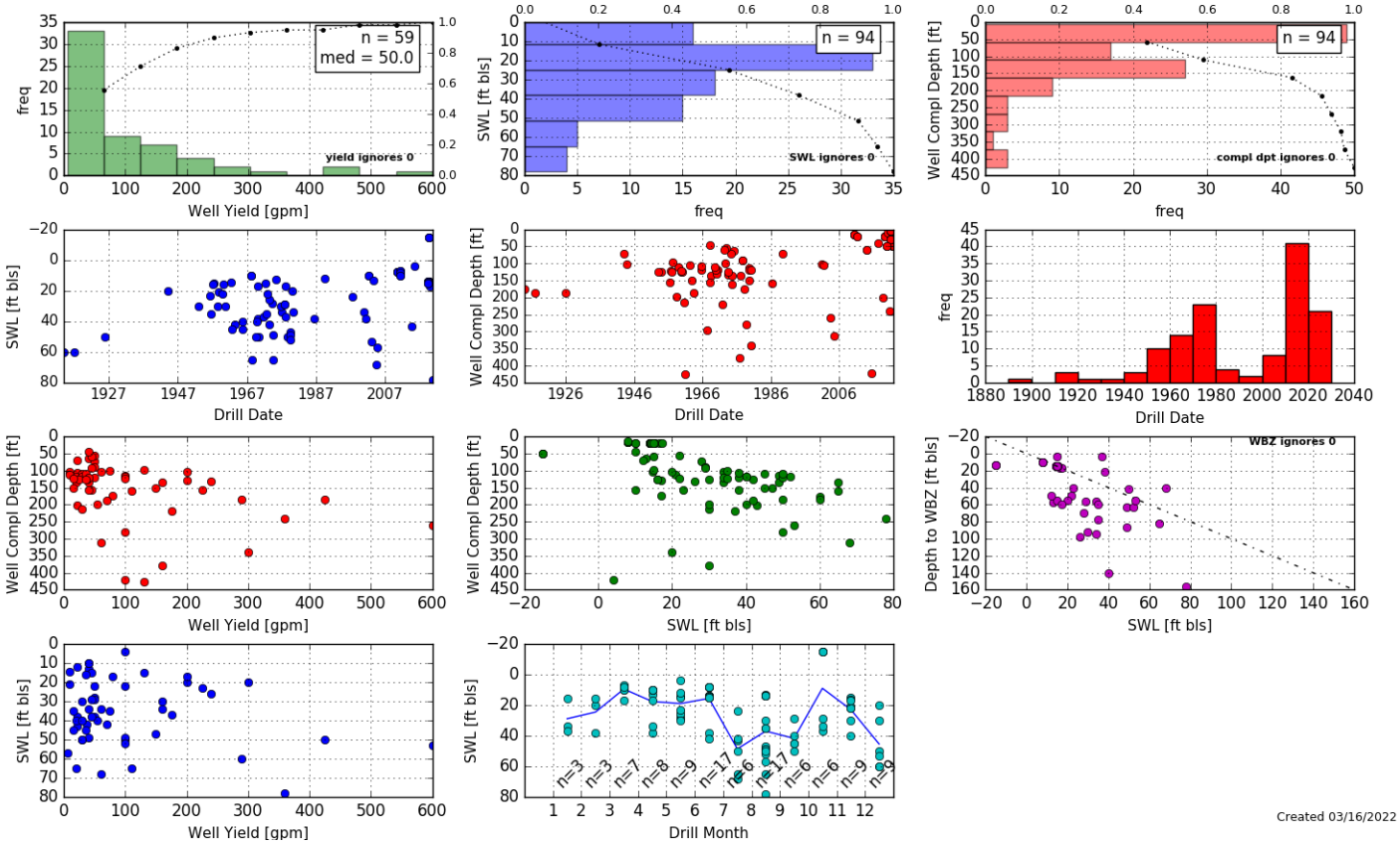
_____

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

Well Location Map



Water-Level Measurements in Nearby Wells



Created 03/16/2022

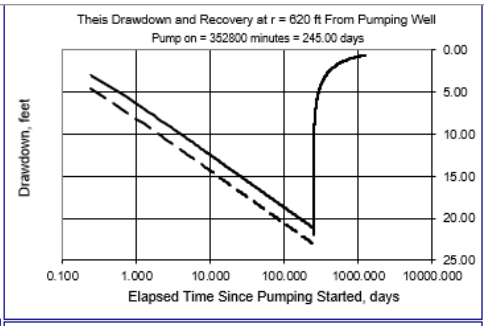
Theis Model

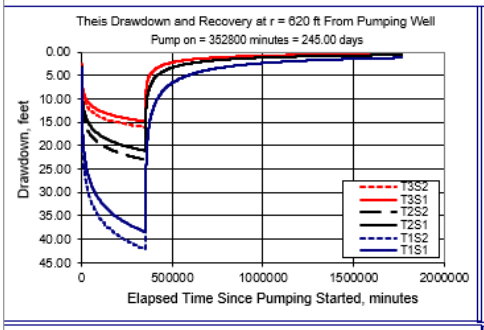
Theis Time-Drawdown Workshe v.5.00

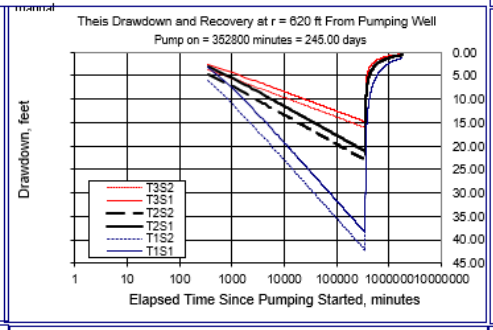
Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 17,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

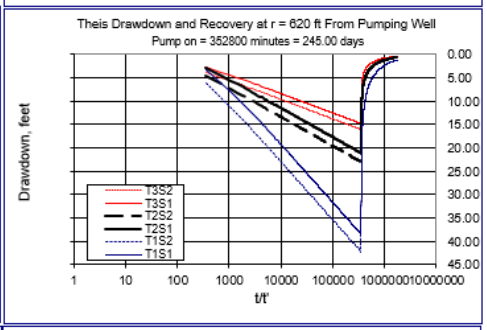
Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		245		d	
Radial distance from pumped well:	r		620		ft	Q conversions
Pumping rate	Q		0.67		cfs	300.70 gpm
Hydraulic conductivity	K	5	10	15	ft/day	0.67 cfs
Aquifer thickness	b		170		ft	40.20 cfm
Storativity	S_1		0.001			57,888.00 cfd
	S_2		0.0005			1.33 af/d
Transmissivity Conversions	T_f2pd	850	1700	2550	ft2/day	
	T_ft2pm	0.5902778	1.1805556	1.7708333	ft2/min	Recalculate
	T_gpdpft	6358	12716	19074	gpd/ft	

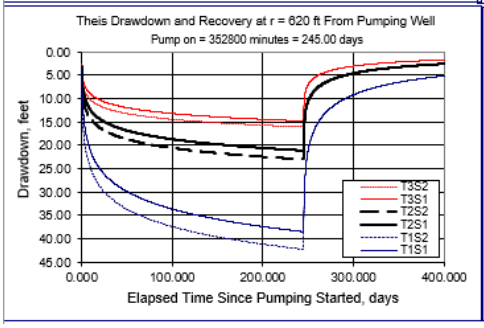
Use the Recalculate button if recalculation is set to manual

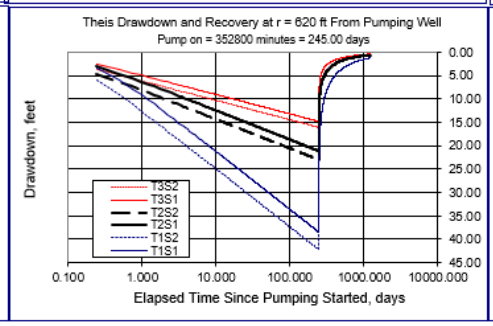


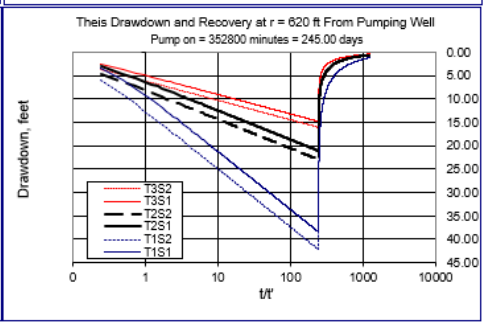


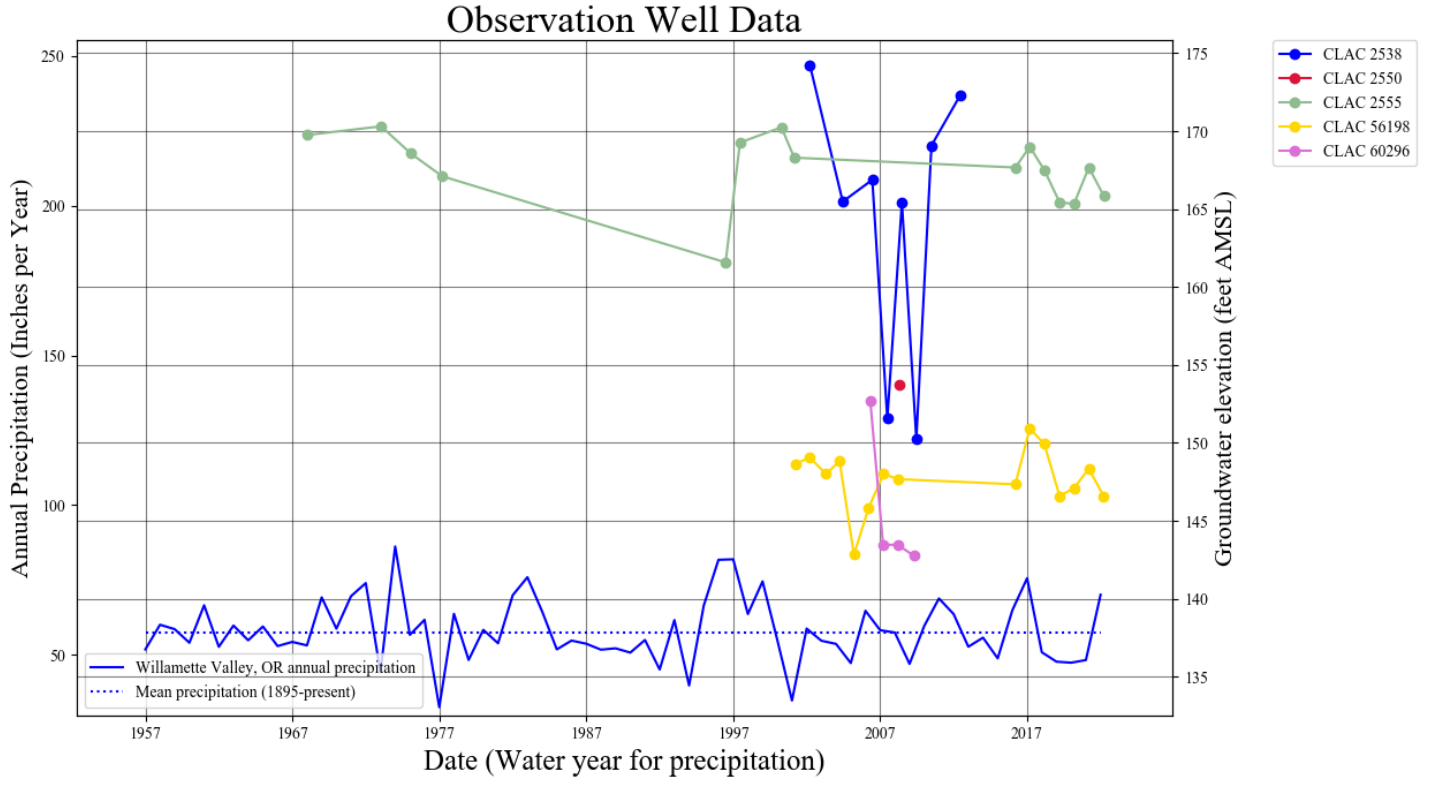












Water Availability Tables

Water Availability Analysis
Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN
Water Availability as of 3/16/2022

Watershed ID #: 151 (Map) Exceedance Level: 80%
Date: 3/16/2022 Time: 3:09 PM

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

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	115.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.60	933.00	0.00	36.00	897.00
APR	787.00	52.40	735.00	0.00	36.00	699.00
MAY	425.00	50.90	374.00	0.00	36.00	338.00
JUN	224.00	73.00	151.00	0.00	36.00	115.00
JUL	109.00	115.00	-5.81	0.00	36.00	-41.80
AUG	71.00	94.10	-23.10	0.00	36.00	-59.10
SEP	67.30	53.40	13.90	0.00	36.00	-22.10
OCT	91.60	11.60	80.00	0.00	36.00	44.00
NOV	363.00	48.60	314.00	0.00	36.00	278.00
DEC	957.00	119.00	838.00	0.00	36.00	802.00
ANN	706,000.00	56,300.00	650,000.00	0.00	26,100.00	626,000.00

Download Data (Text - Formatted , Text - Tab Delimited , Excel)

Stream Interference Model

Application type:	G
Application number:	19199
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.67
Pumping duration (days):	245.0
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3500.0	3500.0	3500.0	ft
Aquifer transmissivity	T	840.0	1700.0	2500.0	ft2/day
Aquifer storativity	S	0.0005	0.0005	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.05	0.05	0.05	ft/day
Aquitard saturated thickness	ba	50.0	50.0	50.0	ft
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	200.0	200.0	200.0	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	5	7	7	5	6	7	8	8	9	10	11	7	7
Depletion (cfs)	0.03	0.05	0.05	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.05	0.05