

Groundwater Application Review Summary Form

Application # G- 18846

GW Reviewer Stacey Garrison Date Review Completed: 6/22/2024

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 22, 2024

TO: Application G- 18846

FROM: GW: Stacey Garrison
(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 6/22/2024
 FROM: Groundwater Section Stacey Garrison
 Reviewer's Name
 SUBJECT: Application G- 18846 Supersedes review of 2/17/2023, 8/3/2020
 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: Jason Sheng Huang County: Lane

A1. Applicant(s) seek(s) 0.045 cfs from 1 well(s) in the Willamette Basin,
Coast Fork Willamette subbasin

A2. Proposed use Nursery (25 acres) 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 78051	1	Bedrock	0.045	19S/2W-4 SW-NE	1615'S, 1550'W de NW 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	125	24 ¹	+2 to 26	5 to 125	(Perf) 65 to 82, 105 to 125	75		Air

Use data from application for proposed wells.

A4. **Comments:** POA/POU are located ~5 miles northeast of Creswell, OR.

¹ Memo dated August 5, 2020 identified well construction issues in former POA LANE 19991.

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 utilizes a confined aquifer. Per OAR 690-502-0240, the relevant basin rules (OAR 690-502-0070) 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 (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 _____ 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 on Pleistocene sand and gravel terrace deposits of the Coast Fork of the Willamette River consisting of unconsolidated gravel, sand, silt, and clay (Peck, 1964; McLaughry et al., 2010) and assigned to the Upper Sedimentary Unit, USU, of the Willamette Aquifer (Herrera et al., 2014, Woodward et al., 1998). The unit, referred to as the Quaternary-to-Late-Tertiary Sediments (QLTS), is underlain by bedrock dominated by the non-marine Little Butte Volcanics, a Middle-to-Early Tertiary Volcanic and Volcaniclastic (METV) aquifer, and the marine Eugene formation of the Tertiary Marine Volcanic and Sedimentary aquifer (TMVS) (Peck, 1964; O'Connor et al., 2001). The POA is in a lobe of terrace deposits adjacent to Seller's Butte, an outcrop of Little Butte Volcanics. A review of statistics for nearby well records was completed and compared with the proposed rate of 0.045 cfs (20 gpm) for this application (see Well Statistics). The median reported well yield is 20 gpm and the maximum reported well yield is 3,600 gpm. The proposed rate for this application is 100% of the median and 16% of the maximum reported yield. The proposed rate of use of 0.045 cfs (20 gpm) is likely within the capacity of the resource. Groundwater level records from nearby wells show a stable long-term trend (see Water Level Measurements in Nearby Wells). Likely, the stable trend is a reflection of the efficient hydraulic connection between groundwater and surface water in the area. The groundwater resource is not likely over-appropriated. The nearest groundwater user to POA 1 is LANE 1675, an exempt domestic well serving 36016 N Morningstar Rd, at an elevation of 741 ft amsl and 1,681 ft south of POA 1. It is likely the proposed use would cause some degree of well-to-well interference with LANE 1675. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference that exceeds the threshold under the standard condition for aquifers in the Willamette Basin, and would therefore be within the capacity of the resource. Conditions listed in B1(d) are recommended along with standard interference conditions.

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	Marine bedrock (Eugene formation)	☒	☐

Basis for aquifer confinement evaluation: Reported SWL is well above the depth of *First Water* reported; aquifer zones in this type of fractured bedrock generally exhibit confined conditions at depth.

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	Papenfus Creek*	600 to 610	558 to 630	2,365	☒	☐	☐	☐	☒
1	2	Bear Creek	600 to 610	500 to 520	11,130	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater elevations are above surface water elevations implying that groundwater is flowing towards and discharging to surface water.

*Papenfus Creek may not be a naturally-perennial stream but was considered under OAR 690-009 because the proposed season of use is year-round and Papenfus Creek flows into the Coast Fork Willamette River, which has a year-round instream water right that extends to below the confluence with Papenfus Creek such that the creek contributes to the instream water right flows.

Water Availability Basin the well(s) are located within: COAST FK WILLAMETTE R>WILLAMETTE R-AT MOUTH

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	☐	65.6	☐	<<25%	☐

Comments: Stream-depletion was estimated using the Hunt 1999 stream-depletion model with hydraulic parameter values in a range of expected values for the local aquifer system, informed by nearby pump test data.

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: N/A Q is 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
1	2	%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS		0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
Interference CFS		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(A) = Total Interf.		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(B) = 80 % Nat. Q		955	1080	1080	928	531	216	108	70.5	65.6	86.4	268	761
(C) = 1 % Nat. Q		9.55	10.8	10.8	9.28	5.31	2.16	1.08	0.71	0.656	0.864	2.68	7.61
(D) = (A) > (C)		☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
(E) = (A / B) x 100		<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %

(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: The maximum rate of appropriation (0.045) cfs) is less than 1% of the 80% exceedance flows for each month for the WAB.

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 POA is hydraulically connected to Papenfus Creek and Bear Creek, but there is no Potential for Substantial Interference per OAR 690-009.

References Used:

Application File: G-18846

Pumping Test Files: LANE 15943

Well Reports: LANE 78051, LANE 19991, LANE 1675, LANE 16503, LANE 76912, LANE 3454

- 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.
- Gonthier, J.B., 1983, Ground-water resources of the Dallas-Monmouth area, Polk, Benton, and Marion Counties, Oregon: Oregon Water Resources Department Ground Water Report 28, 50 p.
- Heath, R.C., 1983. Basic ground-water hydrology, U.S. Geological Survey Water-Supply Paper 2220, 86p.
- Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19
- Ingebritsen, S.E., Mariner, R.H., and Sherrod, D.R., 1994, Hydrothermal systems of the Cascade Range, north-central Oregon: U.S. Geological Survey Professional Paper 1044-L, 85 p.
- 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.
- Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D, 42p
- Peck, D.L., Griggs, A.B., Schlicker, H.G., Wells, F.G., Dole, H.M. 1964. Geology of the Central and Northern parts of the Western Cascade Range in Oregon. USGS Professional Paper 449.
- 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.
- United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.
- Wallick, J.R., Jones, K.L. O'Connor, J.E., Keith, M.K., Hulse, D., and Gregory, S.V., 2013. Geomorphic and vegetation processes of the Willamette River floodplain, Oregon—Current understanding and unanswered questions: U.S. Geological Survey Open-File Report 2013-1246., 70 p.
- Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.
- Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

- D1. **Well #:** _____ **Logid:** _____
- D2. **THE WELL does not appear to meet current well construction standards based upon:**
- a. ☐ review of the well log;
 - b. ☐ field inspection by _____;
 - c. ☐ report of CWRE _____;
 - d. ☐ other: (specify) _____.
- D3. **THE WELL construction deficiency or other comment is described as follows:** _____
- D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Water Availability Tables



Oregon Water Resources Department
Water Availability Analysis

[Main](#)[Help](#)

[Return](#)[Contact Us](#)

Water Availability Analysis
Detailed Reports

COAST FK WILLAMETTE R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Watershed ID #: 532 ([Map](#))
Date: 6/21/2024

Water Availability as of 6/21/2024

Exceedance Level: 80%
Time: 4:03 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

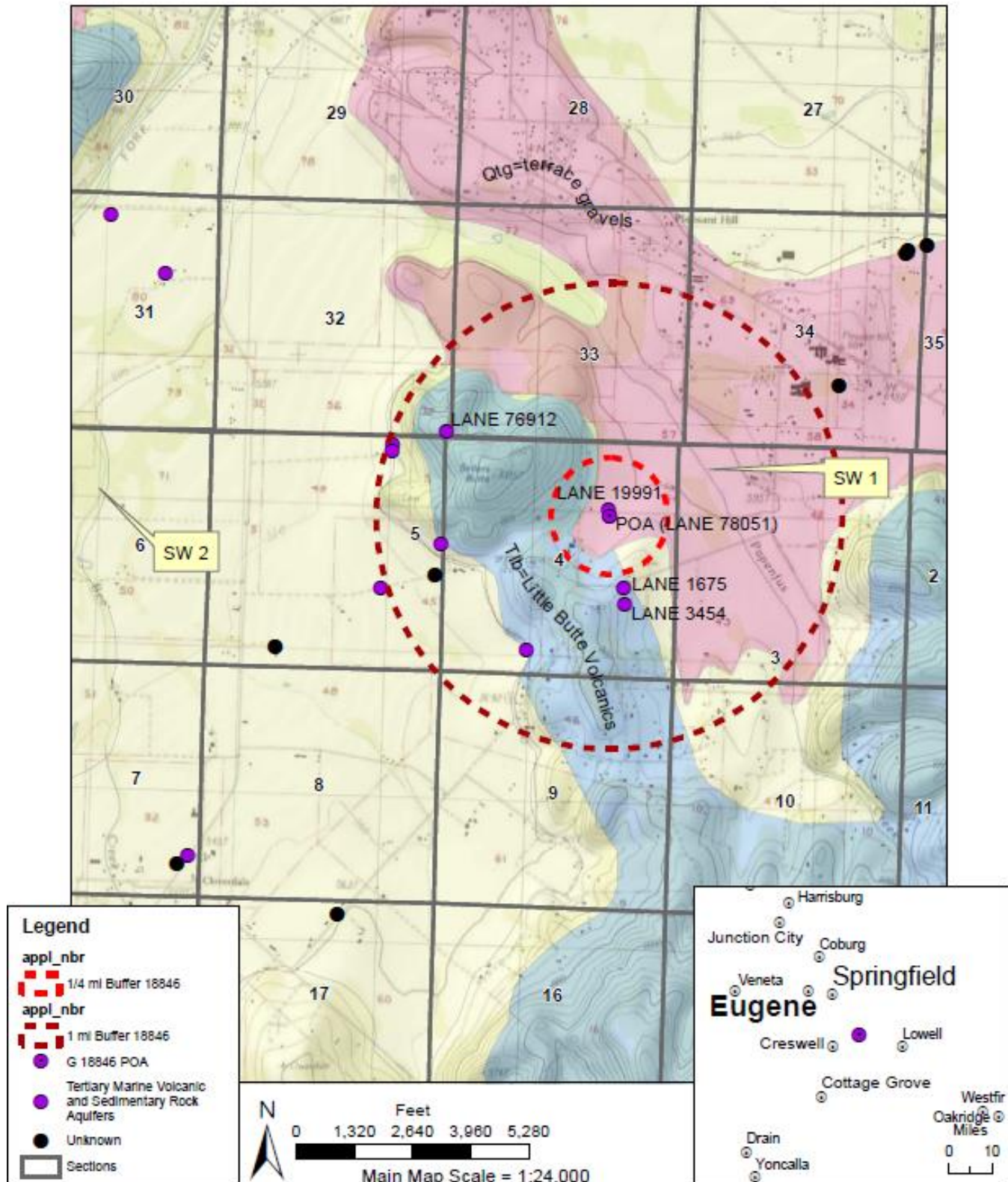
Water Availability Calculation

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	955.00	123.00	832.00	0.00	200.00	632.00
FEB	1,080.00	297.00	783.00	0.00	200.00	583.00
MAR	1,080.00	467.00	613.00	0.00	200.00	413.00
APR	928.00	369.00	559.00	0.00	40.00	519.00
MAY	531.00	236.00	295.00	0.00	40.00	255.00
JUN	216.00	28.60	187.00	0.00	40.00	147.00
JUL	108.00	37.30	70.70	0.00	40.00	30.70
AUG	70.50	33.10	37.40	0.00	40.00	-2.58
SEP	65.60	24.70	40.90	0.00	40.00	0.86
OCT	86.40	8.14	78.30	0.00	40.00	38.30
NOV	268.00	93.70	174.00	0.00	200.00	-25.70
DEC	761.00	9.04	752.00	0.00	200.00	552.00
ANN	754,000.00	104,000.00	651,000.00	0.00	77,000.00	574,000.00

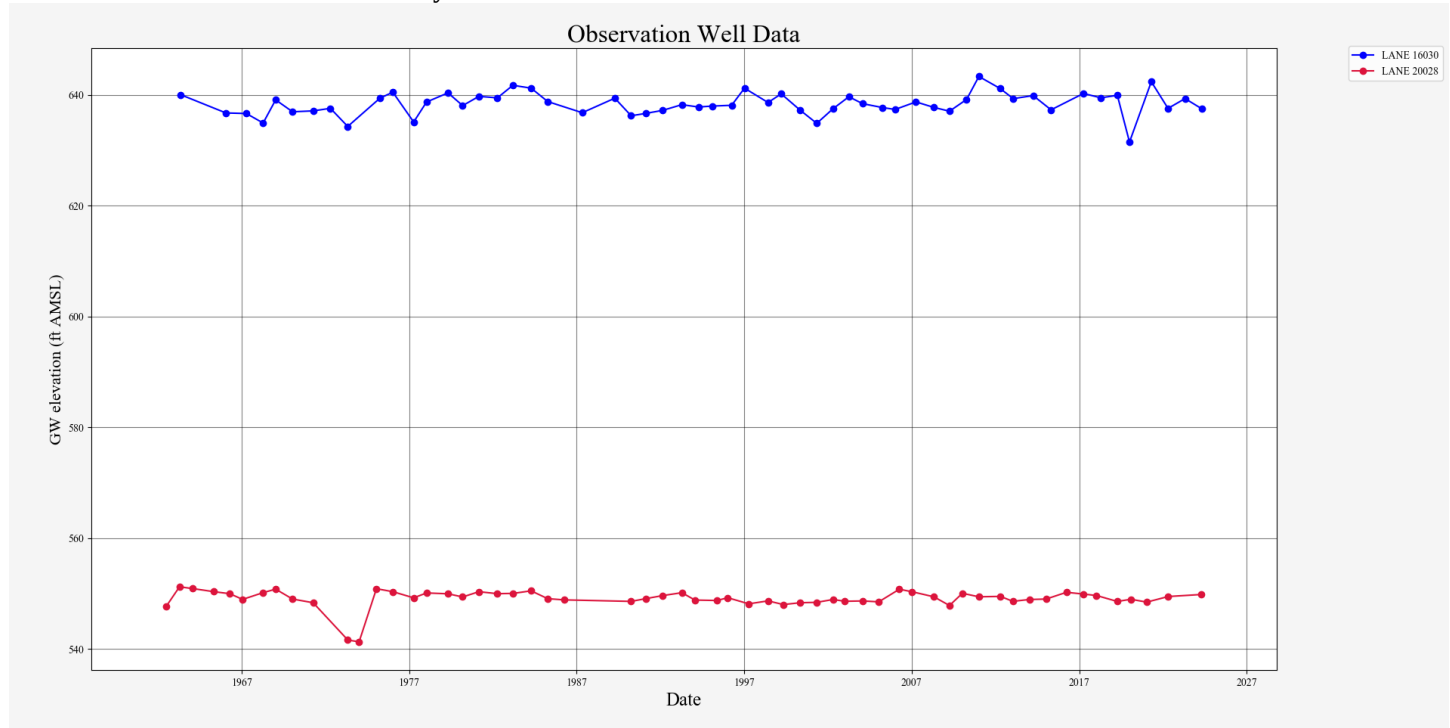
Well Location Map

G 18846 Huang

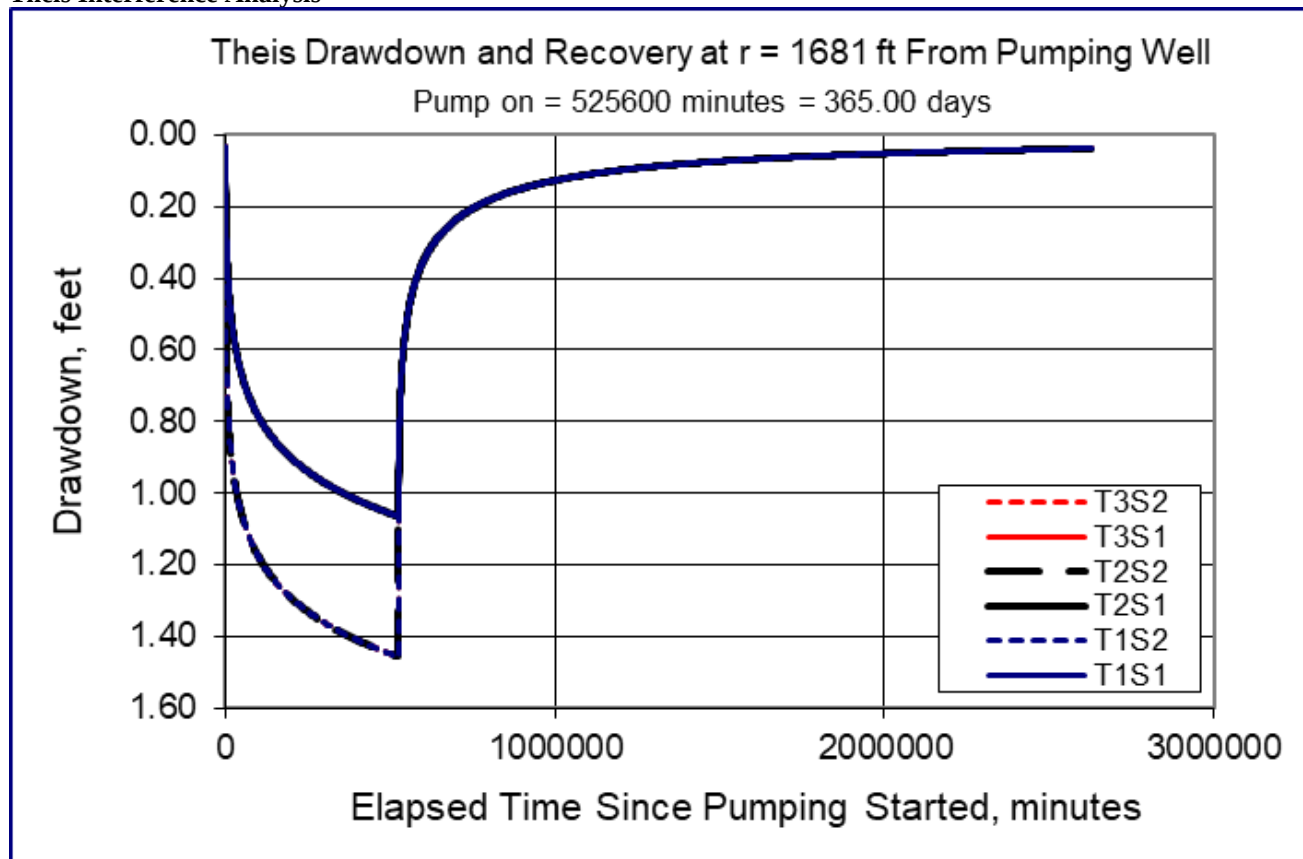


Service Layer Credits: Copyright:© 2013 National Geographic Society, Incubed

Water-Level Measurements in Nearby Wells



Theis Interference Analysis



Radial distance from pumping well (r)=1,681 ft [estimated radial distance from POA to nearest user, LANE 1675]

Pumping Rate (Q)= 0.045 cfs (~20 gpm)

Aquifer Transmissivity (T_1, T_2, T_3) = 13,464 gpd/ft (1800 ft²/day) [OWRD Pump Test and Well Log Database]

Storativity (s_1) = 0.001, (s_2)=0.0001 [Gonthier 1983, Conlon et al., 2005 values for Basement Confining Unit]

Total pumping time=365 days

Stream Depletion (Hunt) Model Analysis

		Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Application type:	G	Distance from well to stream	a	2365	2365	2365	ft
Application number:	18846	Aquifer transmissivity	T	1800.0	1800.0	1800.0	ft ² /day
Well number:	1	Aquifer storativity	S	0.0001	0.0005	0.001	-
Stream Number:	1	Aquitard vertical hydraulic conductivity	Kva	0.001	0.001	0.001	ft/day
Pumping rate (cfs):	0.045	Not used		20.0	20.0	20.0	
Pumping duration (days):	365.0	Aquitard thickness below stream	babs	10.0	10.0	10.0	ft
Pumping start month number (3=March)	1.0	Not used		0.2	0.2	0.2	
		Stream width	ws	5.0	5.0	5.0	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	1	1
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

