Approved: 

# MEMO

| | |
|---|---|
| **To:** | Kristopher Byrd, Well Construction Section Manager |
| **From:** | Tommy Laird, Well Construction Program Coordinator |
| **Subject:** | Review of Water Right Application G-19028 |
| **Date:** | February 8, 2024 |

The attached application was forwarded to the Well Construction Section by the Groundwater Section. Jen Woody reviewed the application. Please see Jen's Groundwater Review.

Applicant's Well #1 (Proposed Well): Well #1 is a proposed well, therefore it cannot be reviewed for construction. Construction of this proposed well shall be completed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240. During construction of this well, specific attention should be paid to ensure sealing requirements are met and that the well does not commingle aquifers.

The construction of proposed Well #1 may not satisfy hydraulic connection issues.

Applicant's Well #2 (Proposed Well): Well #2 is a proposed well, therefore it cannot be reviewed for construction. Construction of this proposed well shall be completed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240. During construction of this well, specific attention should be paid to ensure sealing requirements are met and that the well does not commingle aquifers.

The construction of proposed Well #2 may not satisfy hydraulic connection issues.

# Groundwater Application Review Summary Form

**Application # G- _19028_**

**GW Reviewer _Jen Woody_ Date Review Completed: _03/24/2023_**

**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** **_3/24/2023_**

**TO:** **Application** G-**_19028_**

**FROM:** **GW:** **_Jen Woody_**
(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 3/24/2023

FROM: Groundwater Section Jen Woody
Reviewer's Name

SUBJECT: Application G- **19028** Supersedes review of 4/19/2021
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: **James R. Means/Orenco RE, LLC** County: **Columbia**

A1. Applicant(s) seek(s) 2.6 cfs up to 519.8 AF from 2 well(s) in the Willamette Basin,

Columbia 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)**:

| 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 | Well #1 | alluvial | 2.6 | 3N/2W-13 NW ¼ SE ¼ | 1800'N, 1640'W fr SE cor S 13 |
| 2 | proposed | Well #2 | alluvial | 2.6 | 3N/2W-13 SW ¼ SE ¼ | 1075'N, 1745'W fr SE cor S 13 |
| 3 | | | | | | |
| 4 | | | | | | |

* 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 | 20 | | 5* | | 150 | 0-20 | 0-120 | | 120-150 | | | |
| 2 | 25 | | 10* | | 150 | 0-20 | 0-120 | | 120-150 | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Use data from application for proposed wells.

A4. **Comments:** The wells are proposed. *Water levels are estimated from Oct/Nov water level elevations associated with nearby well logs COLU 100 and COLU 3110.

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: 690-502-0240 applies to this application because the aquifer is unconfined and both POAs are located less than ¼ mile from surface water.

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **N/A**
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) **7C, Large water use reporting condition**;

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.

1. **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 applicant's proposed wells are located in an area that contains coarse-grained alluvial sediments from land surface to approximately 100-200 feet. The permeable coarse-grained sediments are underlain by a sequence of fine-grained alluvial sediments. Shallow wells in the area are strongly connected to Multnomah Channel, therefore water level declines are not anticipated. There are limited nearby groundwater level time series data, but those available show stability (See Figure 3).

The proposed use of 2.6 cfs (1,167 gallons per minute) up to 519.8 acre-feet per year is a large use (defined as greater than 0.5 cfs and greater than 100 acre-feet per year) and therefore the large water use measurement and reporting condition is recommended.

Pumping at the proposed maximum rate is not expected to prevent nearby groundwater rights from accessing their water. As shown in Figure 5, interference estimates at a distance of 1,100 feet range from 2- 9 feet after 365 days of pumping at the maximum rate, and without factoring in any buffering effect from hydraulic connection to surface water, making this a worst-case scenario estimate. Water level monitoring for long-term impacts is recommended.

Section B1a of this review was updated according to the Iverson (2023) memo. The water level data from nearby wells represents the same groundwater sources as the proposed use, represents current hydrologic conditions and established a sufficient interannual water level trend that does not meet the Division 8 definition of excessively declining or declined excessively (OAR 690-008-0001(4)(d)). Therefore the reviewer finds B1a " is not over appropriated".

## 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** | ☐ | ☒ |
| **2** | **alluvial** | ☐ | ☒ |
| | | ☐ | ☐ |
| | | ☐ | ☐ |

**Basis for aquifer confinement evaluation:** Nearby well logs (see COLU 50334) report the static water level at the same elevation as the first water-bearing zone, indicating an unconfined aquifer.

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** | **Jackson Creek** | **10-20** | **10-20** | **1350** | ☒ | ☐ | ☐ | ☐ | ☒ |
| **2** | **1** | **Jackson Creek** | **10-20** | **10-20** | **780** | ☐ | ☐ | ☒ | ☒ | ☐ |
| **1** | **2** | **Spring Lake** | **10-20** | **10** | **940** | ☐ | ☐ | ☒ | ☒ | ☐ |
| **2** | **2** | **Spring Lake** | **10-20** | **10** | **1150** | ☐ | ☐ | ☒ | ☒ | ☐ |

**Basis for aquifer hydraulic connection evaluation:** Groundwater elevation is coincident with nearby surface water, indicating hydraulic connection.

**Water Availability Basin the well(s) are located within:** no WAB at this location

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** | ☐ | ☐ | **n/a** | **n/a** | ☐ | **No WAB** | ☐ | **12%** | ☐ |
| **2** | **1** | ☒ | ☐ | **n/a** | **n/a** | ☐ | **No WAB** | ☐ | **18%** | ☒ |
| **1** | **2** | ☒ | ☐ | **n/a** | **n/a** | ☐ | **No WAB** | ☐ | **16%** | ☒ |
| **2** | **2** | ☒ | ☐ | **n/a** | **n/a** | ☐ | **No WAB** | ☐ | **14%** | ☒ |

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:** Both wells are located in an unconfined aquifer less than ¼ mile from surface water, triggering PSI. There is no Water Availability Basin at this location. See Figure 4 for stream depletion estimates.

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

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:** PSI as defined in OAR 690-009-040 (4)(a) is triggered by the proposed use.

**References Used:** 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: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Iverson, J., February 6, 2023, OWRD Memorandum: Clarification of current policy for determining over-appropriation in section B1a of the Public Interest Review for Groundwater Applications.

USGS topographic maps, Sauvie Island, St. Helens, Chapman and Dixie Mountain Quadrangles.

WRD Groundwater Information System, accessed 4/16/2021.

## D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: _____ **Logid: n/a**

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.**

**Figure 1. Water Availability Tables**

N/A: There are no Water Availability Basin data available at this location.

**Figure 2. Well Location Map**

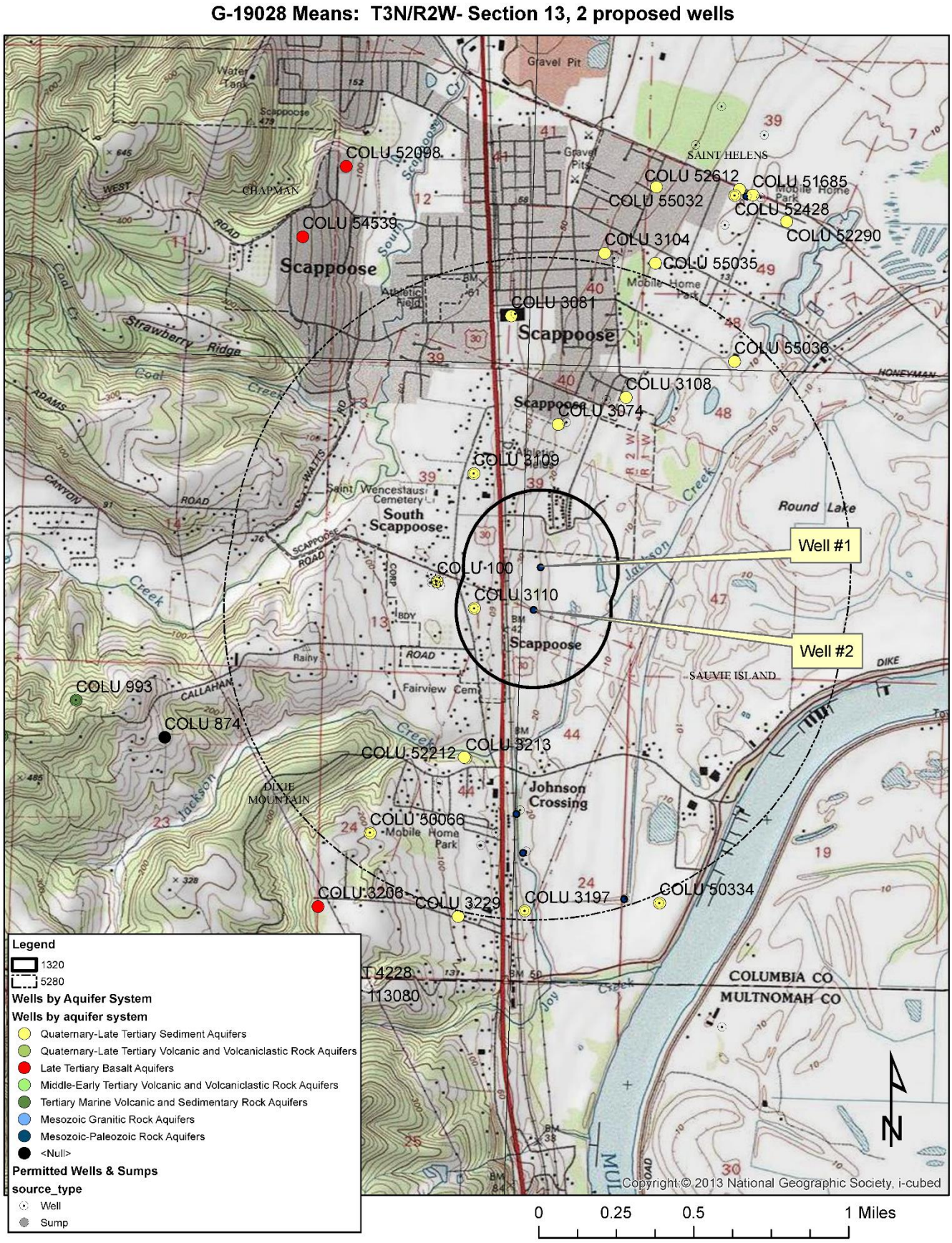


**Figure 3. Water-Level Measurements in Nearby Wells**

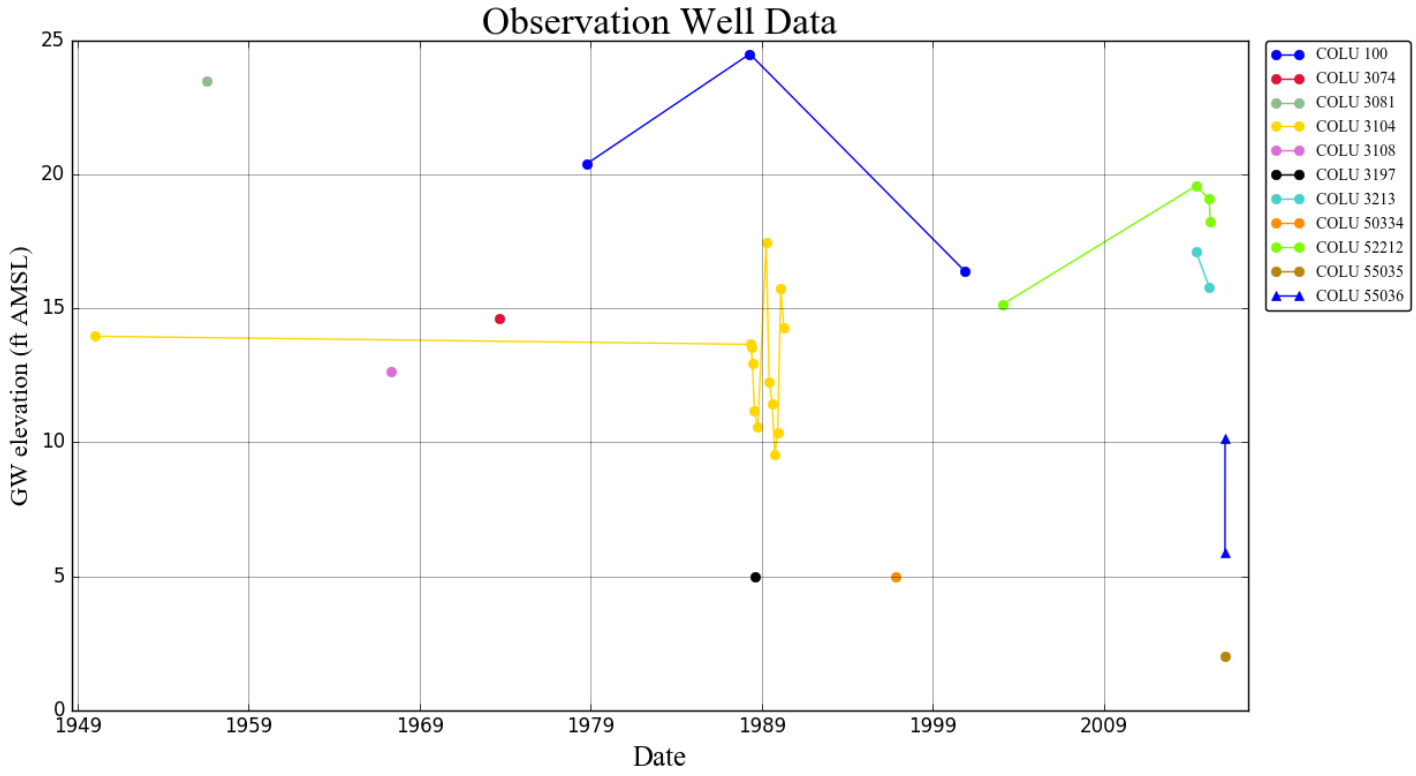



Figure 3a. Hydrograph updated 3/24/2023:

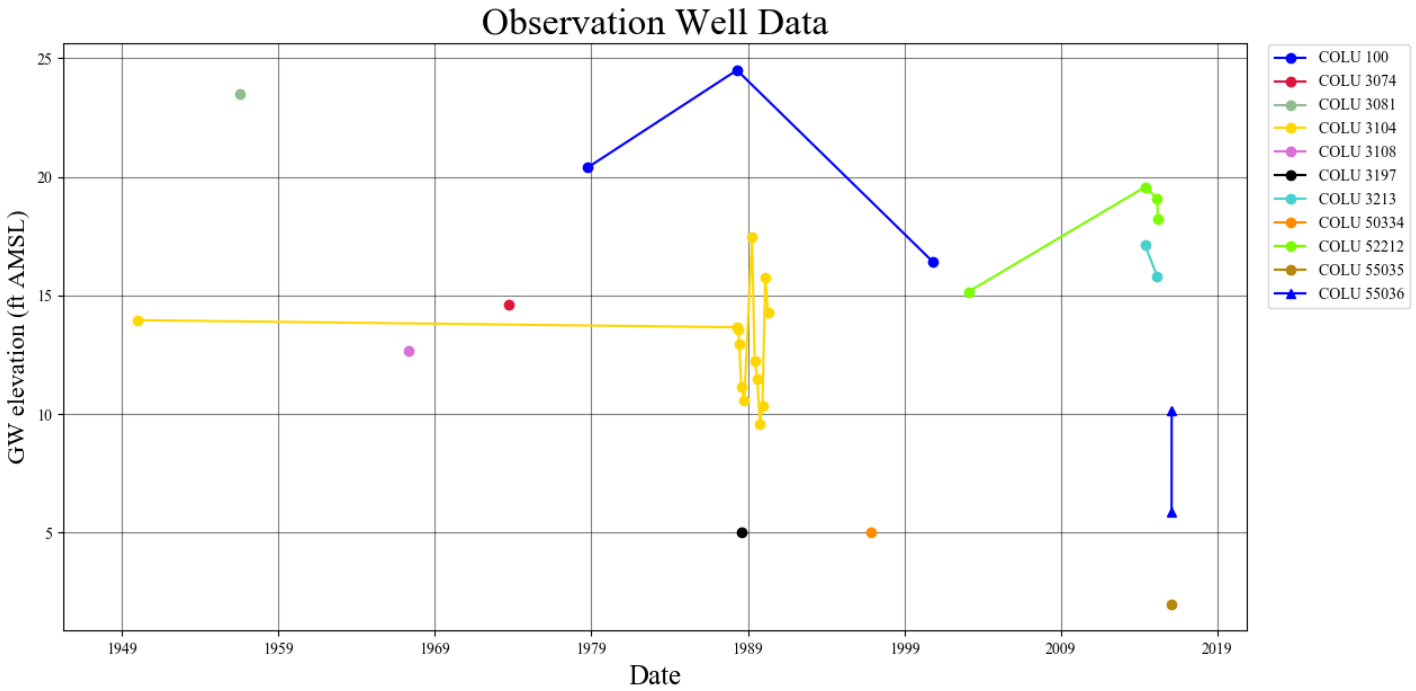
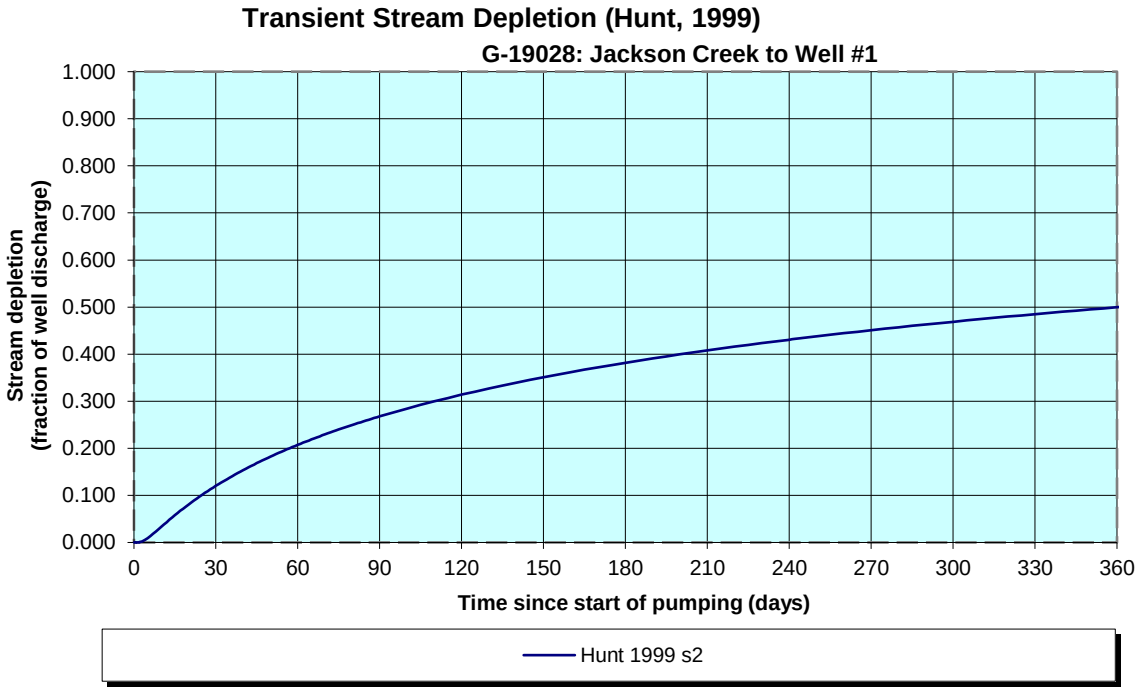


**Figure 4. Stream Depletion Estimates**

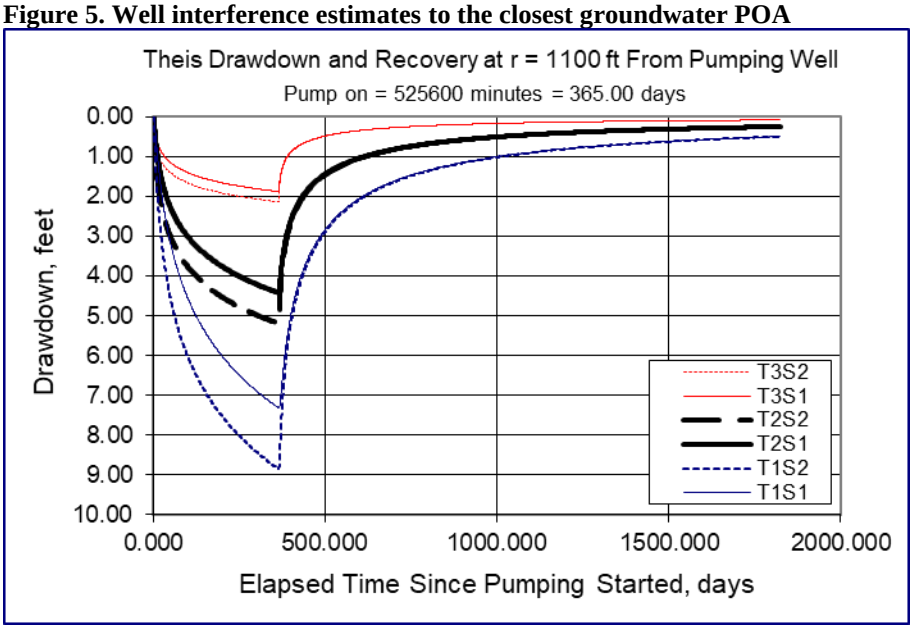



| Output for Stream Depletion, Scenerio 2 (s2): | | | | | | Time pump on (pumping duration) = 365 days | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 |
| J SD | 52.5% | 65.3% | 71.3% | 75.0% | 77.6% | 79.5% | 81.0% | 82.2% | 83.2% | 84.1% | 84.8% | 85.4% |
| H SD 1999 | 12.0% | 20.7% | 26.8% | 31.4% | 35.1% | 38.2% | 40.8% | 43.1% | 45.1% | 46.9% | 48.5% | 50.0% |
| H SD 2003 | 5.84% | 12.06 % | 16.86 % | 20.75 % | 24.00 % | 26.79 % | 29.22 % | 31.39 % | 33.33 % | 35.09 % | 36.69 % | 38.16 % |
| Qw, cfs | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 | 2.600 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H SD 99, cfs | 0.313 | 0.539 | 0.696 | 0.816 | 0.912 | 0.992 | 1.061 | 1.120 | 1.172 | 1.219 | 1.261 | 1.299 |
| H SD 03, cfs | 0.152 | 0.314 | 0.438 | 0.539 | 0.624 | 0.696 | 0.760 | 0.816 | 0.867 | 0.912 | 0.954 | 0.992 |

| **Parameters:** | | **Scenario 1** | **Scenario 2** | **Scenario 3** | **Units** |
|---|---|---|---|---|---|
| Net steady pumping rate of well | Qw | 2.60 | 2.60 | 2.60 | cfs |
| Time pump on (pumping duration) | tpon | 365 | 365 | 365 | days |
| Perpendicular from well to stream | a | 780 | 1350 | 1150 | ft |
| Well depth | d | 150 | 150 | 150 | ft |
| Aquifer hydraulic conductivity | K | 100 | 100 | 100 | ft/day |
| Aquifer saturated thickness | b | 150 | 150 | 150 | ft |
| Aquifer transmissivity | T | 15000 | 15000 | 15000 | ft*ft/day |
| Aquifer storativity or specific yield | S | 0.2 | 0.2 | 0.2 | |
| Aquitard vertical hydraulic conductivity | Kva | 1 | 1 | 1 | ft/day |
| Aquitard saturated thickness | ba | 3 | 3 | 3 | ft |
| Aquitard thickness below stream | babs | 3 | 3 | 3 | ft |
| Aquitard porosity | n | 0.2 | 0.2 | 0.2 | |
| Stream width | ws | 20 | 20 | 20 | ft |

**Figure 5. Well interference estimates to the closest groundwater POA**




| **Input Data:** | Var Name | **Scenario 1** | **Scenario 2** | **Scenario 3** | **Units** |
|---|---|---|---|---|---|
| Total pumping time | t | | **365** | | d |
| Radial distance from pumped well: | r | | **1100** | | ft |
| Pumping rate | Q | | **1100** | | gpm |
| Hydraulic conductivity | K | **50** | **100** | **300** | ft/day |
| Aquifer thickness | b | | **150** | | ft |
| Storativity | S_1 | | **0.2** | | |
| | S_2 | | **0.1** | | |
| **Transmissivity Conversions** | T_f2pd | 7500 | 15000 | 45000 | ft2/day |
| | T_ft2pm | 5.2083333 | 10.416667 | 31.25 | ft2/min |
| | T_gpdpft | 56100 | 112200 | 336600 | gpd/ft |