

Approved:



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Program Coordinator
Subject: Review of Water Right Application G-19027
Date: March 31, 2021

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Joe Kemper reviewed the application. Please see Joe's review and the Well Report.

Applicant's Well #1 (JOSE 9971): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Applicant's Well #1 may not satisfy hydraulic connection issues.

Groundwater Application Review Summary Form

Application # G- 19027

GW Reviewer Joe Kemper Date Review Completed: 3/11/2021

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

March 11, 2021

TO: **Application G- 19027**

FROM: **GW: Joe Kemper**
 (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 Rogue 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
0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 3/11/2021
 FROM: Groundwater Section Joe Kemper
Reviewer's Name
 SUBJECT: Application G- 19027 Supersedes review of na
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: Adrienne Calabrese & Michael Newman County: Josephine

A1. Applicant(s) seek(s) 0.04 cfs from 1 well(s) in the Rogue Basin,
Applegate subbasin

A2. Proposed use Irrigation (2 ac) & Nursery (0.92) ac Seasonality: 4/1 – 10/31 (Irrigation) & 1/1 – 12/31 (Nursery)

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	JOSE 9971	1	Bedrock	0.04	38S/5W-22 NE-SW	220' S, 3730' W fr E1/4 cor S 22
2						
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	1486	86	10	8/20/1976	120	0-80	0-80	na	na	50	25	Air

Use data from application for proposed wells.

A4. **Comments:** The application indicates that the well report JOSE 2042 correlates to the requested POA. Transfer application T-13521 was filed concurrently and also indicates that JOSE 2042 correlates to the POA for certificate 66521 i.e., the same well will serve both rights. The water right file for Certificate 66521 contains the well report JOSE 9971 and a water right inspection by a WRD engineering tech on 8/11/1988 with a well description that matches JOSE 9971. Therefore, it is assumed that the well JOSE 9971 serves as the POA for Certificate 66521 and as the requested POA under this application.

A5. **Provisions of the** Rogue (OAR 690-515) 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: Basin rules contain no such provisions.

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) 7C, 7J, 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 applicant’s well encounters ~20 feet of alluvium, then accesses an aquifer hosted in fractured diorite of the Grayback Pluton. Water in this aquifer is typically stored and transmitted in secondary fractures/fissures, and not the rocks’ primary porosity. Well yields in the area are low to moderate (median yield reported for TRS 38S/5W-s22 = 30 gpm), and water levels are predominately shallow (<25 feet). There are several OWRD observation wells that access the target aquifer in the Williams area, which show predominately shallow water levels with no indication of extensive declines. Because of the fractured nature and relatively low transmissivity, water level trends and perturbations in bedrock aquifers often have a small areal extent. As there are no observation wells with long-term records within a mile of the applicant’s well, it cannot be determined that the aquifer is over appropriated.

Groundwater development is relatively high in the Williams area and acutely near the proposed well. The proposed use poses the risk of injury to the well JOSE 10481 under Certificate 66522 is located approximately 650 feet to the NE. Well-to-well interference is estimated, using a Theis distance drawdown model, to be less than 5-10 feet after full application of the requested water. If a permit is issued, the above conditions should be applied.

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	Fractured Bedrock of Grayback Pluton	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: In fractured-bedrock aquifer systems, water is stored and transmitted primarily by discrete but connected fracture sets. These fractures generally extend to near the surface, so water within these fractures is likely under atmospheric pressure (unconfined) despite an overall low storage coefficient for the aquifer system as a whole and static water levels often reported above water-bearing zones on driller’s logs.

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	Horsehead Creek	1476	1315	375	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Williams Creek	1476	1295	6250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Groundwater levels are higher than Williams Creek, indicating that groundwater is flowing towards and discharging to surface water. Available information (total contributing area, aerial imagery, lidar DEM, fish surveys, and historic mapping) indicates that Horsehead Creek is predominately fed by recent precipitation as opposed to groundwater and, thus, is not considered to be a surface water source that is hydraulically connected to groundwater.

Water Availability Basin the well(s) are located within: WILLIAMS CR > APPLGATE 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?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: There are no hydraulically connected surface water sources within one mile of the applicant's well, so the above metrics do not apply.

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	15%	23%	29%	34%	37%	40%	42%	45%	46%	48%	50%	51%
Well Q as CFS		0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Interference CFS		0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.007
(A) = Total Interf.		0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.007
(B) = 80 % Nat. Q		67.3	110	107	62.7	29.5	10.3	4.24	2.68	1.89	2.28	6.6	32.3
(C) = 1 % Nat. Q		0.673	1.100	1.070	0.627	0.295	0.103	0.042	0.027	0.019	0.023	0.066	0.323
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		0%	0%	0%	1%	2%	5%	14%	23%	34%	30%	11%	2%

(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: Stream depletion to Williams Creek is estimated using the Hunt (1999) analytical model using parameters representative of bulk aquifer properties. A pumping rate of 0.024 cfs is used to represent the total volume of water that would be pumped from JOSE 9971 under G-19027 and Certificate 66521 (17.5 AF) pumped over 365 days.

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:** The applicant's well accesses an aquifer that is determined to be hydraulically connected to Williams Creek. The Division 9 review is done considering both the requested rate under application G-19027 and the current Certificate 66521 (see table below). There is not a preponderance of evidence that the proposed use has the Potential for Substantial Interference (PSI) as per OAR 690-009.

Total Rate of Appropriation for JOSE 9971

Water Right	Rate (cfs)	Irrig POU (acres)	Nursery POU (acres)	Total Volume (AF)
Cert. 66521	0.04	3	0	7.5
App. G-19027	0.04	2	1	10
Total	0.08	5	1	17.5

References Used:

Grants Pass, OR Historical Topographic Map. (1954) Scale 1:62500 15x15 minute. United States Geological Survey

Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp12-19

OWRD Groundwater Information System Database – Accessed 3/9/2021.

Ramp, L., and Peterson, N.V. (1979). Geologic Map of Josephine County, Oregon, 2004, adapted from Ramp L. and Peterson N.V., 1979 map: Geologic map of Josephine County, Oregon. Oregon Department of Geology and Mineral Industries. Open-File Report O-04-13. 1:250,000

Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, Am. Geophys. Union Trans., vol. 16, pp. 519-524.

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

Water Availability Analysis

Detailed Reports

WILLIAMS CR > APPLGATE R - AT MOUTH
ROGUE BASIN

Water Availability as of 2/26/2021

Watershed ID #: 70981 ([Map](#))
Date: 2/26/2021

Exceedance Level: 80% ▾
Time: 3:56 PM

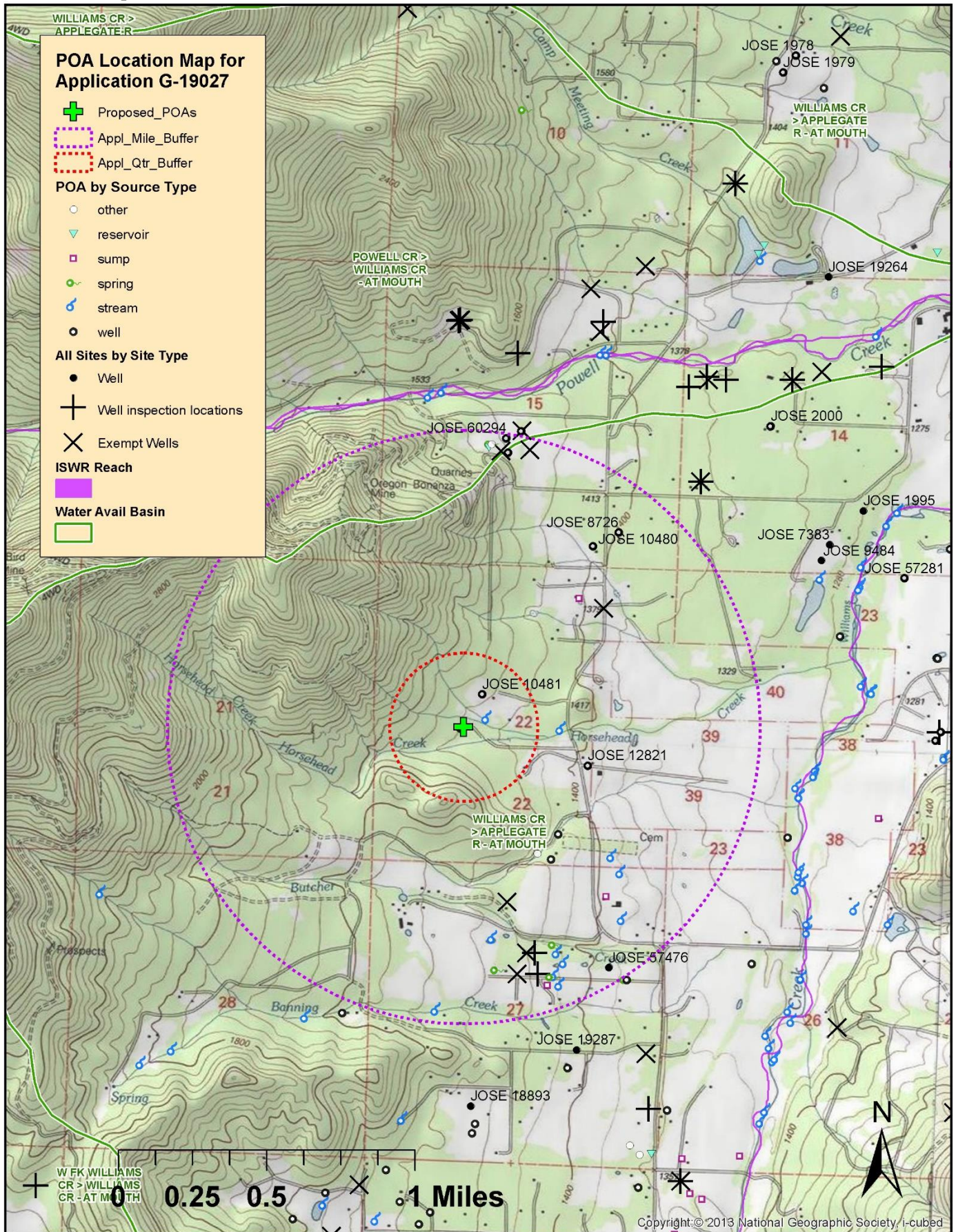
Water Availability Calculation	Consumptive Uses and Storages	Instream Flow Requirements	Reservations
Water Rights		Watershed Characteristics	

Water Availability Calculation

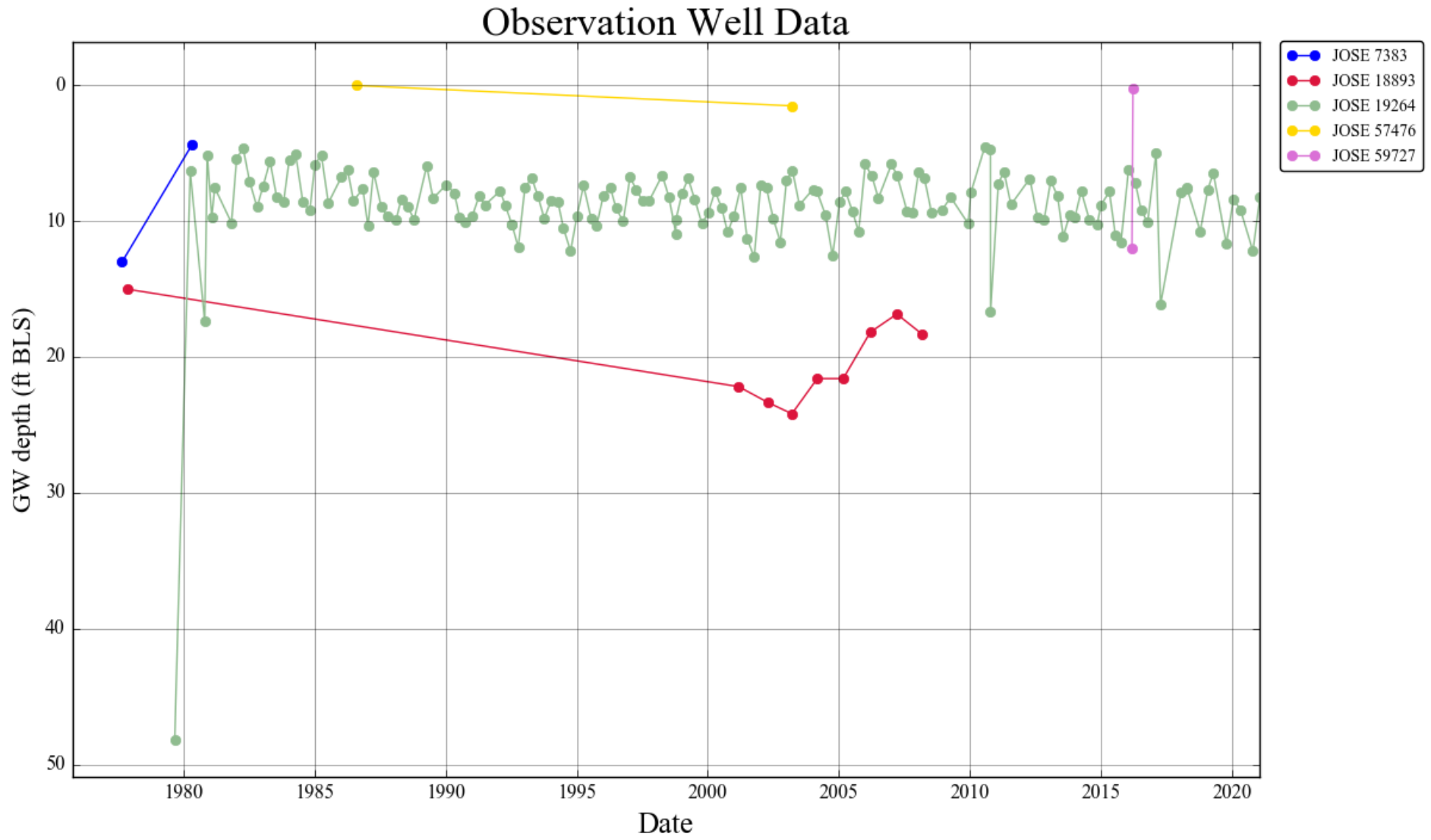
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	67.30	1.14	66.20	0.00	110.00	-43.80
FEB	110.00	1.54	108.00	0.00	110.00	-1.54
MAR	107.00	1.14	106.00	0.00	110.00	-4.14
APR	62.70	3.87	58.80	0.00	110.00	-51.20
MAY	29.50	6.06	23.40	0.00	65.00	-41.60
JUN	10.30	8.47	1.83	0.00	40.00	-38.20
JUL	4.24	11.30	-7.06	0.00	15.00	-22.10
AUG	2.68	9.40	-6.72	0.00	5.00	-11.70
SEP	1.89	6.28	-4.39	0.00	50.00	-54.40
OCT	2.28	2.26	0.02	0.00	80.00	-80.00
NOV	6.60	0.50	6.10	0.00	80.00	-73.90
DEC	32.30	0.80	31.50	0.00	110.00	-78.50
ANN	54,800.00	3,200.00	52,500.00	0.00	53,300.00	15,200.00

Well Location Map



Water-Level Measurements in Nearby Wells



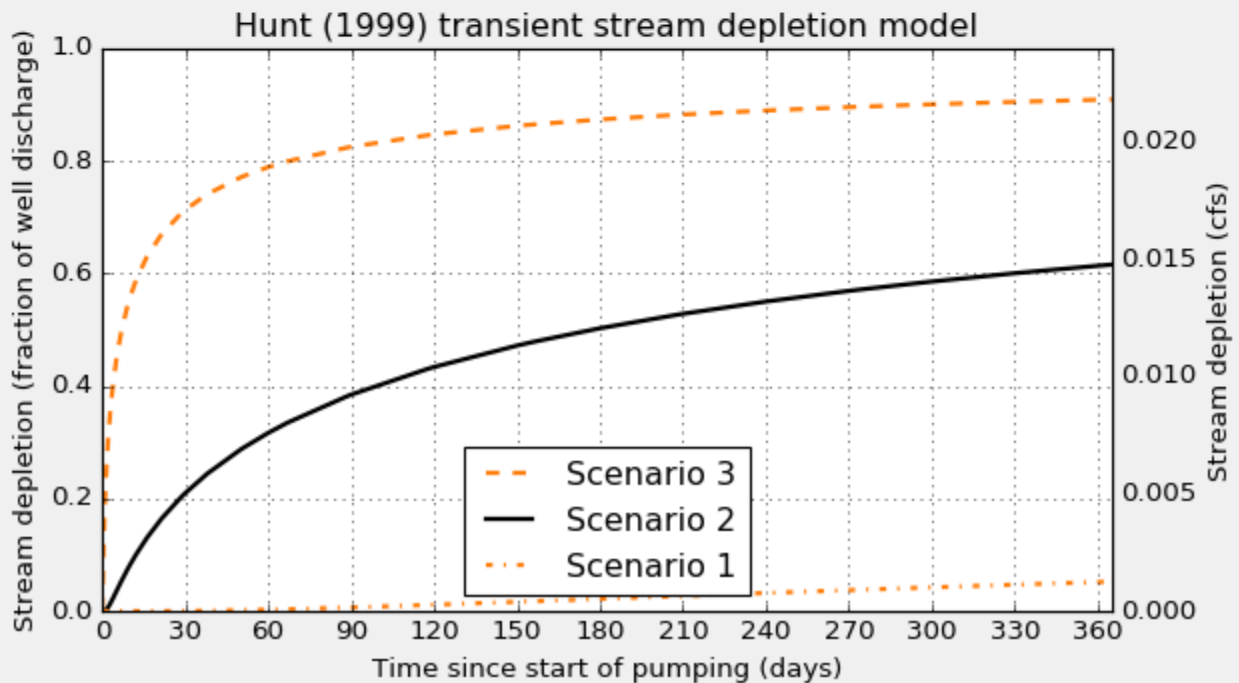
Stream Depletion Modeling (Hunt, 1999)

Application type:	G
Application number:	19027
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.024
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	6250	6250	6250	ft
Aquifer transmissivity	T	100	320	1000	ft ² /day
Aquifer storativity	S	0.001	0.0001	.00001	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	50	40	30	ft
Not used		0	0	0	
Stream width	ws	25	25	25	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	8	21	32	38	43	47	50	53	55	57	59	60	61
Depletion (cfs)	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01



Distance Drawdown Modeling (Theis, 1935)

Theis Time-Drawdown Worksheet v.3.00

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		126		d	
Radial distance from pumped well:	r		650		ft	Q conversions
Pumping rate	Q		0.04		cfs	17.95 gpm
Hydraulic conductivity	K	1	3.2	10	ft/day	0.04 cfs
Aquifer thickness	b		100		ft	2.40 cfm
Storativity	S_1		0.0001			3,456.00 cfd
	S_2		0.00001			0.08 af/d
Transmissivity Conversions	T_f2pd	100	320	1000	ft ² /day	<input type="button" value="Recalculate"/>
	T_f2pm	0.0694444	0.2222222	0.6944444	ft ² /min	
	T_gpdpft	748	2393.6	7480	gpd/ft	

Use the Recalculate button if recalculation is set to manual

