

# Groundwater Application Review Summary Form

Application # G- 19377

GW Reviewer Phillip I. Marcy Date Review Completed: 03/21/2025

## 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 21, 2025

TO: Application G- 19377

FROM: GW: Phillip I. Marcy  
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

- ☐ YES      The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries
- ☒ NO
- 
- ☐ YES      Use the Scenic Waterway Condition (Condition 7J)
- ☒ NO
- 
- ☐ 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 03/21/2025  
 FROM: Groundwater Section Phillip I. Marcy  
 Reviewer's Name  
 SUBJECT: Application G- 19377 Supersedes review of \_\_\_\_\_  
 Date of Review(s)

## **PUBLIC INTEREST PRESUMPTION; GROUNDWATER**

**OAR 690-310-130 (1)** *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

**A. GENERAL INFORMATION:** Applicant's Name: Baker City Cattle Feeders/Johnson Family Trust  
 County: Baker

A1. Applicant(s) seek(s) 3.05 cfs from 2 well(s) in the Powder Basin,  
 \_\_\_\_\_ subbasin

A2. Proposed use Supplemental Irrigation (244.1 acres) Seasonality: March 1<sup>st</sup> – October 31<sup>st</sup> (245 days)

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	Bedrock	3.05	9S/40E-1 SW-NW	1953'S, 1265'E fr NW cor S 1
2	Proposed	2	Bedrock	3.05	9S/40E-1 SE-NW	1664'S, 2085'E fr NW cor S 1
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	3401	NA	NA	NA	400	0-210	0-210	40-400	240-300; 320-380	NA	NA	NA
2	3433	NA	NA	NA	400	0-210	0-210	40-400	240-300; 320-380	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to develop groundwater from the bedrock aquifer beneath the alluvial sequence in the Baker Valley for purposes of supplemental irrigation of 244.1 acres. Two wells are proposed as POAs, neither have been constructed.

A5. ☒ **Provisions of the** Powder 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: \_\_\_\_\_

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; "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 \_\_\_\_\_ 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 proposed POA wells are slated to produce from “bedrock”, which is noted as either basalt or granite. There is some reasonable doubt as to which of these lithologies will be encountered at depth in the proposed locations, as nearby well logs report a complicated picture of the geology underlying the alluvial sequence here. Geologic mapping (Brooks, 1976) also shows a complex geometry between Mesozoic plutonic rocks (granite, diorite, and mafic intrusives), in addition to much younger flows of Miocene Powder River Volcanics. It is likely that if Powder River Volcanics are encountered at the given locations, that these flows will not be of significant thickness or lateral extent and are unlikely to comprise a separate and distinct aquifer system from adjacent lithologies. In our conceptual framework, productive water-bearing zones are anticipated to occur at contacts between Miocene volcanic flow rocks and underlying Mesozoic rocks.

The design of the proposed POA wells appears to be based upon nearby BAKE 52526, which reports “Fractured Basalt” at a depth of 235’ BLS. If the proposed POA wells develop groundwater from this same water-bearing lithology, BAKE 52526 (an exempt use domestic and livestock well) is most likely to be affected at a distance of 1,350 feet from POA 1. At this distance and using a range of values typical for permeable volcanic rock in confined aquifers, a Theis drawdown calculation predicts potential drawdowns from less than 55’ to greater than 120’ as result of continuous pumping at POA well 1. However, the well in question is located on the same tax lot as the proposed POA well and under the same ownership. The only nearby well producing from volcanic rock that does not belong to the applicant is BAKE 51968, a domestic well lying 3,200’ south of the nearest proposed POA. At this distance, the most likely scenarios for drawdown from the proposed use are between 35 and 50 feet after 245 days of continuous pumping at the maximum proposed rate from the nearest POA.

BAKE 52526 and nearby BAKE 51968 to the SE are two wells reporting production from basalt and report yields of 35 GPM and 40 GPM, respectively. The proposed maximum rate proposed for this application is 3.05 cfs, or 1,369 GPM, which is unlikely to be achieved at either or both POA wells, and therefore beyond the capacity of the resource.

### 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
<b>1</b>	<b>Basalt or Granite</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>Basalt or Granite</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer confinement evaluation:** Although static water levels in nearby wells penetrating bedrock are variable, generally these rise considerably above the productive water-bearing zone within each borehole.

#### 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
<b>1</b>	<b>1</b>	<b>Baldock Slough</b>	<b>~3374</b>	<b>3378</b>	<b>5400</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>2</b>	<b>1</b>	<b>Baldock Slough</b>	<b>~3374</b>	<b>3378</b>	<b>6200</b>	<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:** The proposed POA wells are slated to produce from either basalt (presumably Basalt of Little Catherine Creek) or granite (of the Wallowa Batholith). In either case, these bedrock units are truncated by local structures at the fringe of the Baker Valley by basin-bounding faults. In our conceptual model, any vertical migration of groundwater is complemented by horizontal movement of groundwater as transmissive horizons (basalt) or fracture zones (granite) are in direct contact with adjacent alluvial materials. Anticipated static water levels, based on available data, correspond closely to those in nearby surface water in Baldock Slough, though outside of one mile.

**Water Availability Basin the well(s) are located within:** BALDOCK SL > POWDER 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 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"/>
		<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: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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	1	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Well Q as CFS		0	0	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	0	0
Interference CFS		0	0	0	0	0	0	0	0	0	0	0	0
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.		0	0	0	0	0	0	0	0	0	0	0	0
(B) = 80 % Nat. Q		0.58	2.18	4.32	10.9	3.49	0.75	0.17	0.07	0.06	0.06	0.17	0.35
(C) = 1 % Nat. Q		0.0058	0.0218	0.0432	0.109	0.0349	0.0075	0.0017	0.0007	0.0006	0.0006	0.0017	0.0035
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %

(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:** Utilizing the model of Hunt (2003) to calculate impacts beyond one mile from a confined aquifer, which is overlain by a thick sequence of fine-grained, low permeability sediments, the proposed use is not anticipated to produce significant interference with surface water within one year of the onset of pumping.

It is anticipated that effects of the proposed pumping will inevitably reach the full pumping rate, but due to the thick sequence of fine-grained material between the productive aquifer and local surface water, the pressure response in the deeper confined aquifer is anticipated to take much longer than one year to propagate through ~200' of low conductivity materials.

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:**

If a permit is issued, the following special conditions shall apply: \_\_\_\_\_

- 1) Both POA wells shall be constructed to produce from only one aquifer zone. This may include basalt and/or granite, provided that if both are encountered that no change in static water level is noted between the two distinct lithologies. If differences in static water levels are observed between these two lithologies, they shall be noted on the well log report and one or the other shall be sealed off, leaving the well to produce from only one distinct zone.
- 2) Whenever possible, cuttings shall be collected during borehole construction at 10-foot intervals and at changes in formation. A split of each sample shall be submitted to the Department upon completion of each well.
- 3) The Department shall be granted measurement access to any authorized POA wells constructed under this permit upon reasonable notice by Department staff.

**References Used:** \_\_\_\_\_

Brooks, H.C., McIntyre, J.R., Walker, G.W., 1976, Geology of the Oregon part of the Baker 1 degree by 2 degree quadrangle, Geologic Map Series GMS-7, Oregon Department of Geology and Mineral Industries, Portland, OR., map scale 1:250,000.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

Iverson, J.I. 2023, Clarification of current policy for determining over-appropriation in section B1a of the PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS.

Application G-19377, local well logs, GWIS water level database

**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:** \_\_\_\_\_

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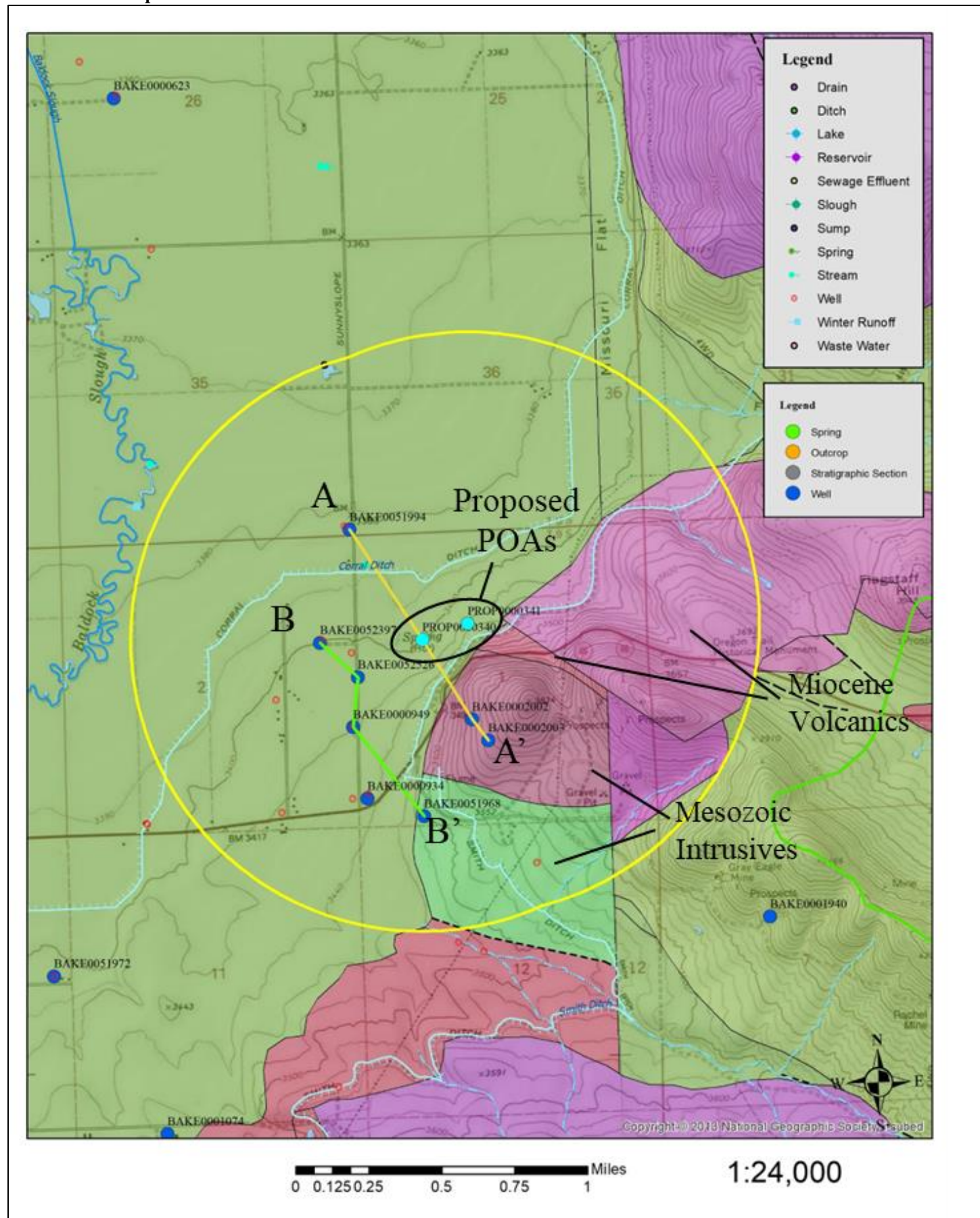
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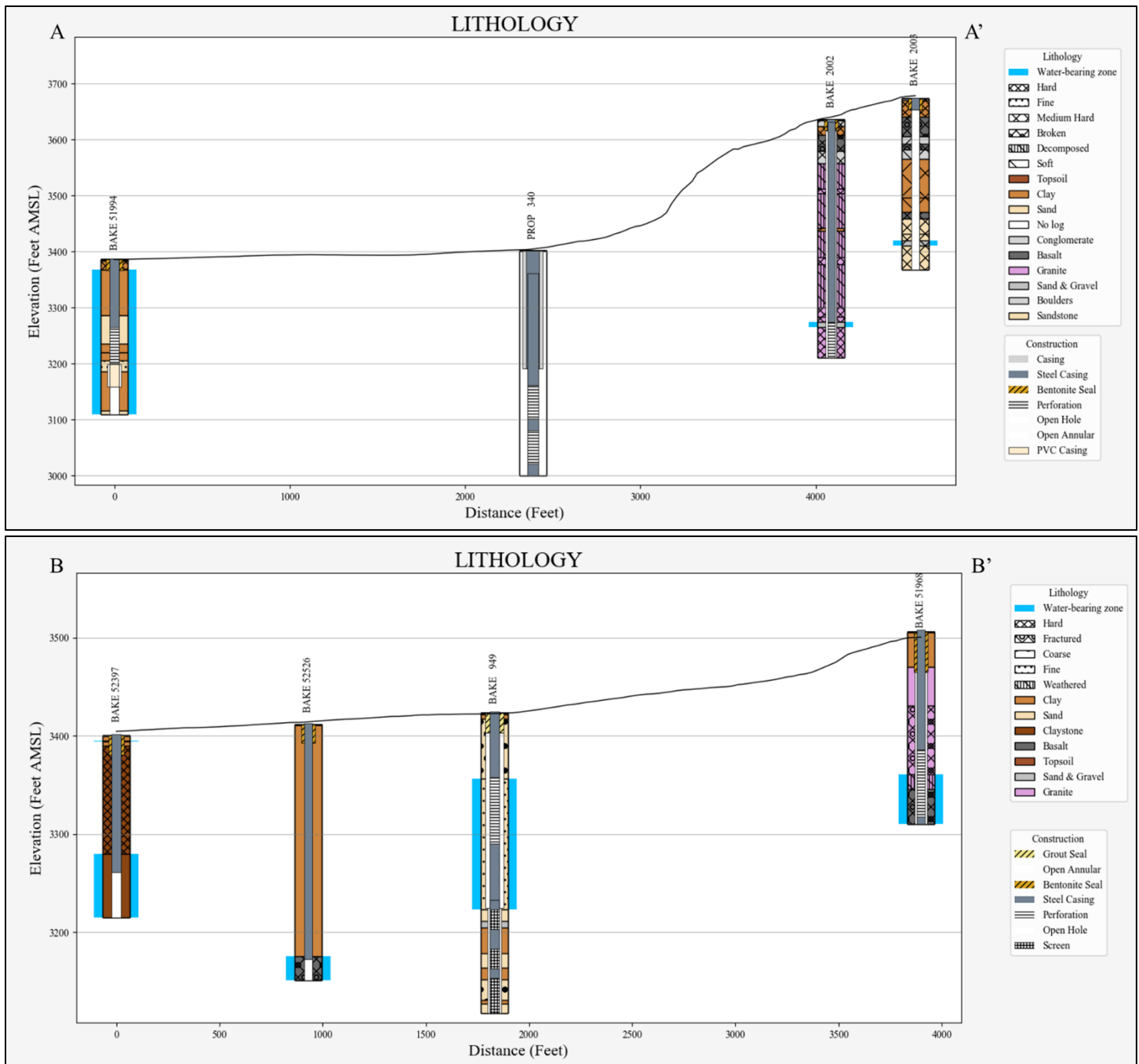
D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.****Water Availability Tables**

BALDOCK SL > POWDER R - AT MOUTH						
Watershed ID #: 30920330			Basin: POWDER		Exceedance Level: 80	
Time: 1:59 PM					Date: 07/24/2023	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	0.58	0.24	0.34	0.00	0.00	0.34
FEB	2.18	0.24	1.94	0.00	0.00	1.94
MAR	4.32	0.28	4.04	0.00	0.00	4.04
APR	10.90	3.12	7.78	0.00	0.00	7.78
MAY	3.49	4.70	-1.21	0.00	0.00	-1.21
JUN	0.75	5.31	-4.56	0.00	0.00	-4.56
JUL	0.17	3.02	-2.85	0.00	0.00	-2.85
AUG	0.07	1.30	-1.23	0.00	0.00	-1.23
SEP	0.06	0.83	-0.77	0.00	0.00	-0.77
OCT	0.06	0.49	-0.43	0.00	0.00	-0.43
NOV	0.17	0.24	-0.07	0.00	0.00	-0.07
DEC	0.35	0.24	0.11	0.00	0.00	0.11
ANN	3,770	1,210	3,090	0	0	3,090

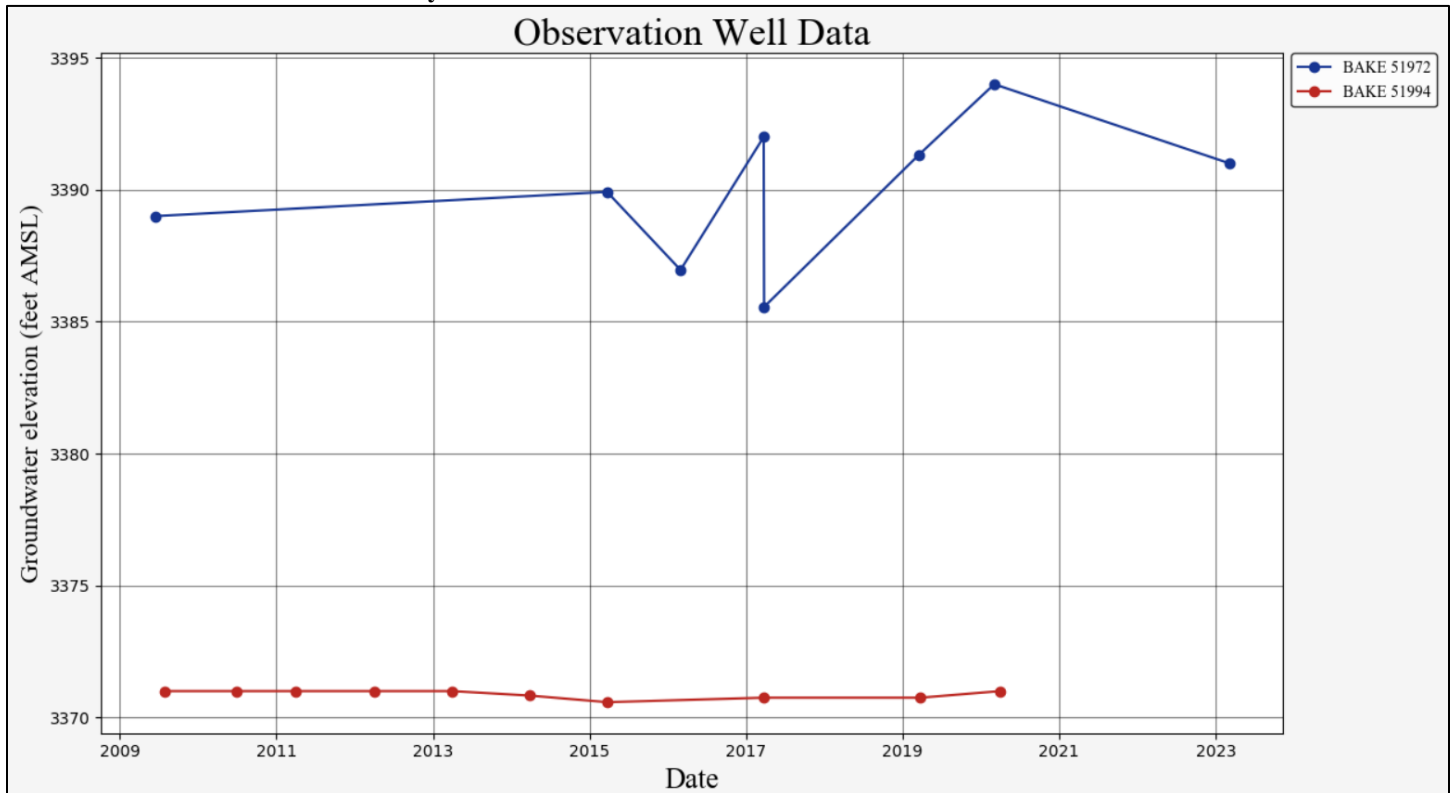


## Well Location Map

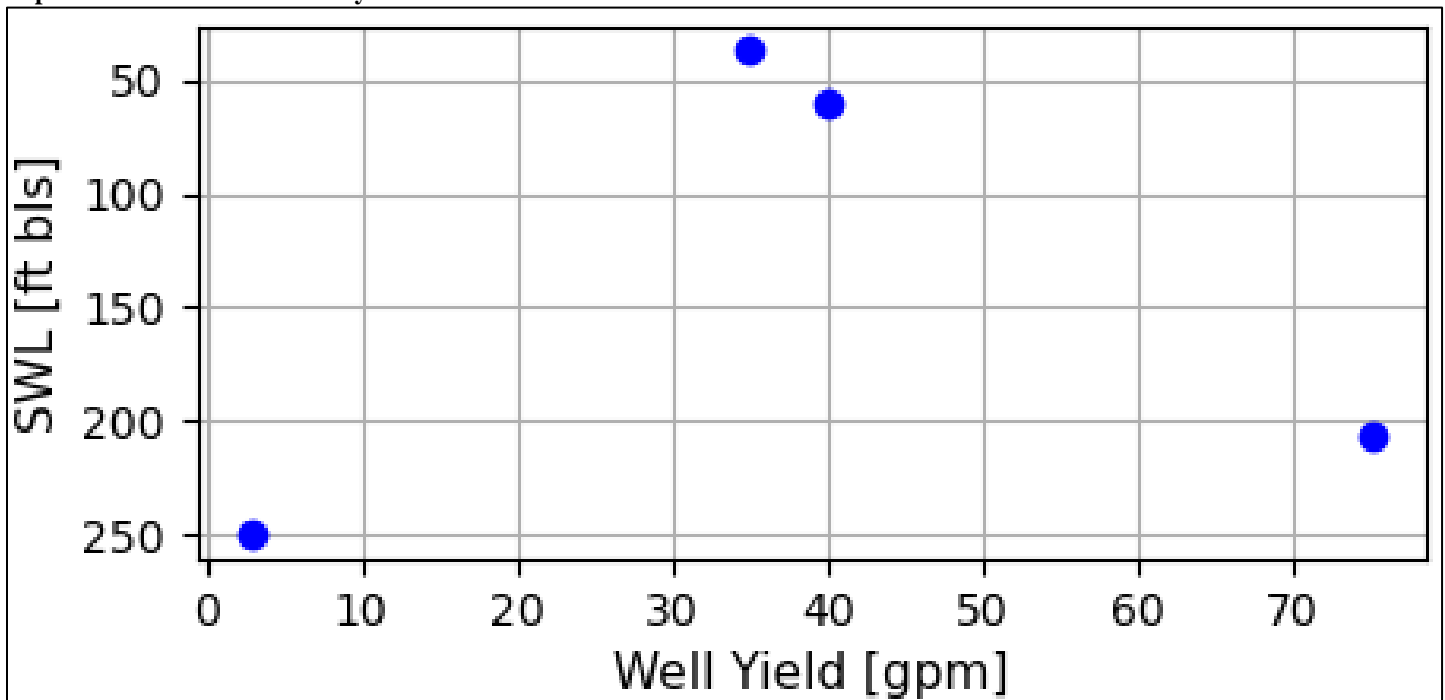


**Cross-Section**

The proposed POA wells lie within a complex geologic setting with faults juxtaposing rocks of disparate ages and hydrogeologic characteristics on the eastern margin of the Baker Valley. The geometry of this contact is lost beneath the valley-fill alluvial sequence to the west, where there is little data available concerning the presence or depth of bedrock lithologies.

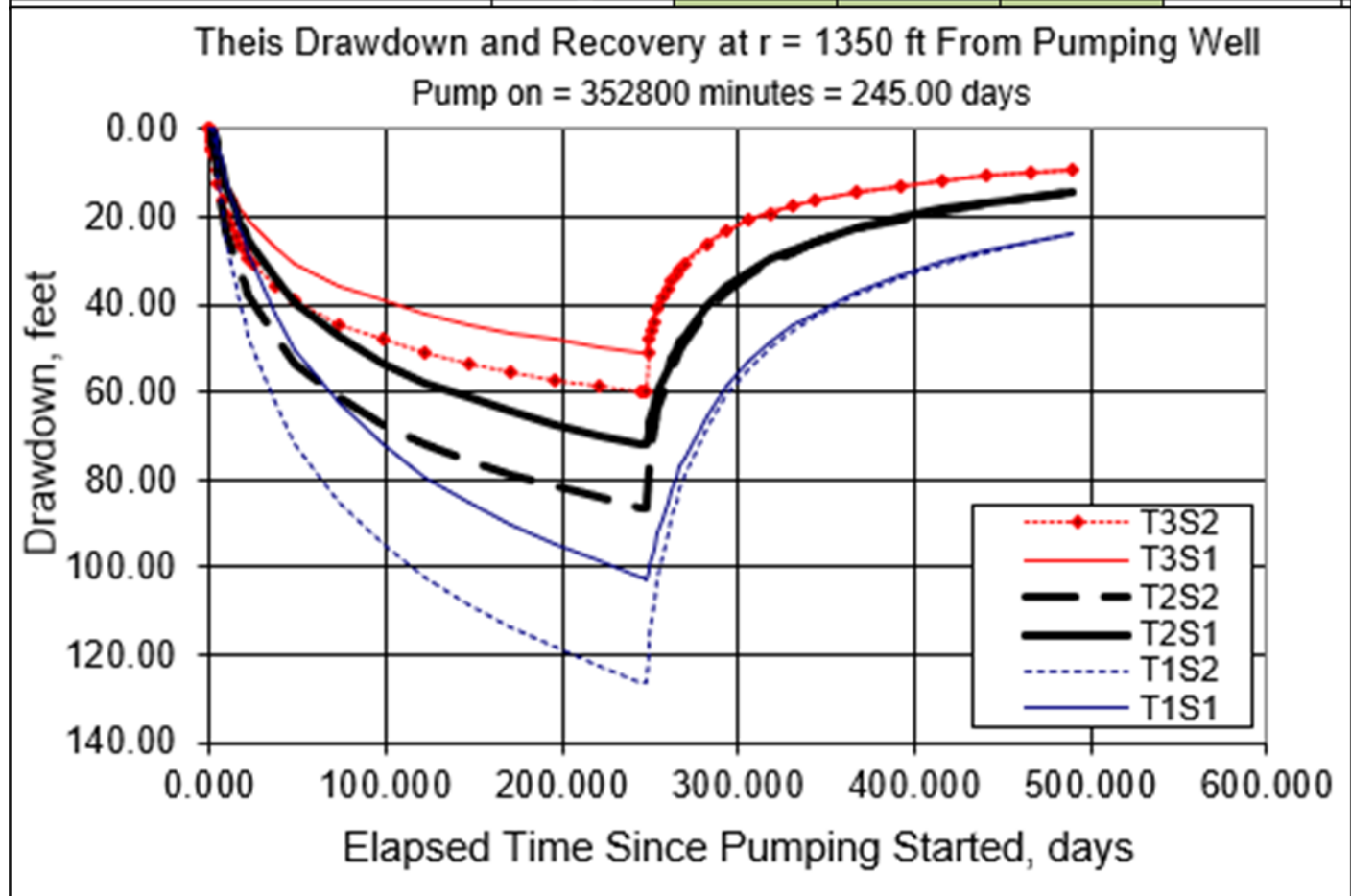
**Water-Level Measurements in Nearby Wells**

Static water level elevations for alluvial wells upgradient (BAKE 51972) and downgradient (BAKE 51994) from the proposed POA wells suggest that groundwater levels within the alluvial sequence are relatively stable.

**Reported Well Yields in Nearby Granite and Basalt Wells**

**Theis Interference Analysis**

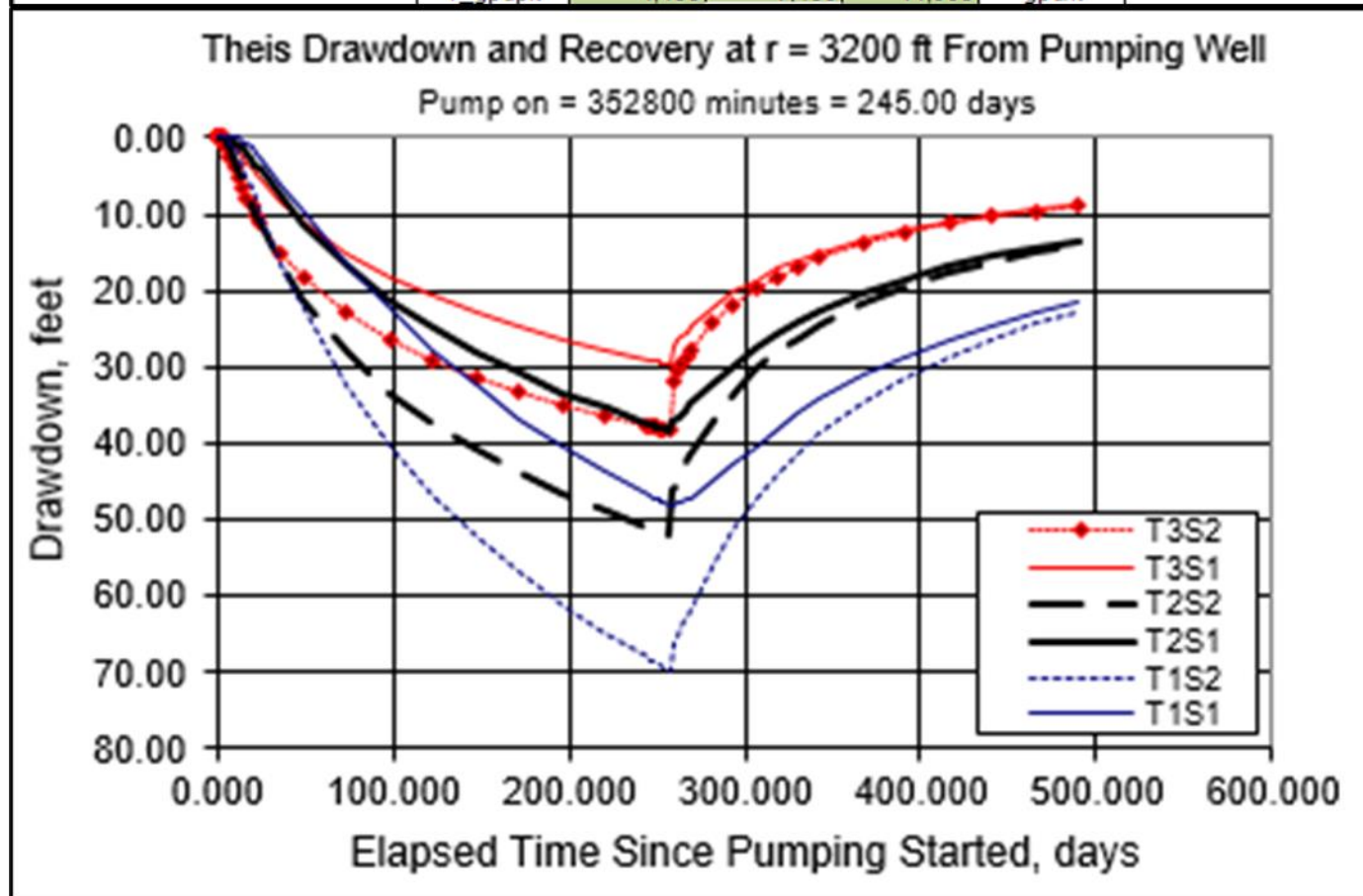
<b>Input Data:</b>	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		245		d
Radial distance from pumped well:	r		1350.00		ft
Pumping rate	Q		3.1		cfs
Hydraulic conductivity	K	15	25	40	ft/day
Aquifer thickness	b		40		ft
Storativity	S 1		0.01000		
	S 2		0.00500		



This time drawdown estimates of drawdown experienced at the nearest basalt well, BAKE 52526. This well belongs to the applicant and lies on the same tax lot as the nearest POA well.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		245		d	
Radial distance from pumped well:	r		3200.00		ft	Q conversions
Pumping rate	Q		3.1		cfs	1,368.84 gpm
Hydraulic conductivity	K	15	25	40	ft/day	3.05 cfs
Aquifer thickness	b		40		ft	183.00 cfm
Storativity	S_1		0.01000			263,520.00 cfd
	S_2		0.00500			6.05 af/d
Transmissivity Conversions	T_f2pd	600	1,000	1,600	ft <sup>2</sup> /day	
	T_ft2pm	0.4167	0.6944	1.1111	ft <sup>2</sup> /min	
	T_gpdft	4,488	7,480	11,968	gpd/ft	



This time drawdown estimates of drawdown experienced at the nearest basalt well not belonging to the applicant, BAKE 51968. A plurality of estimates fall between 35-50' of expected drawdown at this well based on the most liberal pumping regime from the nearest POA well.

## Stream Depletion (Hunt) Model Analysis

Parameter	Scenario 1	Scenario 2	Scenario 3	Unit	Description
Plot Title	G-19377 to Baldock Slough				Plot title
Qw		3.05		cfs	Net steady pumping rate of well
tpon		245		days	Time pump on (pumping duration)
a	5400	5400	5400	ft	Perpendicular distance from well to stream
d		250		ft	Well depth
K	15	25	40	ft/day	Aquifer hydraulic conductivity
b	40	40	40	ft	Aquifer saturated thickness
S	0.005	0.005	0.005		Aquifer storativity or specific yield
Kva	1	1	1	ft/day	Aquitard vertical hydraulic conductivity
ba	200	200	200	ft	Aquitard saturated thickness
babs	190	190	190	ft	Aquitard thickness below stream
n	0.2	0.2	0.2		Aquitard porosity
ws	15	15	15	ft	Stream width

## Transient Stream Depletion (Jenkins, 1970; Hunt, 1999, 2003)

## G-19377 to Baldock Slough

