

Groundwater Application Review Summary Form

Application # G- 18439

GW Reviewer M. Thoma Date Review Completed: 07.25.17

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).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date July 25, 2017
 FROM: Groundwater Section Michael Thoma
 Reviewer's Name
 SUBJECT: Application G- 18439 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: Sabine Collings County: Jackson

A1. Applicant(s) seek(s) 0.045 cfs from 1 well(s) in the Rogue Basin,
Evans Creek subbasin

A2. Proposed use Irrigation (10 ac) Seasonality: March 1 – October 31 (244 d)

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	JACK 4688	1	Bedrock	0.04	35S/04W-03 NWNW	547'S, 1300'E of NW cor S 03
2						
3						

* 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	1250	53	24	10/29/1985	94	0-25	+1-59			20		A

Use data from application for proposed wells.

A4. **Comments:** _____

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: _____

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 (7-yr SWL); 7J (Scenic); 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:** There are no OWRD Observation Well data in the area of the proposed POA so groundwater over-appropriation could not be determined. There are also few permitted groundwater POAs in the area (the nearest are > 1/2 mile away) and taxlot density is relatively low (implying few domestic wells) so injury to existing permitted or domestic groundwater users is unlikely.

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 Wimer Pluton	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The well log for the applicant's proposed POA reports static level considerably above first water, indicating confined aquifer conditions. Geologic maps for this area show younger alluvial material overlying the pluton and the well log further reports 17 ft of clay over granite; the clay likely represents a significant confining layer

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	Pleasant Creek	1200	1180-1220	2070	<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: GW elevations are estimated to be coincident with SW elevations suggesting that groundwater may flow to or from surface water

Water Availability Basin the well(s) are located within: Pleasant Cr > Evans Cr – At Mouth (ID#71009)

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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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	<input type="checkbox"/>	<input type="checkbox"/>	IS71009	1.20	<input checked="" type="checkbox"/>	0.87	<input checked="" type="checkbox"/>	< 1%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Interference @ 30 d was calculated using the Hunt (2003) stream-depletion model and aquifer parameter values that represent a fractured rock aquifer overlain by younger alluvial sediment. Model results are shown in Section E

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"/>

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
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS		No surface water sources beyond 1 mile were evaluated											
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
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: _____

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 proposed POA would be producing from an aquifer that has been found to be hydraulically connected to surface water, specifically Pleasant Creek, at a distance of < 1 mile. The proposed rate is > 1% of the minimum monthly stream flow and the pertinent instream water right so there is a preponderance of evidence for the Department to assume that the proposed use will have the Potential for Substantial Interference with surface water. If the requested rate were reduced below 0.008 cfs (5760 gallons/day) then PSI would not be assumed for this review.

References Used: _

Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer*. Journal of Hydrologic Engineering. Vol 8(1), pp 12-19

Oregon Department of Geology and Mineral Industries, *Geologic Map of Oregon*. <http://www.oregongeology.org/geologicmap/>

OWRD Well Log Database – Accessed 7/25/2017.

Wiley, T. J. 2006. *Preliminary Geologic Map of the Wimer and McConville Peak 7.5' Quadrangles, Jackson and Josephine Counties, Oregon*. Dept. of Geol. and Mineral Industries, Open-file Report O-06-05

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.**

E. ATTACHMENTS

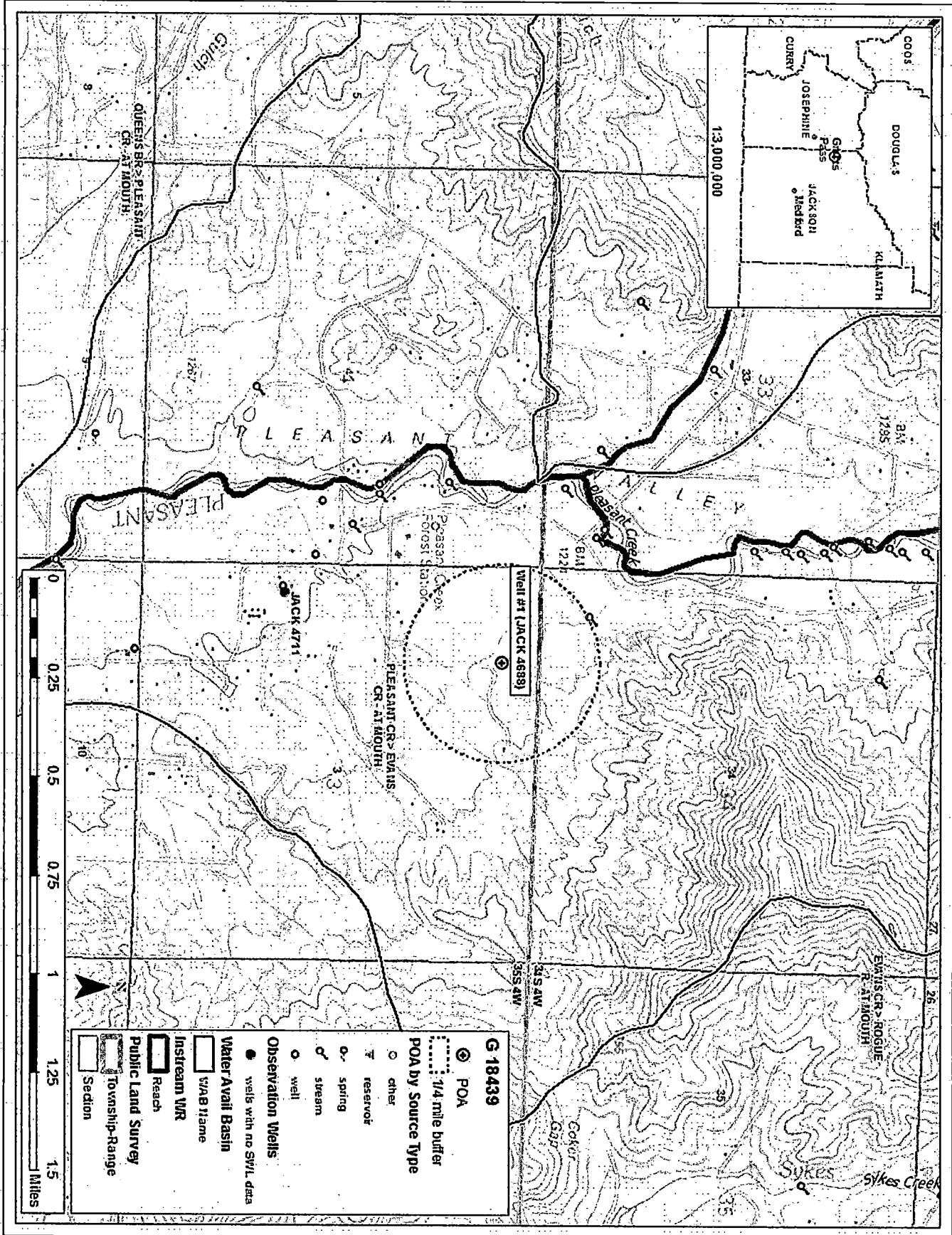
Water-Level Trends in Nearby Wells

There are no observation well data in the area

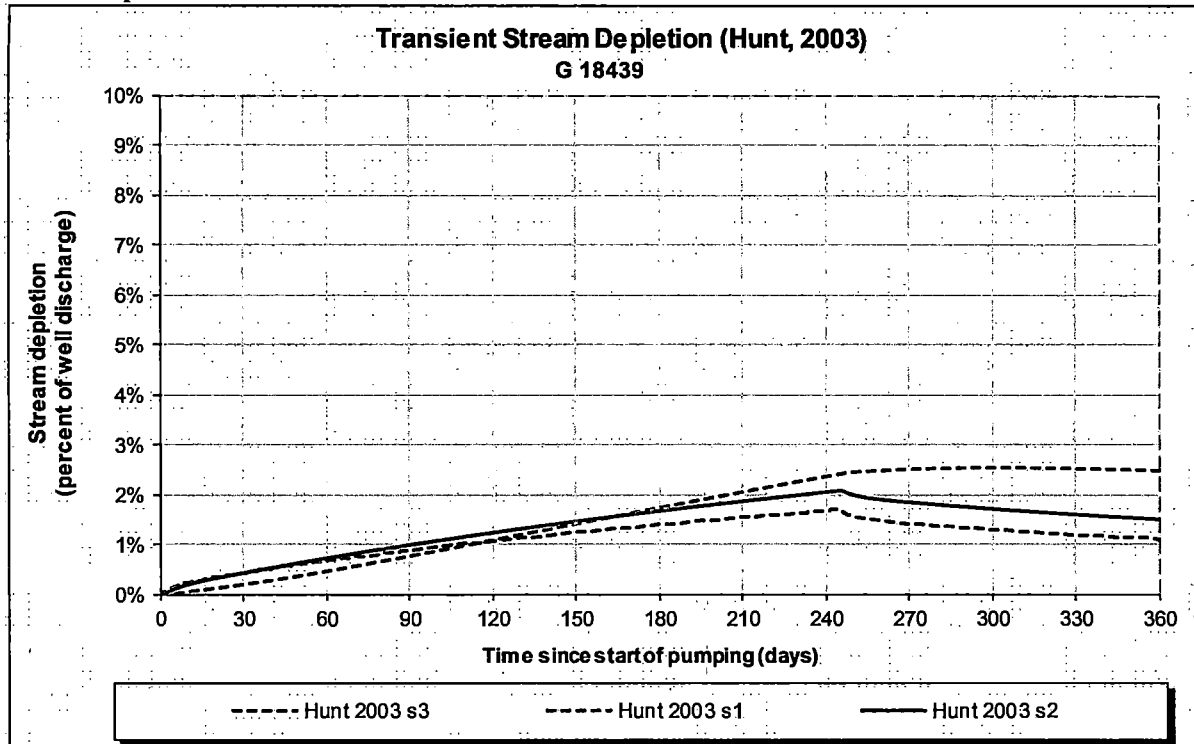
Water Availability Tables

<h2 style="margin: 0;">Water Availability Analysis</h2> <h3 style="margin: 0;">Detailed Reports</h3>																																																																																																								
PLEASANT CR > EVANS CR - AT MOUTH ROGUE BASIN																																																																																																								
Water Availability as of 7/25/2017																																																																																																								
Watershed ID #: 71009 (Map)						Exceedance Level: 80% ▾																																																																																																		
Date: 7/25/2017						Time: 3:21 PM																																																																																																		
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<h3 style="margin: 0;">Water Availability Calculation</h3> <p style="margin: 0;">Monthly Streamflow in Cubic Feet per Second</p> <p style="margin: 0;">Annual Volume at 50% Exceedance in Acre-Feet</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #333; color: white;"> <th style="padding: 5px;">Month</th> <th style="padding: 5px;">Natural Stream Flow</th> <th style="padding: 5px;">Consumptive Uses and Storages</th> <th style="padding: 5px;">Expected Stream Flow</th> <th style="padding: 5px;">Reserved Stream Flow</th> <th style="padding: 5px;">Instream Flow Requirement</th> <th style="padding: 5px;">Net Water Available</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">JAN</td><td style="padding: 5px;">29.20</td><td style="padding: 5px;">0.47</td><td style="padding: 5px;">28.70</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">60.00</td><td style="padding: 5px;">-31.30</td></tr> <tr><td style="padding: 5px;">FEB</td><td style="padding: 5px;">51.50</td><td style="padding: 5px;">0.76</td><td style="padding: 5px;">50.70</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">60.00</td><td style="padding: 5px;">-9.26</td></tr> <tr><td style="padding: 5px;">MAR</td><td style="padding: 5px;">45.80</td><td style="padding: 5px;">0.62</td><td style="padding: 5px;">45.20</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">60.00</td><td style="padding: 5px;">-14.80</td></tr> <tr><td style="padding: 5px;">APR</td><td style="padding: 5px;">22.70</td><td style="padding: 5px;">0.73</td><td style="padding: 5px;">22.00</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">47.00</td><td style="padding: 5px;">-25.00</td></tr> <tr><td style="padding: 5px;">MAY</td><td style="padding: 5px;">10.30</td><td style="padding: 5px;">1.14</td><td style="padding: 5px;">9.16</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">16.40</td><td style="padding: 5px;">-7.24</td></tr> <tr><td style="padding: 5px;">JUN</td><td style="padding: 5px;">4.08</td><td style="padding: 5px;">1.57</td><td style="padding: 5px;">2.51</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">8.60</td><td style="padding: 5px;">-6.09</td></tr> <tr><td style="padding: 5px;">JUL</td><td style="padding: 5px;">1.77</td><td style="padding: 5px;">2.09</td><td style="padding: 5px;">-0.32</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">2.91</td><td style="padding: 5px;">-3.23</td></tr> <tr><td style="padding: 5px;">AUG</td><td style="padding: 5px;">1.20</td><td style="padding: 5px;">1.73</td><td style="padding: 5px;">-0.53</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">1.76</td><td style="padding: 5px;">-2.29</td></tr> <tr><td style="padding: 5px;">SEP</td><td style="padding: 5px;">0.87</td><td style="padding: 5px;">1.15</td><td style="padding: 5px;">-0.28</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">1.20</td><td style="padding: 5px;">-1.48</td></tr> <tr><td style="padding: 5px;">OCT</td><td style="padding: 5px;">1.29</td><td style="padding: 5px;">0.41</td><td style="padding: 5px;">0.88</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">2.21</td><td style="padding: 5px;">-1.33</td></tr> <tr><td style="padding: 5px;">NOV</td><td style="padding: 5px;">4.12</td><td style="padding: 5px;">0.07</td><td style="padding: 5px;">4.05</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">12.20</td><td style="padding: 5px;">-8.15</td></tr> <tr><td style="padding: 5px;">DEC</td><td style="padding: 5px;">15.60</td><td style="padding: 5px;">0.24</td><td style="padding: 5px;">15.40</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">60.00</td><td style="padding: 5px;">-44.60</td></tr> <tr><td style="padding: 5px;">ANN</td><td style="padding: 5px;">27,300.00</td><td style="padding: 5px;">665.00</td><td style="padding: 5px;">26,600.00</td><td style="padding: 5px;">0.00</td><td style="padding: 5px;">20,000.00</td><td style="padding: 5px;">7,180.00</td></tr> </tbody> </table>							Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available	JAN	29.20	0.47	28.70	0.00	60.00	-31.30	FEB	51.50	0.76	50.70	0.00	60.00	-9.26	MAR	45.80	0.62	45.20	0.00	60.00	-14.80	APR	22.70	0.73	22.00	0.00	47.00	-25.00	MAY	10.30	1.14	9.16	0.00	16.40	-7.24	JUN	4.08	1.57	2.51	0.00	8.60	-6.09	JUL	1.77	2.09	-0.32	0.00	2.91	-3.23	AUG	1.20	1.73	-0.53	0.00	1.76	-2.29	SEP	0.87	1.15	-0.28	0.00	1.20	-1.48	OCT	1.29	0.41	0.88	0.00	2.21	-1.33	NOV	4.12	0.07	4.05	0.00	12.20	-8.15	DEC	15.60	0.24	15.40	0.00	60.00	-44.60	ANN	27,300.00	665.00	26,600.00	0.00	20,000.00	7,180.00
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Well Location Map



Stream-depletion Model Results



Output for Stream Depletion, Scenerio 2 (s2):					Time pump on (pumping duration) = 244 days							
Days	30	60	90	120	150	180	210	240	270	300	330	360
J:SD	64.3%	74.3%	78.9%	81.7%	83.6%	85.0%	86.1%	87.0%	25.8%	14.9%	10.4%	8.0%
H SD 1999	1.2%	2.1%	2.8%	3.4%	3.9%	4.4%	4.8%	5.2%	4.5%	3.9%	3.5%	3.2%
H SD 2003	0.42%	0.71%	0.93%	1.23%	1.45%	1.66%	1.86%	2.04%	1.84%	1.71%	1.59%	1.50%
Qw, 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
H SD 99, cfs	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
H SD 03, cfs	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	0.05	0.05	0.05	cfs
Time pump on (pumping duration)	tpon	244	244	244	days
Perpendicular from well to stream	a	2070	2070	2070	ft
Well depth	d	133	133	133	ft
Aquifer hydraulic conductivity	K	10	50	100	ft/day
Aquifer saturated thickness	b	200	200	200	ft
Aquifer transmissivity	T	2000	10000	20000	ft ² /day
Aquifer storativity or specific yield	S	0.03	0.03	0.03	
Aquitard vertical hydraulic conductivity	Kva	0.1	0.1	0.1	ft/day
Aquitard saturated thickness	ba	20	20	20	ft
Aquitard thickness below stream	babs	15	15	15	ft
Aquitard porosity	n	0.1	0.1	0.1	
Stream width	ws	20	20	20	ft
Streambed conductance (lambda)	sbc	0.133	0.133	0.133	ft/day
Stream depletion factor	sdf	64.274	12.855	6.427	days
Streambed factor	sbf	0.138	0.028	0.014	
input #1 for Hunt's Q_4 function	t'	1.56E-02	7.78E-02	1.56E-01	
input #2 for Hunt's Q_4 function	K'	1.07E+01	2.14E+00	1.07E+00	
input #3 for Hunt's Q_4 function	epsilon'	3.00E-01	3.00E-01	3.00E-01	
input #4 for Hunt's Q_4 function	lamda'	1.38E-01	2.76E-02	1.38E-02	