

Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17591

ROUTED TO: Kerry Kavanaugh

TOWNSHIP/
RANGE-SECTION: 37S/4W - 19

CONDITIONS ATTACHED?: yes no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: Ken Woody

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 12/14/2012
 FROM: Ground Water/Hydrology Section Jen Woody
 SUBJECT: Application G- 17591 Reviewer's Name Jen Woody
 Supersedes review of n/a 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 ground water 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: Boyd Family 2001 Trust County: Jackson

- A1. Applicant(s) seek(s) 0.10 cfs from 1 well(s) in the Rogue Basin,
 _____ subbasin Quad Map: Applegate
- A2. Proposed use irrigation Seasonality: April 1 – October 31
- 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 61302		granitic	0.10	T37S/R4W-S 19 SWSW	1149' N, 988' E fr SW cor S 19
2						
3						
4						
5						

* 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	1730	75	25.95	10/31/2012	220	0-41	0-58	0-220	200-220	60	?	AIR

Use data from application for proposed wells.

A4. **Comments:** _____

A5. **Provisions of the Rogue** _____ Basin rules relative to the development, classification and/or management of ground water 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. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. Based upon available data, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or
- d. will, if properly conditioned, avoid injury to existing ground water rights or to the ground water resource:
 - i. The permit should contain condition #(s) 7J, 7C, 7P, 7T;
 - 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 ground water production from no deeper than _____ ft. below land surface;
- b. Condition to allow ground water production from no shallower than _____ ft. below land surface;
- c. Condition to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks:** Nearby, long-term groundwater level data are not available. WRD’s well log database contains 5 wells in T37S/ R4W Section 19, and 11 wells in T37S/ 5W Section 24, indicating low well density. Median yet is about 35 gpm in this data set, so the granitic aquifer is reasonably productive in this area. The nearest permitted well is more than ¼ mile away, and the cone of depression in a fractured rock aquifer is expected to be steep and narrow. Therefore, direct interference with neighboring wells is not likely. Given the neighboring taxlot sizes, it is also unlikely this well will interfere with nearby domestic wells, although their exact locations are unknown. If issued, the permit should be conditioned to require annual spring water level measurements (7C) to monitor how new usage is affecting groundwater levels in the long-term.

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Granitic (likely Grayback pluton)	<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"/>

Basis for aquifer confinement evaluation: The driller reports first water at 75 feet bls, static water on 10/31/2012 was 25.95 feet bls. The well is cased and sealed through the weathered granite zone (0-41 feet), and open hole through competent granite. The degree of fracturing in the competent granite is unknown, although the well log reports a fractured, water-bearing zone from 75-121 feet between land surface. The static water level is tens of feet above the water bearing zone, indicating the aquifer at this location is more confined than unconfined.

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	Miner's Creek	1705	1760	1100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Taylor Gulch	1705	1720	100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Caris Creek	1705	1600	3500	<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"/>
						<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"/>

Basis for aquifer hydraulic connection evaluation: The aquifer is more confined than unconfined at this location, and the water bearing zone lies tens of feet below Miner's Creek and Taylor Gulch. Hydraulic connection at these locations, if any, is likely inefficient. The fractured granitic aquifer probably discharges down gradient to Miner's or Caris Creek. Taylor Gulch was dry during April and October site visits, indicating little groundwater contribution. The lack of streambed development also suggests it is a runoff gulch and not a year-round surface water source.

Water Availability Basin the well(s) are located within: Watershed ID #: 249 APPLGATE R > ROGUE 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 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	3	<input type="checkbox"/>	<input type="checkbox"/>	n/a	n/a	<input type="checkbox"/>	45.80	<input type="checkbox"/>	9.9%	<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"/>
	<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: Site specific aquifer parameters are not available, but using a range of textbook values for fractured granitic materials and multiple stream depletion models, stream depletion at 30 days ranges from 0.18% (Hunt 2003) to 9.9% (Jenkins). The Jenkins results is overly conservative, but it does not trigger a PSI finding.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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:

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 ground water 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

References Used:

Freeze, R.A. and Cherry, J.A. , 1979, Groundwater.

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

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

Jenkins, C.T., 1968, Techniques for computing rate and volume of stream depletion by wells: Ground Water, v. 6, no. 2, p. 37-46.

Jenkins, C.T., 1970, Computation of rate and volume of stream depletion by wells: U.S. Geol. Survey Techniques of Water-Resources Investigations of the Unites States Geological Survey, Chapter D1, Book 4, 17 p.

Wiley, T.J., 2006, Preliminary geologic map of the Sexton Mountain, Murphy, Applegate, and Mount Isabelle 7.5 minute quadrangles, Jackson and Josephine Counties, Oregon , 13 p., 1:24,000.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not 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:**

- a. constitutes a health threat under Division 200 rules;
- b. commingles water from more than one ground water reservoir;
- c. permits the loss of artesian head;
- d. permits the de-watering of one or more ground water reservoirs;
- e. other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL** a. was, or was not constructed according to the standards in effect at the time of original construction or most recent modification.

b. I don't know if it met standards at the time of construction.

D6. **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

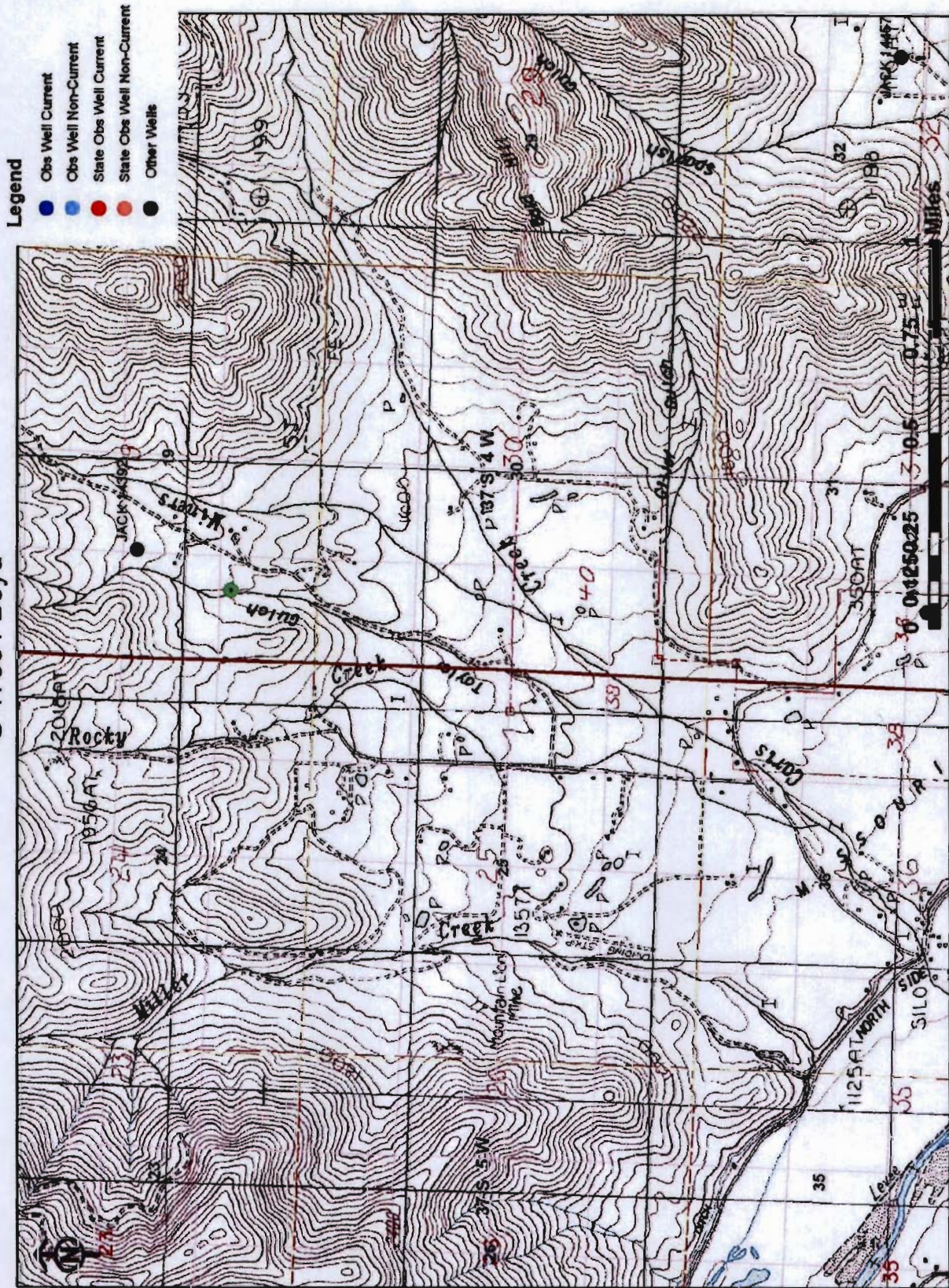
THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. Well construction deficiency has been corrected by the following actions: _____

_____, 200_____
(Enforcement Section Signature)

D8. **Route to Water Rights Section (attach well reconstruction logs to this page).**

G 17591 Boyd



Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

APPLEGATE R > ROGUE R - AT MOUTH

Watershed ID #: 249
Time: 9:21 AM

Basin: ROGUE

Exceedance Level: 80

Date: 12/13/2012

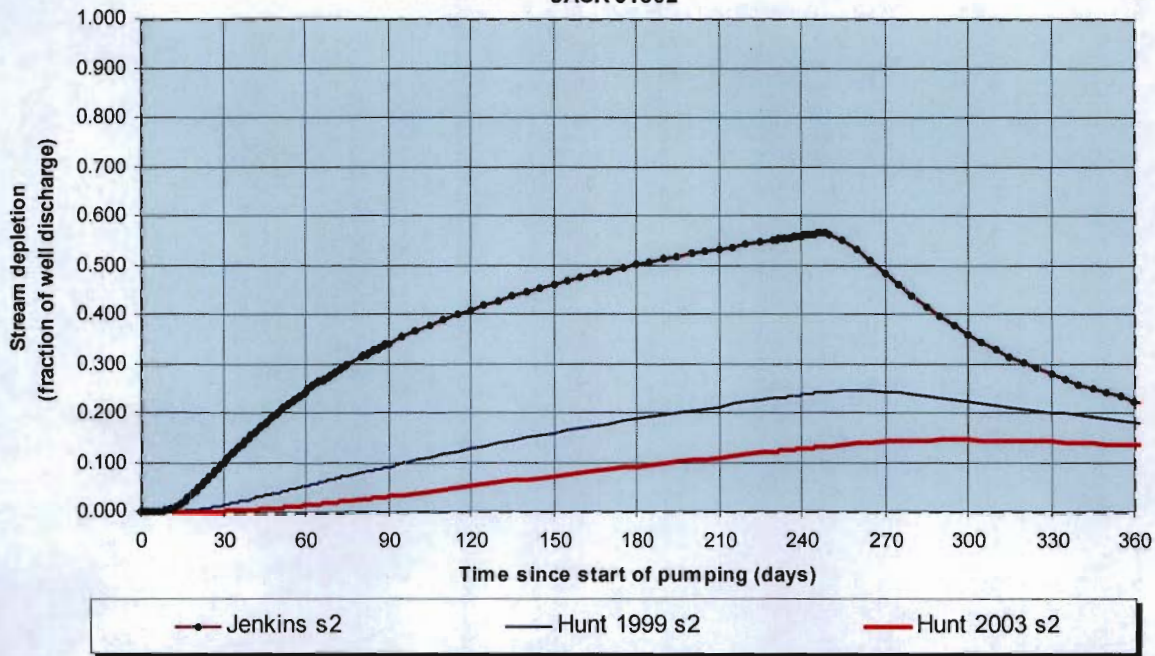
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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Monthly values are in cfs.

Storage is the annual amount at 50% exceedance in ac-ft.

JAN	373.00	5.11	368.00	0.00	300.00	67.90
FEB	674.00	439.00	235.00	0.00	300.00	-65.00
MAR	792.00	438.00	354.00	0.00	340.00	14.30
APR	662.00	460.00	202.00	0.00	340.00	-138.00
MAY	591.00	41.70	549.00	0.00	360.00	189.00
JUN	222.00	57.10	165.00	0.00	360.00	-195.00
JUL	91.80	75.70	16.10	0.00	120.00	-104.00
AUG	59.00	62.80	-3.85	0.00	120.00	-124.00
SEP	45.80	42.00	3.77	0.00	120.00	-116.00
OCT	56.00	15.40	40.60	0.00	360.00	-319.00
NOV	146.00	3.54	142.00	0.00	360.00	-218.00
DEC	244.00	4.37	240.00	0.00	300.00	-60.40
ANN	421,000	97,600	323,000	0	204,000	160,000

Transient Stream Depletion (Jenkins, 1970; Hunt, 1999, 2003)
JACK 61302



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 240 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	9.9%	24.3%	34.1%	40.9%	46.1%	50.1%	53.3%	56.0%	48.3%	35.8%	27.8%	22.4%
H SD 1999	1.4%	5.2%	9.2%	12.8%	15.9%	18.8%	21.3%	23.6%	24.3%	22.3%	20.2%	18.2%
H SD 2003	0.18%	1.39%	3.24%	5.26%	7.26%	9.20%	11.03%	12.77%	14.22%	14.55%	14.16%	13.51%
Qw, cfs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
H SD 99, cfs	0.001	0.005	0.009	0.013	0.016	0.019	0.021	0.024	0.024	0.022	0.020	0.018
H SD 03, cfs	0.000	0.001	0.003	0.005	0.007	0.009	0.011	0.013	0.014	0.015	0.014	0.014

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	45.00	45.00	45.00	gpm
Time pump on (pumping duration)	tpon	240	240	240	days
Perpendicular from well to stream	a	3500	3500	3500	ft
Well depth	d	220	220	220	ft
Aquifer hydraulic conductivity	K	0.01	5	200	ft/day
Aquifer saturated thickness	b	150	150	150	ft
Aquifer transmissivity	T	1.5	750	30000	ft*ft/day
Aquifer storativity or specific yield	S	0.01	0.01	0.01	
Aquitard vertical hydraulic conductivity	Kva	1	1	1	ft/day
Aquitard saturated thickness	ba	40	40	40	ft
Aquitard thickness below stream	babs	37	37	37	ft
Aquitard porosity	n	0.01	0.01	0.01	
Stream width	ws	10	10	10	ft
Streambed conductance (lambda)	sbc	0.270270	0.270270	0.270270	ft/day
Stream depletion factor	sdf	81666.666667	163.333333	4.083333	days
Streambed factor	sbf	630.630631	1.261261	0.031532	
input #1 for Hunt's Q_4 function	t'	0.000012	0.006122	0.244898	
input #2 for Hunt's Q_4 function	K'	204166.666667	408.333333	10.208333	
input #3 for Hunt's Q_4 function	epsilon'	1.000000	1.000000	1.000000	
input #4 for Hunt's Q_4 function	lamda'	630.630631	1.261261	0.031532	