

Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17855

ROUTED TO: Water Rights

TOWNSHIP/

RANGE-SECTION: 25/5E-34

CONDITIONS ATTACHED?: ☒ yes ☐ no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: Karl Wozniak

WATER RESOURCES DEPARTMENT

MEMO

Sept. 29, ~~2010~~ 2014

TO: Application G- 17855
FROM: GW: Karl Wozniak
(Reviewer's Name)
SUBJECT: Scenic Waterway Interference Evaluation

☒ YES

The source of appropriation is within or above a Scenic Waterway

☐ NO

☒ YES

Use the Scenic Waterway condition (Condition 7J)

☐ NO

☒ Per ORS 390.835, the Ground Water Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below.

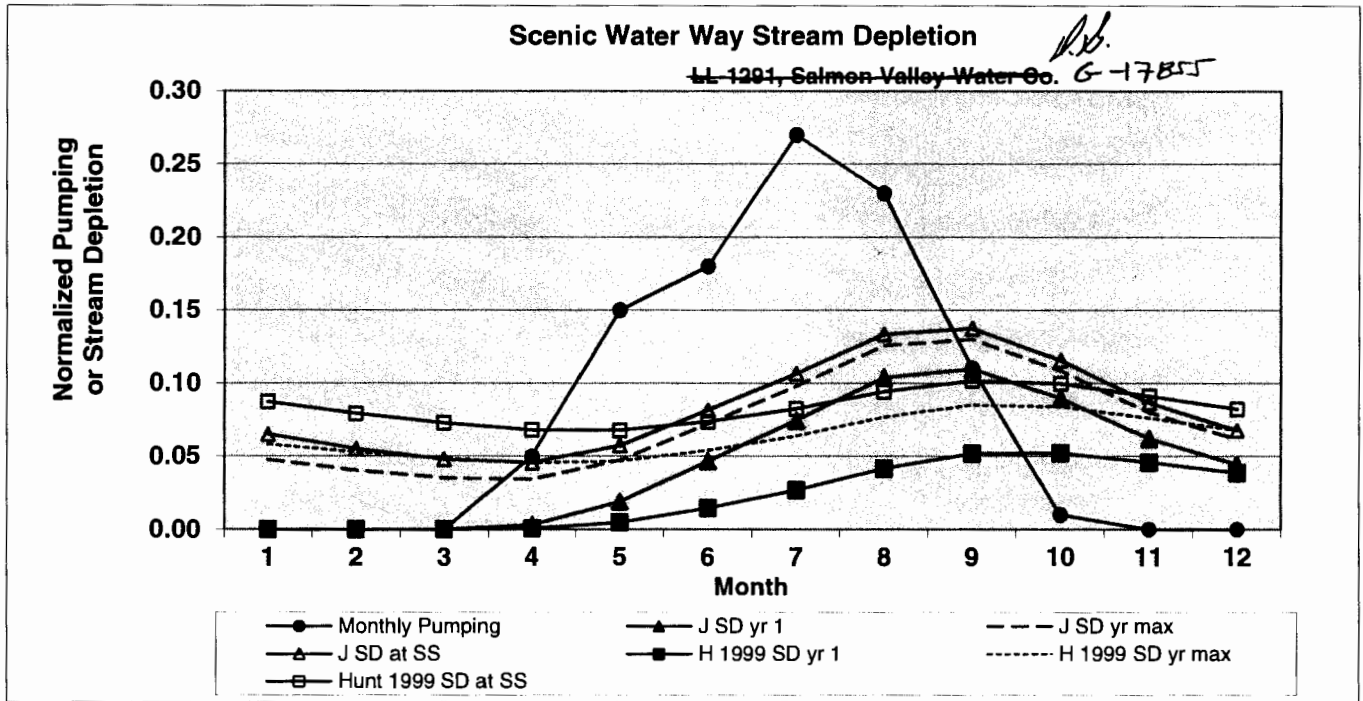
☐ Per ORS 390.835, the Ground Water Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water 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 Lisakamas 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
0.087	0.079	0.073	0.068	0.068	0.074	0.082	0.094	0.102	0.100	0.091	0.082



Region	4 Steady state stream depletion as a fraction of pumping normalized to crop water use consumption.												
Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Resid
Qw	0.00	0.00	0.00	0.05	0.15	0.18	0.27	0.23	0.11	0.01	0.00	0.00	0.00
Jenkins SD													
yr1	0.000	0.000	0.000	0.003	0.019	0.047	0.074	0.104	0.110	0.090	0.062	0.044	0.447
yrmax-1	0.048	0.040	0.035	0.034	0.047	0.072	0.098	0.126	0.130	0.109	0.080	0.061	0.119
yrmax	0.048	0.040	0.035	0.034	0.047	0.072	0.098	0.126	0.130	0.109	0.080	0.061	0.119
yrmax-yr1	0.048	0.040	0.035	0.031	0.028	0.026	0.024	0.022	0.020	0.019	0.018	0.017	0.328
J SD SS	0.065	0.055	0.048	0.046	0.057	0.081	0.107	0.134	0.138	0.116	0.087	0.068	0.000
Hunt SD 1999													
yr 1	0.000	0.000	0.000	0.001	0.005	0.015	0.027	0.042	0.052	0.052	0.046	0.039	0.723
yr max-1	0.058	0.053	0.049	0.046	0.047	0.054	0.064	0.077	0.085	0.084	0.076	0.068	0.241
yr max	0.058	0.053	0.049	0.046	0.047	0.054	0.064	0.077	0.085	0.084	0.076	0.068	0.241
yrmax-yr1	0.058	0.053	0.049	0.045	0.042	0.039	0.037	0.035	0.033	0.032	0.030	0.029	0.482
H99 SD SS	0.087	0.079	0.073	0.068	0.068	0.074	0.082	0.094	0.102	0.100	0.091	0.082	0.000

Parameters:		Values	Units	
Maximum number of years pumped	yrmax	25	years	
Days pumped each month	tpoff	30.4375	days/month	
Perpendicular from well to stream	a	1700	ft	
Well depth	d	75	ft	
Aquifer hydraulic conductivity	K	100	ft/day	
Aquifer saturated thickness	b	50	ft	
Aquifer transmissivity	T _{ft}	5,000	ft ² /day	= K*b
Aquifer transmissivity	T _{gal}	37,400	gpd/ft	= K*b
Aquifer storativity or specific yield	S	0.2		
Streambed conductivity (Hunt 1999)	Ks	1	ft/day	
Streambed thickness, Hunt 1999	bs	1	ft	
Stream width (Hunt 1999)	ws	5	ft	
Streambed conductance (lambda)	sbc	5.0000	ft/day	= Ks*ws/bs
Stream depletion factor	sdf	115.6000	days	= (a ² *S)/(T)
Streambed factor	sbfc	1.7000		= sbc*a/T

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date September 29, 2014

FROM: Groundwater Section Karl Wozniak
Reviewer's Name

SUBJECT: Application G- 17855 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: Steve & Paula Gagnon County: Clackamas

A1. Applicant(s) seek(s) 0.0344 cfs from 1 well(s) in the Sandy Basin,
Eagle Creek subbasin Quad Map: Cherryville

A2. Proposed use Irrigation Seasonality: June 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	CLAC 7298	1	Cascadian Volcanics	0.0344	02S/05E-34 NE/SW	1100' S, 1500' E fr W1/4 cor S 34
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	1700	40	39	11/01/1987	75	0-20	0-66	56-75	40-65 56-74	15	5	Pump

Use data from application for proposed wells.

A4. **Comments:** Applicant seeks 15 gpm for irrigation of 10 acres.

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: The well is greater than 1/4 mile from the nearest surface water source so the pertinent rules (OAR 690-502-0240) do not apply.

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) 7e;
 - 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 area around the well is underlain by Plio-Pleistocene lava flows (Boring Lava) associated with Lenhart Butte. We have no observation wells in the area. However, no permitted irrigation wells exist in the area, domestic well density is relatively low (84 wells in the OWRD well log database in sections 33 & 34), and well deepening are rare (2 in sections 33 & 34). A recently drilled well of similar depth, CLAC 66683 (about 1600 feet to the northwest of CLAC 7298) reported a static water level of 21 feet upon completion in February 2010. These facts suggest that groundwater is not likely to be over appropriated in the area. Well yields in the area (sections 33 & 34) range from 5-55 gpm with a median value of 15 gpm. Therefore, groundwater is likely to be available in the amount requested (15 gpm) and should be available within the capacity of the resource. Injury to other users is unlikely at the proposed rate.

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
	Cascade Volcanics	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The static water level reported on the well log is essentially coincident with the depth of the water-bearing zone. This seems consistent with other shallow wells in the area.

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	Bear Creek	1661	1500-1620	1700	☒	☐	☐	☐	☒
1	2	Unnamed Trib to Beaver Crk	1661	1520-1630	1700	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The elevation of the water table at the well (1661 feet) is slightly higher than reaches of two nearby perennial streams. Both streams become perennial in these nearby reaches which indicates local groundwater discharge, and hydraulic connection, to the streams.

Water Availability Basin the well(s) are located within: N FK EAGLE CR> EABLE CR- AT MOUTH & CEDAR CR> SANDY R- AT MOUTH (Well is within N FK EAGLE CR WAB but will likely interfere with both streams).

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	☐	☐			☐	3.45	☐	4	☐
1	2	☐	☐			☐	7.22	☐	4	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: The Hunt 1999 model was used to estimate pumping impacts on the stream. A reasonably efficient hydraulic connection was assumed (streambed thickness of 1 feet and a streambed hydraulic conductivity of 1 ft/day) since the streams have a relatively high gradient. Hydraulic conductivity is poorly known in this area but the model is not very sensitive to this parameter at the modeled distance from the streams.

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 groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions** _____

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.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

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

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

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:** _____

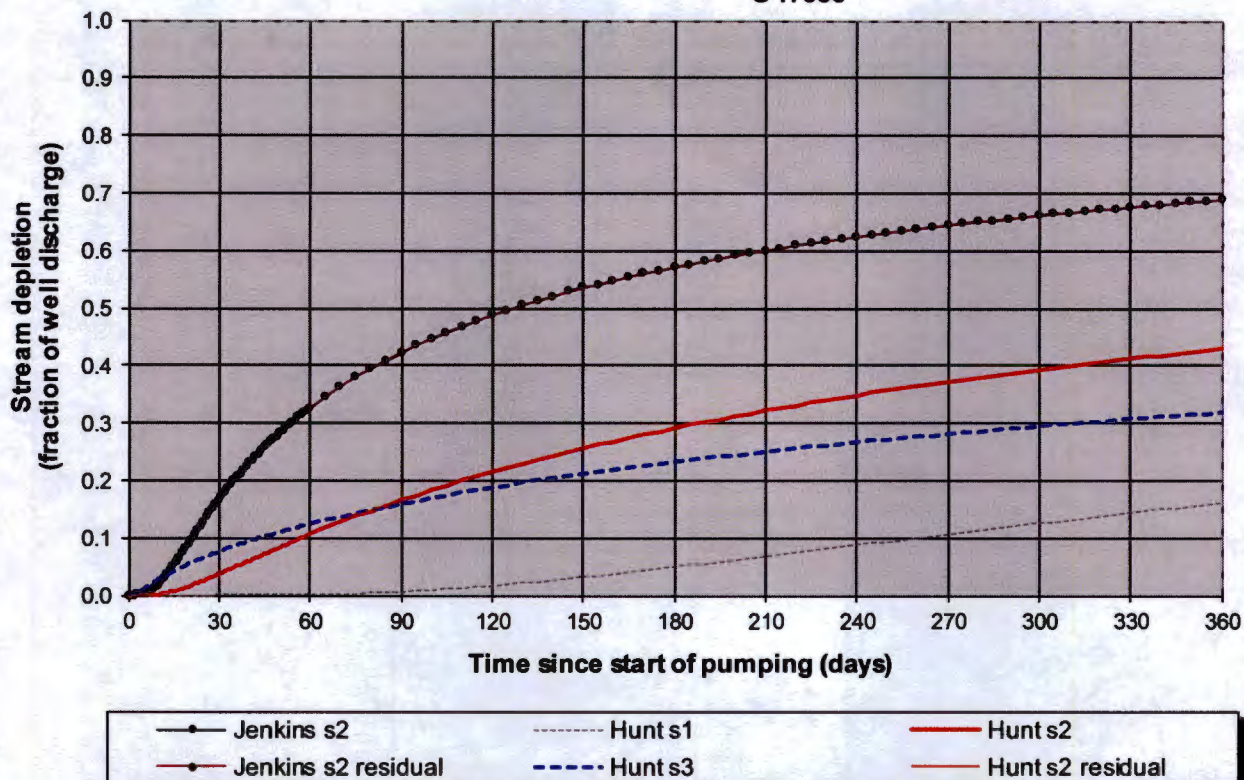
 _____D4. ☐ Route to the Well Construction and Compliance Section for a review of existing well construction.**Water Availability Tables****DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION**

Watershed ID #: 138 N FK EAGLE CR > EAGLE CR - AT MOUTH Exceedance Level: 80
 Time: 11:28 AM Basin: WILLAMETTE Date: 09/29/2014

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	68.70	0.07	68.60	0.00	45.00	23.60
FEB	69.70	0.05	69.60	0.00	45.00	24.60
MAR	70.80	0.03	70.80	0.00	45.00	25.80
APR	75.70	0.05	75.70	0.00	45.00	30.70
MAY	68.90	0.10	68.80	0.00	45.00	23.80
JUN	30.90	0.15	30.70	0.00	30.00	0.75
JUL	12.10	0.27	11.80	0.00	20.00	-8.17
AUG	5.14	0.22	4.92	0.00	10.00	-5.08
SEP	3.45	0.08	3.37	0.00	10.00	-6.63
OCT	4.75	0.02	4.73	0.00	10.00	-5.27
NOV	19.60	0.03	19.60	0.00	45.00	-25.40
DEC	66.70	0.08	66.60	0.00	45.00	21.60
ANN	57,000	70	57,000	0	23,800	34,000

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

G-17855



Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 360 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Jenk SD %	0.165	0.326	0.423	0.488	0.535	0.571	0.600	0.624	0.644	0.661	0.676	0.689
Jen SD cfs	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Hunt SD %	0.037	0.106	0.166	0.215	0.256	0.292	0.322	0.349	0.372	0.393	0.412	0.430
Hunt SD cfs	0.000	0.000	0.001	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	Qw	0.0034	0.0034	0.0034	cfs
Distance to stream	a	1700	1700	1700	ft
Aquifer hydraulic conductivity	K	5	50	500	ft/day
Aquifer thickness	b	100	100	100	ft
Aquifer transmissivity	T	500	5000	50000	ft ² /day
Aquifer storage coefficient	S	0.2	0.2	0.2	
Stream width	ws	5	5	5	ft
Streambed hydraulic conductivity	Ks	1	1	1	ft/day
Streambed thickness	bs	1	1	1	ft
Streambed conductance	sbc	5	5	5	ft/day
Stream depletion factor (Jenkins)	sdf	1156	115.6	11.56	days
Streambed factor (Hunt)	sbf	17	1.7	0.17	

G-17855, Gagnon

