



PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date March 19, 2015  
 FROM: Groundwater Section Aurora C. Bouchier / Karl C. Wozniak  
 SUBJECT: Application G- 17963 Reviewer's Name 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: Kathleen M. Cutsforth County: Clackamas

A1. Applicant(s) seek(s) 0.121 cfs from 1 well(s) in the Willamette Basin,  
Middle Willamette subbasin Quad Map: Canby

A2. Proposed use irrigation of 9.7 acres Seasonality: March 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 9477	1	Alluvium	0.121	T3S/R1E-S21 SW-SW	165' N, 1485' E fr SW cor S 21
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	165	140	90	6/6/1966	145	0-20	0-140	--	--	30	35	Bailer

Use data from application for proposed wells.

A4. **Comments:** CLAC 9477 is an existing well. This well is cased from land surface to a depth of 140 ft below land surface (bls). The top 20 ft are sealed with bentonite. The borehole is open from 140-145 ft bls, and is open to a sandy layer from 140-143 ft bls.

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 ¼ mile from a surface water source, and produces from a confined aquifer, so the pertinent rules (OAR 690-502-2040) 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) 7C, Seven Year Minimum Measurement;
  - 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 CLAC 9477 is underlain by a thick sequence of clay and silt beds with relatively thin beds of gravel and sand. The CLAC 9477 produces from a layer of course-grained sand from 140-143 feet bls, or 22-25 ft above mean sea level (amsl). This layer is below the elevation of the adjacent reach of the Willamette River (~50-53 ft amsl, with bathymetry mapped at 18 ft below the river surface), and is not likely to be in direct communication with the river. Similarly, it is also below the adjacent reach of the Molalla River (~62-64 ft amsl), and is not likely to be in direct communication. Nearby groundwater levels appear to be stable (see attached hydrograph). These factors indicate that the alluvial groundwater resource is not likely to be over appropriated. However, the capacity of the production zone is likely to be somewhat limited because the layer is relatively thin and the associated aquifer is confined. This suggests that it would be prudent to monitor groundwater levels for some time to assess the impact of this production.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**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	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer confinement evaluation:** The well log for MARI 9477 indicates the static water level is above the producing sand bed. Regionally, the principal water-bearing zones appear to be relatively thin gravel and sand beds in a thick sequence of low permeability clay and silt.

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	Willamette River	75	50-53	3,200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Molalla River	75	62-64	4,640	<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"/>

**Basis for aquifer hydraulic connection evaluation:** Published water-table maps indicate that groundwater in the alluvial aquifer flows toward, and discharges to, the Molalla and Willamette rivers.

**Water Availability Basin the well(s) are located within:** 181 (Willamette R> Columbia R-at mouth), and 69796 (Molalla R> Willamette 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	1	<input type="checkbox"/>	<input type="checkbox"/>	MF 181A	1500	<input type="checkbox"/>	4,890	<input type="checkbox"/>	<25	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	IS69796 A	100	<input type="checkbox"/>	134	<input type="checkbox"/>	<<25	<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"/>		<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: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%



**D. WELL CONSTRUCTION, OAR 690-200**

D1. Well #: 1 Logid: CLAC 9477

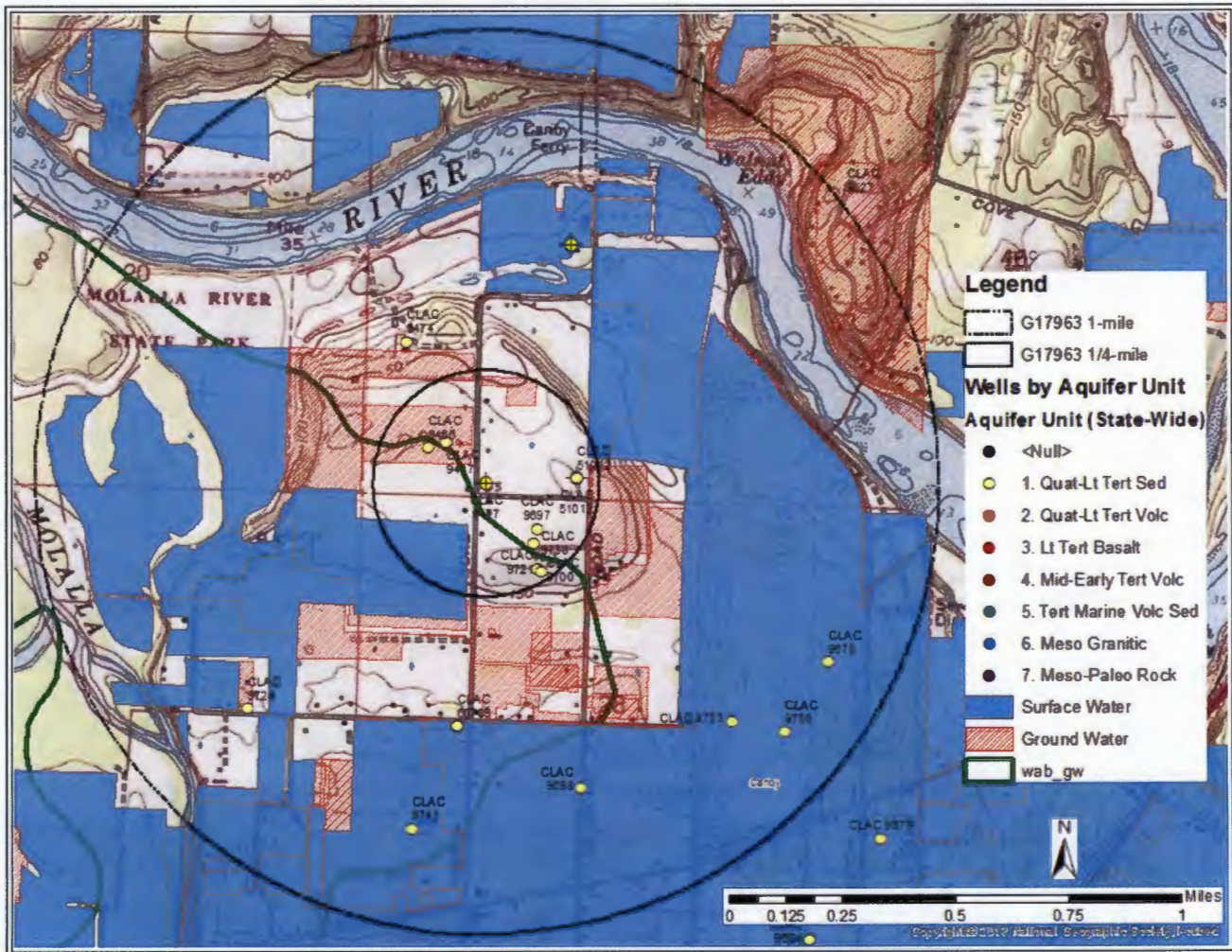
D2. THE WELL does not appear to meet current well construction standards based upon:

- 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.

**Location Map**



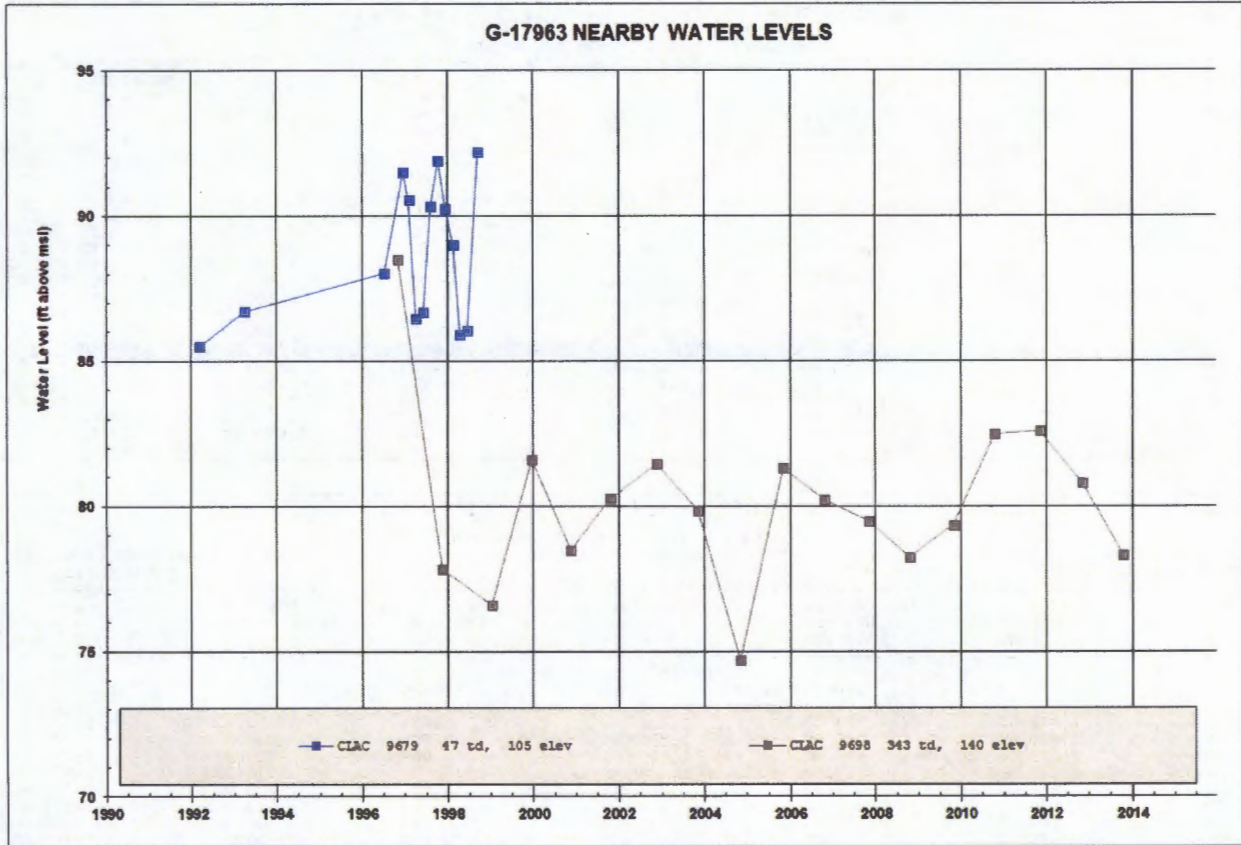
Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION							
Watershed ID #: 181		WILLAMETTE R > COLUMBIA R - AT MOUTH				Exceedance Level: 80	
Time: 4:42 PM		Basin: WILLAMETTE				Date: 03/16/2015	
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	27,500.00	2,770.00	24,700.00	0.00	1,500.00	23,200.00	
FEB	30,000.00	8,040.00	22,000.00	0.00	1,500.00	20,500.00	
MAR	28,500.00	7,600.00	20,900.00	0.00	1,500.00	19,400.00	
APR	25,400.00	7,210.00	18,200.00	0.00	1,500.00	16,700.00	
MAY	20,700.00	4,460.00	16,200.00	0.00	1,500.00	14,700.00	
JUN	11,000.00	2,430.00	8,570.00	0.00	1,500.00	7,070.00	
JUL	6,280.00	2,370.00	3,910.00	0.00	1,500.00	2,410.00	
AUG	4,890.00	2,110.00	2,760.00	0.00	1,500.00	1,260.00	
SEP	4,930.00	1,760.00	3,170.00	0.00	1,500.00	1,670.00	
OCT	5,990.00	735.00	5,250.00	0.00	1,500.00	3,750.00	
NOV	12,700.00	1,030.00	11,700.00	0.00	1,500.00	10,200.00	
DEC	24,800.00	1,420.00	23,400.00	0.00	1,500.00	21,900.00	
ANN	19,700,000	2,510,000	17,200,000	0	1,090,000	16,100,000	

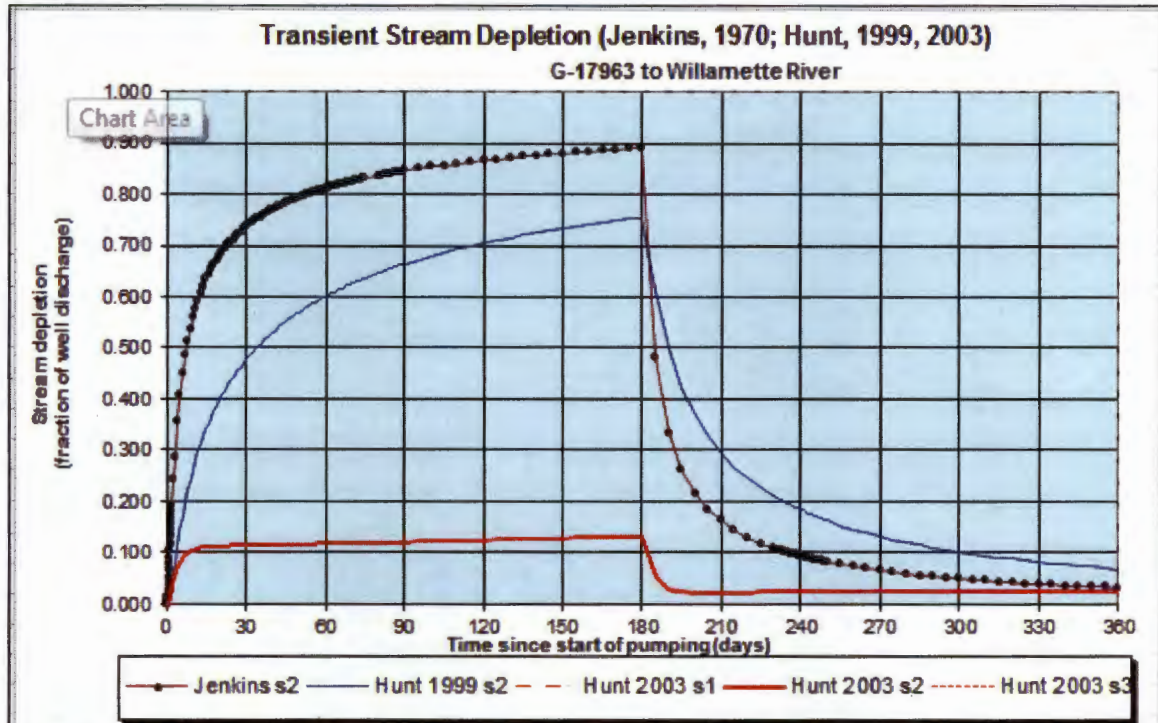
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION							
Watershed ID #: 69796		MOLALLA R > WILLAMETTE R - AT MOUTH				Exceedance Level: 80	
Time: 4:41 PM		Basin: WILLAMETTE				Date: 03/16/2015	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available	
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.							
JAN	1,870.00	154.00	1,720.00	0.00	500.00	1,220.00	
FEB	2,010.00	144.00	1,870.00	0.00	500.00	1,370.00	
MAR	1,830.00	116.00	1,710.00	0.00	500.00	1,210.00	
APR	1,530.00	89.30	1,440.00	0.00	500.00	941.00	
MAY	927.00	99.20	828.00	0.00	500.00	328.00	
JUN	431.00	119.00	312.00	0.00	500.00	-188.00	
JUL	204.00	183.00	21.10	0.00	200.00	-179.00	
AUG	139.00	154.00	-15.20	0.00	100.00	-115.00	
SEP	184.00	83.30	50.70	0.00	150.00	-98.30	
OCT	188.00	41.70	146.00	0.00	450.00	-304.00	
NOV	637.00	79.50	558.00	0.00	500.00	57.50	
DEC	1,700.00	149.00	1,550.00	0.00	500.00	1,050.00	
ANN	1,320,000	85,400	1,240,000	0	295,000	966,000	



Water Level Trends



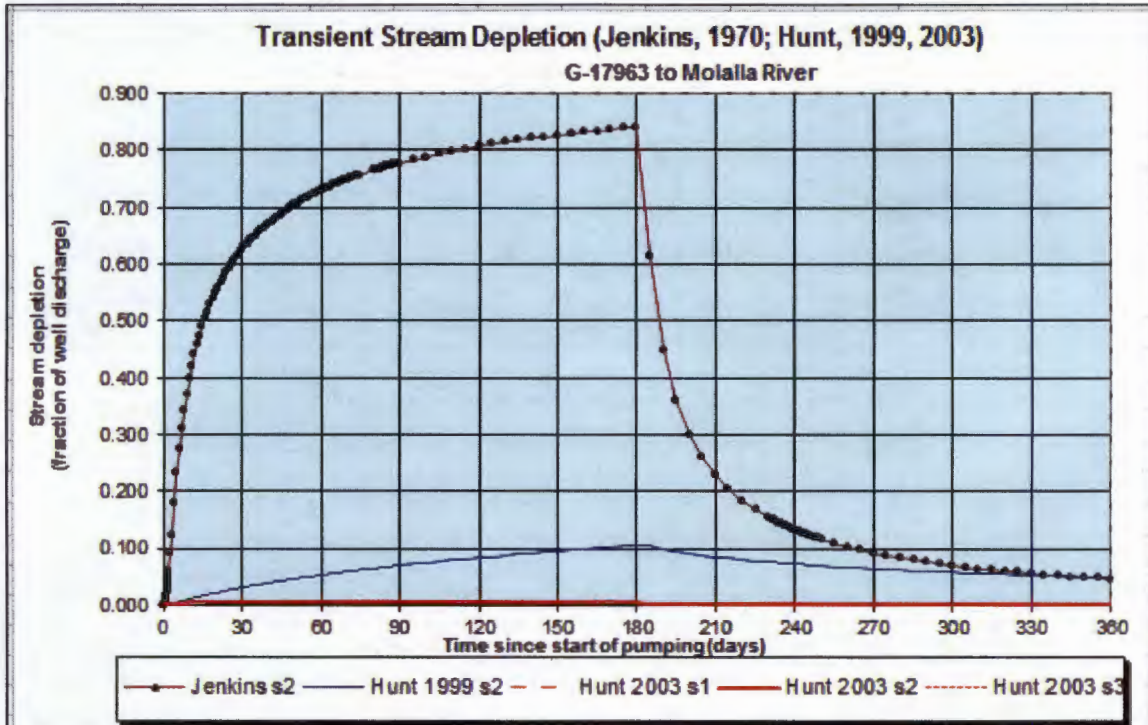
Stream Depletion Model Results – Willamette River



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 180 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	73.6%	81.1%	84.6%	86.6%	88.0%	89.0%	16.3%	9.4%	6.5%	4.9%	3.9%	3.2%
H SD 1999	47.7%	60.1%	66.5%	70.5%	73.3%	75.5%	29.5%	18.4%	13.2%	10.2%	8.2%	6.8%
H SD 2003	11.41%	11.76%	12.10%	12.46%	12.84%	13.25%	2.26%	2.37%	2.50%	2.54%	2.45%	2.35%
Qw, cfs	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123
H SD 99, cfs	0.058	0.074	0.081	0.086	0.090	0.092	0.036	0.023	0.016	0.012	0.010	0.008
H SD 03, cfs	0.014	0.014	0.015	0.015	0.016	0.016	0.003	0.003	0.003	0.003	0.003	0.003

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	55.00	55.00	55.00	gpm
Time pump on (pumping duration)	tpon	180	180	180	days
Perpendicular from well to stream	a	3200	3200	3200	ft
Well depth	d	145	145	145	ft
Aquifer hydraulic conductivity	K	50	50	50	ft/day
Aquifer saturated thickness	b	30	30	30	ft
Aquifer transmissivity	T	1500	1500	1500	ft*ft/day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	0.01	0.01	0.01	ft/day
Aquitard saturated thickness	ba	45	45	45	ft
Aquitard thickness below stream	babs	7	7	7	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	500	500	500	ft
Streambed conductance (lambda)	sbc	0.714286	0.714286	0.714286	ft/day
Stream depletion factor	sdf	6.826667	6.826667	6.826667	days
Streambed factor	sbf	1.523810	1.523810	1.523810	
input #1 for Hunt's Q_4 function	r'	0.146484	0.146484	0.146484	
input #2 for Hunt's Q_4 function	K'	1.517037	1.517037	1.517037	
input #3 for Hunt's Q_4 function	epsilon'	0.005000	0.005000	0.005000	
input #4 for Hunt's Q_4 function	lamda'	1.523810	1.523810	1.523810	

Stream Depletion Model Results – Molalla River



Output for Stream Depletion, Scenerio 2 (s2):												Time pump on (pumping duration) = 180 days				
Days	30	60	90	120	150	180	210	240	270	300	330	360				
J SD	62.5%	72.9%	77.8%	80.7%	82.7%	84.2%	22.9%	13.3%	9.3%	7.0%	5.6%	4.6%				
H SD 1999	3.1%	5.3%	6.9%	8.4%	9.6%	10.7%	8.6%	7.3%	6.4%	5.8%	5.3%	4.9%				
H SD 2003	0.37%	0.38%	0.40%	0.42%	0.43%	0.45%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%				
Qw, cfs	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123				
H SD 99, cfs	0.004	0.006	0.009	0.010	0.012	0.013	0.011	0.009	0.008	0.007	0.007	0.006				
H SD 03, cfs	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000				

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	55.00	55.00	55.00	gpm
Time pump on (pumping duration)	tpon	180	180	180	days
Perpendicular from well to stream	a	4640	4640	4640	ft
Well depth	d	145	145	145	ft
Aquifer hydraulic conductivity	K	50	50	50	ft/day
Aquifer saturated thickness	b	30	30	30	ft
Aquifer transmissivity	T	1500	1500	1500	ft <sup>2</sup> /day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	0.01	0.01	0.01	ft/day
Aquitard saturated thickness	ba	45	45	45	ft
Aquitard thickness below stream	babs	40	40	40	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	100	100	100	ft
Streambed conductance (lambda)	sbc	0.025000	0.025000	0.025000	ft/day
Stream depletion factor	sdf	14.353067	14.353067	14.353067	days
Streambed factor	sbf	0.077333	0.077333	0.077333	
input #1 for Hunt's Q_4 function	t'	0.069672	0.069672	0.069672	
input #2 for Hunt's Q_4 function	K'	3.189570	3.189570	3.189570	
input #3 for Hunt's Q_4 function	epsilon'	0.005000	0.005000	0.005000	
input #4 for Hunt's Q_4 function	lamda'	0.077333	0.077333	0.077333	

Elevation Profile

