

Groundwater Application Review Summary Form

Application # G- 18484

GW Reviewer DENNIS ORLOWSKI

Date Review Completed: 8/09/2017

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 08/09/2017
 FROM: Groundwater Section Dennis Orłowski
Reviewer's Name
 SUBJECT: Application G- 18484 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: Rick Schindler and Ed Coleman County: Marion

A1. Applicant(s) seek(s) 0.0757 cfs from _____ well(s) in the Willamette Basin,
North Santiam River subbasin

A2. Proposed use Irrigation (6.1 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	MARI 56597	1	Alluvium	0.0757	T9S/R1W-10 NE-SE	100' S, 970' W fr E ¼ cor, S 10

* 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	465		28	11/07/2002	110	0-20	+1-99		82-98	33	70	Air

Use data from application for proposed wells.

A4. **Comments:** The application area is located in central Stayton, Oregon.
MARI 56597 is also the authorized POA for permit G-15175, which is for irrigation of 1.9 acres of a portion of this application's proposed 6.1 acres. For that permit application, PSI was determined based on the POA's proximity to a slough of the North Santiam River, and consequently that permit was flow- and season-limited (0.024 cfs, June 1-30, Sept 1-30). However, that original PSI determination was subsequently found to be incorrect based on an erroneous distance measurement of 1300 ft (< ¼ mile), since confirmed to be 1430 ft instead (see attached K. Wozniak e-mail, 3/24/2016).
This application is for irrigation of a greater area (to include the original area), rate, and for the entire irrigation season. For this technical review, it was assumed that only this new requested allocation (0.0757 cfs) will be used, and that it will not be supplemental to the existing 0.024 cfs (largely because the new requested allocation equals the tested capacity of MARI 56597).

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 proposed POA (MARI 56597) obtains groundwater from an unconfined aquifer. However, because MARI 56597 is greater than ¼ mile from the nearest surface water source, the applicable basin rules (OAR 690-502-0240) are not activated by this application.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction. Name of administrative area: Stayton-Sublimity Groundwater Limited Area
 Comments: Not applicable because groundwater restrictions in this GWLA apply only to basalt aquifer wells, whereas this proposed POA (existing well MARI 56597) obtains groundwater from an alluvial aquifer.

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) Medium water-use reporting, 7c (7-yrs measurements);
 - 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 alluvial 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, MARI 56597, obtains groundwater from unconfined sand and gravel deposits at a proximal portion of the Stayton alluvial fan (Woodward and others, 1998). Groundwater exploitation of the unconfined alluvial aquifer in this area is moderate, with about 10-12 permitted irrigation and industrial wells and about 35-40 domestic wells within one mile of the POA. Typical yields in nearby shallow alluvial aquifer wells are on the order of 20-80 gpm.

Groundwater level data for the alluvial aquifer in this area is very sparse. However, data available from a few wells show generally stable long-term trends (see attached hydrograph).

Groundwater storage (specific yield) is typically much greater in unconfined aquifers compared to confined systems. However, because pumping of unconfined aquifers results in localized dewatering of the aquifer, long-term supplies might not be as reliable as a confined system if recharge of the local unconfined aquifer is insufficient.

These factors indicate that groundwater for the proposed use is likely available in the amounts requested, but if a permit is granted the recommended permit conditions should be included to monitor and protect 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
1	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer confinement evaluation: The well log for the proposed POA, MARI 56957, does not show an appreciable thickness of confining silt or clay above the water-bearing sands and gravels that provide groundwater to the well. Also, static water levels are approximately coincident or even below some shallower sand and gravel layers. These facts indicate that MARI 56597 obtains groundwater from an unconfined alluvial aquifer.

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	Unnamed slough – North Santiam River	440-450	430-460	1430	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Mill Creek	440-450	440-450	4500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Groundwater elevations in the alluvial aquifer are generally coincident with or above the elevations of SW1 and SW2. Furthermore, water table maps in the area indicate that groundwater in the alluvial aquifer system flows towards and discharges into local streams (Conlon and others, 2005; Gannett and Caldwell, 1998). These facts indicate that the alluvial aquifer and local streams are hydraulically connected.

The depletion of local streams by proposed Well 1 will be attenuated, but not eliminated, by the low vertical hydraulic conductivity (permeability) of any clay and silt layers that lie between the deeper sands and gravels and the stream beds, including the stream bed itself. Net impacts will be small at the onset of pumping, but will increase with time until a new equilibrium between local recharge and discharge is reached. At that time depletion is expected to be relatively constant throughout the year.

Water Availability Basin the well(s) are located within:
 SW1: North Santiam River > Santiam River – at mouth (WID 141)
 SW2: Mill Creek > Willamette River – at mouth (WID 30200701)

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"/>	MF141A	430.00	<input type="checkbox"/>	627.00	<input type="checkbox"/>	<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	16.30	<input type="checkbox"/>	<25%	<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"/>

Comments: C3a: The Hunt 1999 analytical stream depletion model was used to estimate pumping interference at 30 days at SW1. Model results indicate that interference is expected to be less than 25% of the maximum allocated pumping rate at 30 days.

C3b: not applicable.

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													
(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: Not applicable.

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:** As discussed in Section A4 of this review, a previous groundwater review for this application's proposed POA, MARI 56957, concluded PSI with an unnamed slough of the North Santiam River. However, that original PSI determination was subsequently found to be incorrect based on an erroneous distance measurement of 1300 ft (< 1/4 mile), since confirmed to be 1430 ft instead (see attached K. Wozniak e-mail, 3/24/2016).

References Used: Application file: G-18484.

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:**

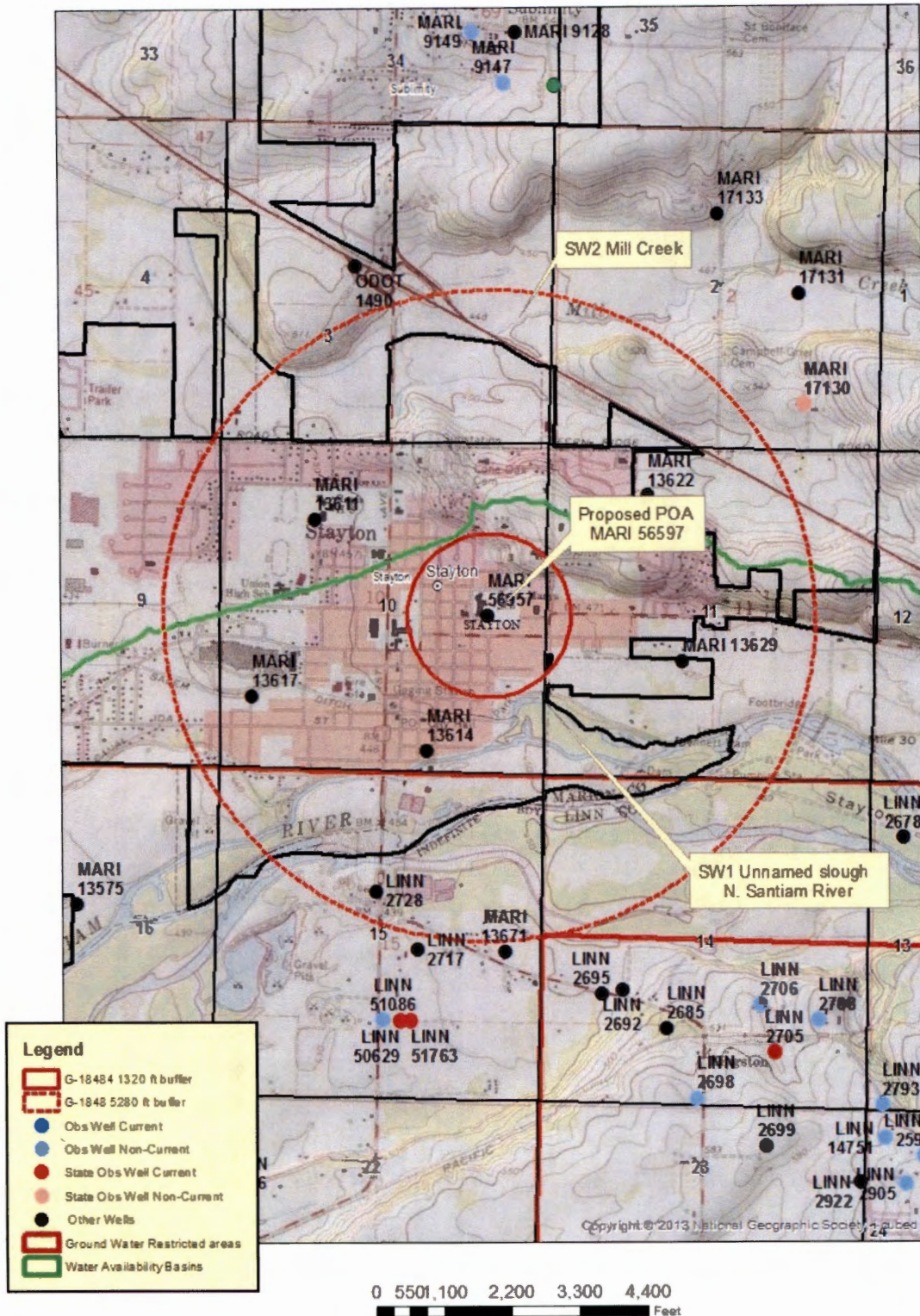
- a. review of the well log;
- b. field inspection by _____ ;
- c. report of CWRE _____ ;
- d. other: (specify) _____

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.**

Well Location Map

Application G-18484 Schindler and Coleman T9S, R1W Section 10



Water Availability Tables

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N SANTIAM R - SANTIAM R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 8/9/2017

Watershed ID # 141 (Map) Exceedance Level: 80%
Date: 8/9/2017 Time: 11:02 AM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	2,330.00	480.00	1,850.00	0.00	430.00	1,420.00
FEB	2,670.00	1,495.00	1,180.00	0.00	430.00	751.00
MAR	2,540.00	1,320.00	1,220.00	0.00	430.00	790.00
APR	2,500.00	1,480.00	1,020.00	0.00	430.00	590.00
MAY	2,590.00	802.00	1,790.00	0.00	430.00	1,360.00
JUN	1,500.00	434.00	1,070.00	0.00	430.00	636.00
JUL	858.00	331.00	527.00	0.00	430.00	97.00
AUG	661.00	317.00	344.00	0.00	430.00	-66.00
SEP	627.00	295.00	332.00	0.00	430.00	-87.00
OCT	694.00	264.00	430.00	0.00	430.00	-0.29
NOV	1,380.00	288.00	1,110.00	0.00	430.00	684.00
DEC	2,540.00	267.00	2,270.00	0.00	430.00	1,840.00
ANN	1,960,000.00	463,000.00	1,500,000.00	0.00	312,000.00	1,190,000.00

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MILL CR - WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 8/9/2017

Watershed ID # 30200701 (Map) Exceedance Level: 80%
Date: 8/9/2017 Time: 11:04 AM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

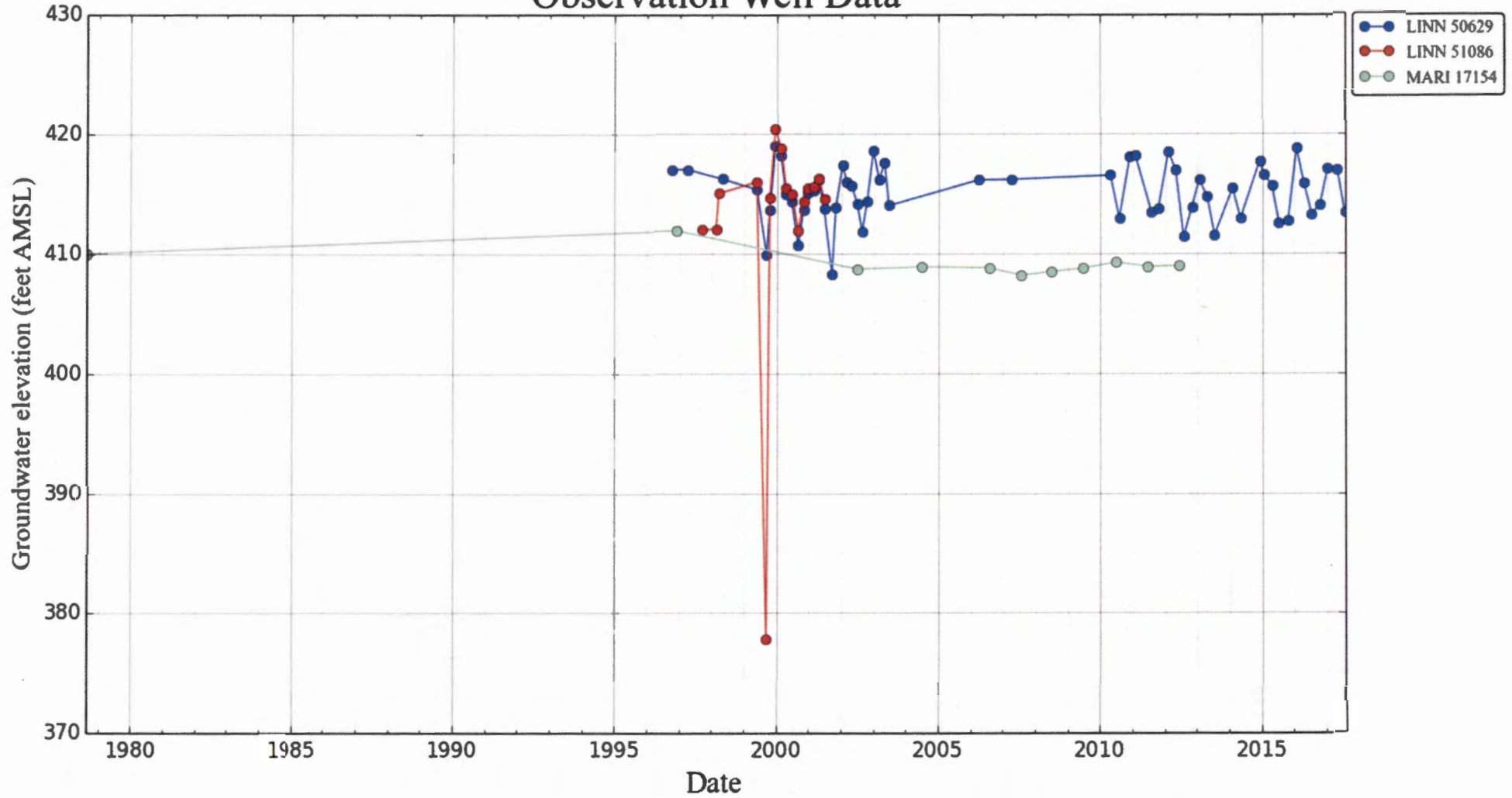
Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	236.00	69.00	166.00	0.00	0.00	166.00
FEB	224.00	67.00	156.00	0.00	0.00	156.00
MAR	206.00	67.00	138.00	0.00	0.00	138.00
APR	155.00	67.40	87.60	0.00	0.00	87.60
MAY	78.30	67.80	10.50	0.00	0.00	10.50
JUN	40.70	95.10	-54.40	0.00	0.00	-54.40
JUL	20.60	84.80	-64.20	0.00	0.00	-64.20
AUG	16.30	70.00	-53.70	0.00	0.00	-53.70
SEP	17.20	69.00	-51.80	0.00	0.00	-51.80
OCT	20.30	65.90	-45.60	0.00	0.00	-45.60
NOV	58.30	67.00	-7.69	0.00	0.00	-7.69
DEC	167.00	68.90	98.10	0.00	0.00	98.10
ANN	135,000.00	49,100.00	96,300.00	0.00	0.00	96,300.00

Water-Level Trends in Nearby Wells

Observation Well Data



K. Wozniak e-mail, 3/24/2016

RECEIVED

MAR 22 2017

M Gmail

Will McGill <willmcgill.surveying@gmail.com>

OWRD**Pump Test for MARI 56957 (File G-15574, Permit G-15175), St. Mary School**

2 messages

WOZNIAK Karl C <karl.c.wozniak@state.or.us>
 To: Will McGill <willmcgill.surveying@gmail.com>

Thu, Mar 24, 2016 at 12:28 PM

Hello Will,

I was finally able to analyze this pump test. The data looks reasonably good so I've approved the test and placed a letter of approval in file G-15574.

This permit restricts use of the well to the months of June and September. These restrictions were based on a Public Interest Review by the Groundwater Section on 12/01/2001 which was based on the data that was on hand at the time the original application was filed on 08/07/2001. In particular, the reviewer determined that proposed well location was 1300 feet from the nearest surface water source, a slough of the North Santiam River. The reviewer also determined that 30 days of continuous pumping of the well would result in a depletion of streamflow that was greater than 25% of pumping rate of the well. Both of these factors forced the Department to determine that there was a potential for substantial interference (PSI) with the stream based on our Division 9 rules (OAR 690-009) which govern the conjunctive management of groundwater and surface water. Since the well was less than ¼ mile from the stream, it gets treated as if it were a surface water right. Surface water is no longer available for allocation in some months so the groundwater right that was issued was limited to the months of June and September.

GPS coordinates based on a well inspection by our Department and the map you provided indicate that the actual location of the well is 1430 feet from the nearest reach of the slough of the Santiam River. Using the aquifer Transmissivity derived from your pump test (50 ft/day) I have recalculated the pumping impacts to the stream and find that stream depletion after 30 days of pumping would be less than 25% (see attached file). Therefore, if we were reviewing this application today we would not find PSI under our Division 9 reviews and would likely be able to issue a right for all of the summer months.

I don't think there are any options to change your current right based on this information (water over the dam so to speak) but that is a question best addressed to our Water Rights staff. However, you could file for a new permit for additional months under the same well or a new permit for all of the months of interest. The latter option would probably require that the current permit be cancelled, something you would not want to do unless and until the new right was approved.

I can't give you 100% assurance that we can issue an additional right from the well or a replacement right. However, I think that there is a reasonably good chance that a new right would be approved based on the

G-18484

additional facts that are now on hand.

Please let me know if you have any questions.

Karl C. Wozniak | Hydrogeologist – Groundwater Section

Water Resources Department | Ph: 503.986.0843

725 Sumner ST. NE., Suite A Salem OR 97301

From: Will McGill [mailto:willmcgill.surveying@gmail.com]
Sent: Thursday, March 24, 2016 8:56 AM
To: WOZNAK Karl C
Subject: St. Mary School Pump Test

Hi Karl

Last time we spoke you explained you were very busy at that time but to email you in about two weeks if I hadn't heard anything. So I am just checking in to see how it's going. I am coming into OWRD this morning on another project so we could talk if needed.

Thanks

Will

Will McGill PLS, CWRE
15333 Pletzer Rd SE
Turner, OR 97392
Ph: 503-510-3026

 **MARI 56957 Stream Depletion Analysis - St Mary School Well.pdf**
43K

Will McGill <willmcgill.surveying@gmail.com>
To: WOZNAK Karl C <karl.c.wozniak@state.or.us>

Thu, Mar 24, 2016 at 12:33 PM

Thanks Karl. I really appreciate your help.

Will McGill PLS, CWRE
15333 Pletzer Rd SE
Turner, OR 97392
Ph: 503-510-3026

[Quoted text hidden]

G-18484

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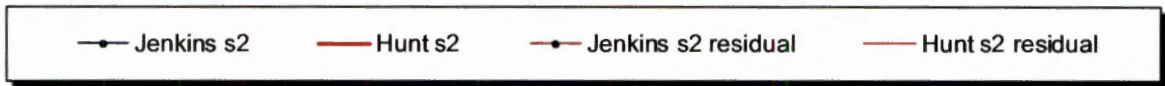
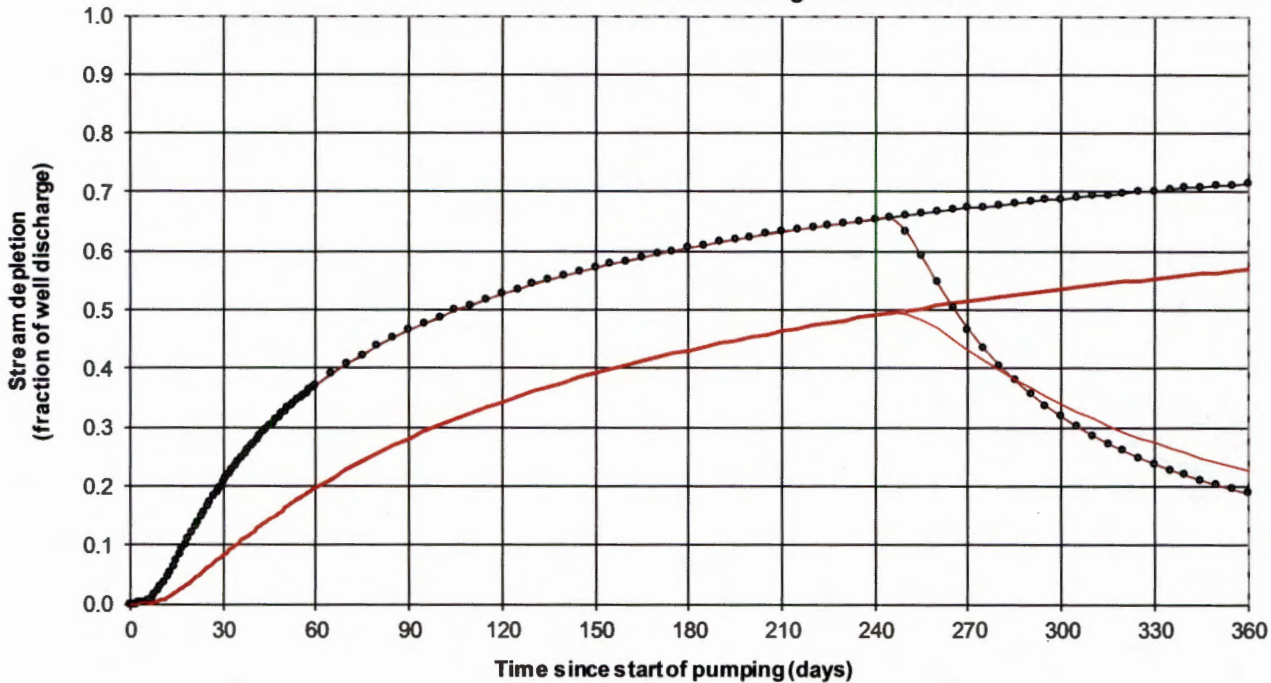
MAR 22 2017

OWRD

Hunt 1999 Stream Depletion Analytical Model Results

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

G-18484 MARI 56957-Unnamed slough N. Santiam R.



Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 240 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
Jenk SD s2 %	20.54	37.05	46.47	52.66	57.11	60.51	63.22	65.43	46.76	31.83	23.79	18.81
Jen SD s2 cfs	0.016	0.028	0.035	0.040	0.043	0.046	0.048	0.050	0.035	0.024	0.018	0.014
Hunt SD s2 %	8.24	19.67	28.03	34.29	39.16	43.10	46.35	49.11	43.24	33.87	27.33	22.70
Hunt SD s2 cfs	0.006	0.015	0.021	0.026	0.030	0.033	0.035	0.037	0.033	0.026	0.021	0.017

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.0757	0.0757	0.0757	cfs
Distance to stream	a	1430	1430	1430	ft
Aquifer hydraulic conductivity	K	50	50	50	ft/day
Aquifer thickness	b	85	85	85	ft
Aquifer transmissivity	T	4250	4250	4250	ft*ft/day
Aquifer storage coefficient	S	0.2	0.2	0.2	
Stream width	ws	30	30	30	ft
Streambed hydraulic conductivity	Ks	1	1	1	ft/day
Streambed thickness	bs	3	3	3	ft
Streambed conductance	sbc	10	10	10	ft/day
Stream depletion factor (Jenkins)	sdf	96.23058824	96.23058824	96.23058824	days
Streambed factor (Hunt)	sbf	3.364705882	3.364705882	3.364705882	