

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date June 10, 2015
 FROM: Groundwater Section Phillip I. Marcy / Ivan K. Gall
Reviewer's Name
 SUBJECT: Application G- 17967 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: Brad Hevner County: Malheur

A1. Applicant(s) seek(s) 1.0 cfs from 1 well(s) in the Malheur Basin,
Willow Creek subbasin

A2. Proposed use Supplemental Irrigation (65.7 acres) Seasonality: March 1st to October 31st (245 days)

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	MALH 52006	1	Alluvium	1.0	15S/42E-14 SW-SE	140'N, 95'E fr S1/4 cor S 14
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	2665	185	26	01/30/2003	315	0-25	+1-39	+1-200	180-200	900	62	Pump

Use data from application for proposed wells.

A4. **Comments:** _____

A5. **Provisions of the Malheur (690-510)** 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) _____;
 - 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 applicant’s well (MALH 52006) develops groundwater from sandy brow clays and gravels overlain by a thick sequence of brown clay. Geologic maps of the area (Brooks and others, 1976) show a thin skiff of Quaternary alluvium (Qal) overlying deposits of tuffaceous sediments (Tst) that are likely lower Pliocene in age. These units are described as possible lake-bed sediments, deposited in a low-energy environment, and correlates them with the Chalk Butte Formation of Corcoran and others (1962) and the Bully Creek Formation of Kittleman and others (1967). There is little recent data available for this area. Old State Observation Well records indicate that water levels were quite stable for nearly three decades in nearby MALH 122 (Figure 2).

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	Tuffaceous sediments and fine gravels	<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: According to the driller's report, the static water level in the applicant's well is significantly higher than the elevation of the water-bearing zone at which it was first encountered. Several local well logs indicate a similar rise in head from a water-bearing zone at depth, which in each case is overlain by a thick sequence of brown clay (see attached). This appears consistent with the observations of Brooks (1976) of a low-energy, possibly lacustrine, depositional environment capable of emplacing a continuous low-permeability horizon within the valley as it existed at the time.

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	Willow Creek	2639	2596	8620	<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: The head elevation in the proposed POA well is equivalent to elevations of surface waters within 1 mile downstream of the well. Willow Creek, and its tributaries Pole Creek and Becker Creek, are designated as intermittent streams within 1 mile of the proposed POA location. Therefore, the proposed POA will be evaluated for PSI from the point downstream at which Willow Creek becomes perennial, east of Brogan.

Water Availability Basin the well(s) are located within: Willow Cr > Malheur R – AB Gum Cr (31011910)

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?
		<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"/>	<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: This section does not apply.

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		
1	1	%	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.04%	0.06%	0.09%		
Well Q as CFS				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0				
Interference CFS				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001		
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.				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001		
(B) = 80 % Nat. Q				12.6	27.9	45.3	65.6	54.8	41.4	14.8	6.36	4.41	6.74	8.59	
(C) = 1 % Nat. Q				.126	.279	.453	.656	.548	.414	.148	.064	.044	.067	.071	.086
(D) = (A) > (C)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(E) = (A / B) x 100				%	%	-- %	-- %	-- %	-- %	-- %	-- %	-- %	.014%	.011%	

(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: Interference calculations here were performed considering the distance between the proposed POA location and the nearest perennial reach of Willow Creek down gradient. The Hunt (2003) model was utilized (see attached) to account for a thick sequence of brown clay noted on the driller's log above the production zone. Pump tests conducted within a few miles of the proposed POA indicate a transmissivity of about 640 ft²/day, reflected in the model by setting the hydraulic conductivity at 20 ft/day and the aquifer thickness at 34 feet. A vertical conductivity of 5 ft/day was used for the model, at the upper end of conductivity values for fine-grained sediments to avoid underestimation of impacts to the stream.

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 well appears to develop water from a confined aquifer system, based on reported static water versus first water level elevations. This agrees with local geologic mapping efforts (Brooks and others, 1976) that place a thick sequence of fine water-lain sediments in this part of the valley. Groundwater elevations in this area are likely stabilized by the presence of canals and nearby Pole Creek Reservoir. These surface water diversions are often leaky, and allow downward percolation of irrigation water into the upper unconfined to leaky-confined aquifer (Gannett, 1990). During drought years, flow through the canals is reduced, and according to our conceptual model will contribute a lower proportion of recharge to the shallow aquifer system. There is not adequate data to assess the balance of recharge coming from anthropogenic sources versus natural occurring recharge. Therefore, if a permit is issued, the conditions below should be applied in order to maintain flows in Pole Creek and Willow Creek if significant groundwater elevation declines are observed.

Modified Condition 7N – The water user shall discontinue the use of, or reduce the rate or volume of withdrawal from, the well(s) if any of the following events occur:

- A. Annual water-level measurements reveal an average water-level decline of **two or more feet per year for three consecutive years**; or
- B. Annual water-level measurements reveal a water level decline of **6 or more feet** in fewer than five consecutive years; or
- C. Annual water-level measurements reveal a water-level decline of **10 or more feet**; or
- D. Hydraulic interference leads to a decline of **10 or more feet** in any neighboring well with senior priority.

References Used:

Brooks, H.C., McIntyre, J.R., Walker, G.W., 1976. Geology of the Oregon Part of the Baker 1⁰ by 2⁰ Quadrangle. Oregon Department of Geology and Mineral Industries Geological Map Series 7.

Gannett, M. W. 1990. Hydrogeology of the Ontario Area Malheur County, Oregon. Oregon Water Resources Dept. Ground Water Report No. 34. 39p.

Local Well logs, Application file G 17967, Local pump test results.

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						
WILLOW CR > MALHEUR R - AB GUM CR			Basin: MALHEUR			
watershed ID #: 31011910				Exceedance Level: 80		
Time: 2:42 PM				Date: 06/15/2015		
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	12.60	20.00	-7.38	0.00	0.00	-7.38
FEB	27.90	77.80	-49.80	0.00	0.00	-49.80
MAR	45.30	116.00	-70.50	0.00	0.00	-70.50
APR	65.60	163.00	-96.90	0.00	0.00	-96.90
MAY	54.80	159.00	-105.00	0.00	0.00	-105.00
JUN	41.40	135.00	-93.10	0.00	0.00	-93.10
JUL	14.80	71.10	-56.30	0.00	0.00	-56.30
AUG	6.36	44.00	-37.60	0.00	0.00	-37.60
SEP	4.41	30.10	-25.70	0.00	0.00	-25.70
OCT	6.74	19.00	-12.30	0.00	0.00	-12.30
NOV	7.14	13.20	-6.02	0.00	0.00	-6.02
DEC	8.59	14.70	-6.10	0.00	0.00	-6.10
ANN	30,700	51,900	0	0	0	0

Well Logs Included:

- MALH 52006 (Applicant's well)
- MALH 108
- MALH 107
- MALH 106
- MALH 112

Well Location Map

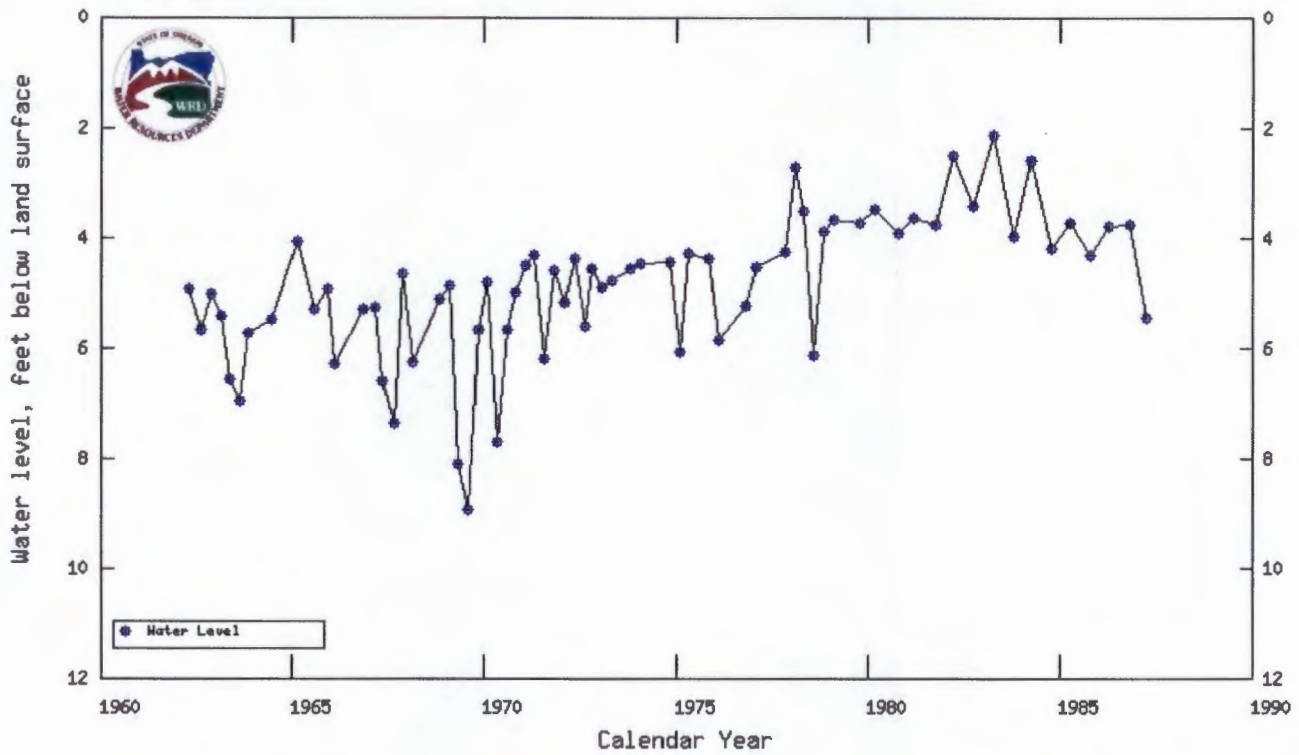


Water-Level Trends in Nearby Wells

Oregon Water Resources Department (OWRD) Well Location
 OWRD Logid
 OWRD Well Tag (Well ID)
 OWRD State Observation Well Number
 Total well depth (feet below land surface)
 Land surface elevation (feet above mean sea level)
 Primary use of well
 Primary aquifer system

15.00S/42.00E-25ABX
 MALH 122

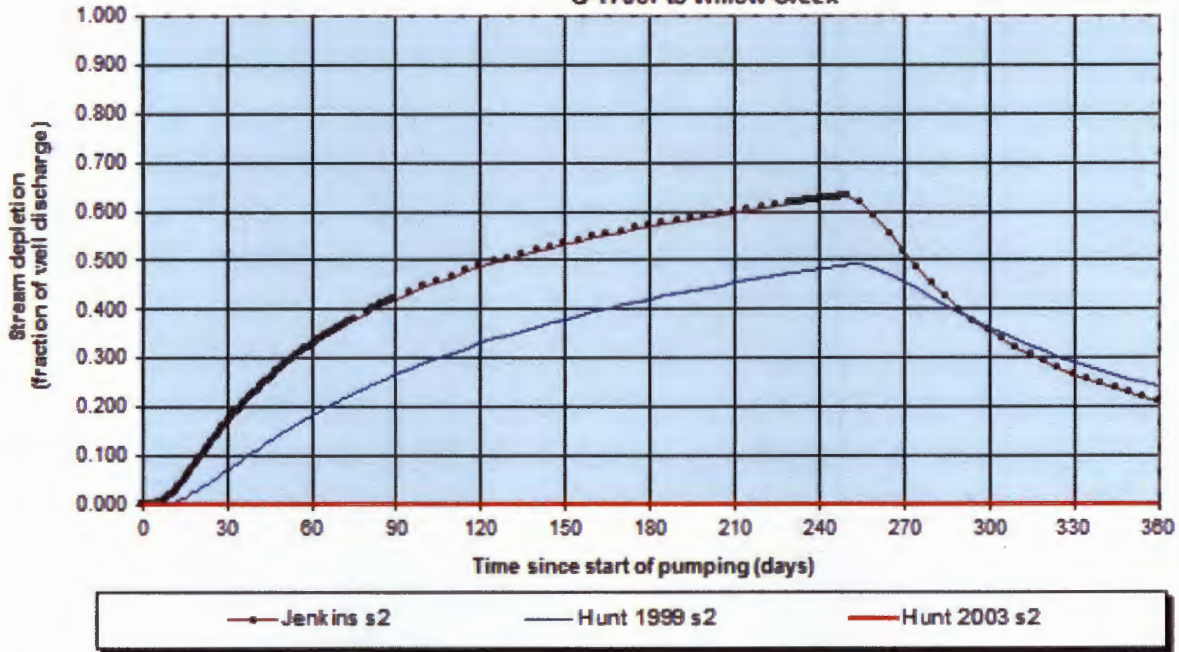
 567
 560



Results of Hunt (2003) model, including input parameters

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

G-17967 to Willow Creek



Output for Stream Depletion, Scenerio 2 (s2):				Time pump on (pumping duration) = 245 days											
Days	30	60	90	120	150	180	210	240	270	300	330	360			
JSD	16.4%	32.5%	42.2%	48.7%	53.4%	57.0%	59.9%	62.3%	51.5%	35.6%	26.6%	21.1%			
HSD 1999	7.0%	18.2%	26.7%	33.1%	38.1%	42.1%	45.4%	48.2%	45.7%	36.2%	29.2%	24.2%			
HSD 2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.04%	0.06%	0.09%	0.12%	0.16%			
Qw, cfs	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
HSD 99, cfs	0.070	0.182	0.267	0.331	0.381	0.421	0.454	0.482	0.457	0.362	0.292	0.242			
HSD 03, cfs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002			

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	1.00	1.00	1.00	cfs
Time pump on (pumping duration)	tpon	245	245	245	days
Perpendicular from well to stream	a	8620	8620	8620	ft
Well depth	d	315	315	315	ft
Aquifer hydraulic conductivity	K	20	20	20	ft/day
Aquifer saturated thickness	b	32	32	32	ft
Aquifer transmissivity	T	640	640	640	ft ² /day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	5	5	5	ft/day
Aquitard saturated thickness	ba	167	167	167	ft
Aquitard thickness below stream	babs	157	157	157	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	10	10	10	ft
Streambed conductance (lambda)	sbc	0.318471	0.318471	0.318471	ft/day
Stream depletion factor	sdf	116.100625	116.100625	116.100625	days
Streambed factor	sbf	4.289411	4.289411	4.289411	
input #1 for Hunt's Q_4 function	t'	0.008613	0.008613	0.008613	
input #2 for Hunt's Q_4 function	K'	3476.066617	3476.066617	3476.066617	
input #3 for Hunt's Q_4 function	epsilon'	0.005000	0.005000	0.005000	
input #4 for Hunt's Q_4 function	lamda'	4.289411	4.289411	4.289411	

MALH 52006

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL ID. # 61635
START CARD # 148423

Instructions for completing this report are on the last page of this form.

(1) LAND OWNER: Well Number 61635
Name Gary Dombay
Address 170516 NW Springville Rd #134
City Portland State OR Zip 97229

(9) LOCATION OF WELL, by legal description:
County Malheur Latitude _____ Longitude _____
Township 15 S N or S Range 42 E E or W WM
Section 14 SW 1/4 SE 1/4
Tax Lot 300 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 5751 Willow Creek Rd - Oregon, OR

(2) TYPE OF WORK
 New Well Deepening Alteration (repair/recondition) Abandonment

(3) DRILL METHOD:
 Rotary Air Rotary Mud Cable Auger
 Other _____

(10) STATIC WATER LEVEL:
26 ft below land surface Date 1-30-03
Artesian pressure _____ lb per square inch Date _____

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
 Thermal Injection Livestock Other _____

(11) WATER BEARING ZONES:
Depth at which water was first found 185 ft

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well 315 ft
Explosives used Yes No Type _____ Amount _____

From	To	Estimated Flow Rate	SWL
<u>185</u>	<u>315</u>	<u>1200gpm</u>	<u>26</u>

HOLE		SEAL		Size (in pounds)
Diameter	From To	Material	From To	
<u>16</u>	<u>0</u> <u>25</u>	<u>Portland</u>	<u>0</u> <u>25</u>	<u>46</u>
<u>12</u>	<u>25</u> <u>200</u>			
<u>10</u>	<u>200</u> <u>315</u>			

How was seal placed Method A B C D E
 Other poured from surface
Backfill placed from _____ ft to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(12) WELL LOG:
Ground Elevation _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: <u>12</u>	<u>+1</u>	<u>39</u>	<u>.250</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner: <u>10</u>	<u>+1</u>	<u>200</u>	<u>.250</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Drive Shoe used Inside Outside None
Final location of shoe(s) 39 ft

Material	From	To	SWL
<u>top soil</u>	<u>0</u>	<u>6</u>	
<u>Blue clay</u>	<u>6</u>	<u>14</u>	
<u>large gravel</u>	<u>14</u>	<u>18</u>	
<u>1st clay</u>	<u>18</u>	<u>185</u>	
<u>Sandy with clay</u>	<u>185</u>	<u>295</u>	<u>26</u>
<u>Sandy blue clay - gravel</u>	<u>295</u>	<u>315</u>	

RECEIVED
MAR 10 2003
WATER RESOURCES DEPT
SALEM, OREGON

(7) PERFORATIONS/SCREENS:

Perforations Method touch
 Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
<u>180</u>	<u>200</u>	<u>6"</u>	<u>200</u>	<u>4"</u>	<u>10"</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Date started 1-02-03 Completed 1-30-03

(8) WELL TESTS: Minimum testing time is 1 hour

Pump Bailor Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
<u>900</u>	<u>62 ft</u>		<u>1 hr</u>

Temperature of water 60° Depth Artesian Flow Found _____

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number _____
Signed _____ Date _____

Was a water analysis done? Yes By whom _____
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata: _____

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 14-85
Signed Jon M Ho Date 2-23-03

ORIGINAL - WATER RESOURCES DEPARTMENT FIRST COPY - CONSTRUCTOR SECOND COPY - CUSTOMER

WATER WELL REPORT
STATE OF OREGON

Malheur
Malheur 108

State Well No. 155/42c-23aa

WATER RESOURCES DEPT
SALEM, OREGON

(1) OWNER:
Name Craig Siddoway
Address Bragan
City _____ State OR

(2) TYPE OF WORK (check):
New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL: (4) PROPOSED USE (check):
Rotary Air Driven Domestic Industrial Municipal
Rotary Mud Dug Irrigation Test Well Other
Cased Bored Thermal Withdrawal Reinflection

CASING INSTALLED: Steel Plastic
Threaded Welded
16" Diam. from 0 ft. to 19 ft. Gauge 250

LINER INSTALLED:
" Diam. from _____ ft. to _____ ft. Gauge _____

(6) PERFORATIONS: Perforated? Yes No
Type of perforator used _____
Size of perforations in by in.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.

(7) SCREENS: Well screen installed? Yes No
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ Set from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ Set from _____ ft. to _____ ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? Driller
950 gal./min. with 140 ft. drawdown after 1 hr.
Air test _____ gal./min. with drill stem at _____ ft. _____ hr.
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hr.
Minimum flow _____ g.p.m.
Temperature of water _____ Depth artesian flow encountered _____ ft.

(9) CONSTRUCTION: Special standards: Yes No
Well seal—Material used Portland Cement
Well sealed from land surface to 19 ft.
Diameter of well bore to bottom of seal 20 in.
Diameter of well bore below seal 12 in.
Number of sacks of cement used in well seal 42 sacks
How was cement grout placed? Grout pump

Was pump installed? _____ Type _____ HP _____ Depth _____ ft.
Was a drive shaft used? Yes No Plug _____ Size location _____ ft.
Did any strata contain unconsolidated water? Yes No
Type of Water? _____ depth of strata _____
Method of sealing strata off _____
Was well gravel packed? Yes No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report
are to be filed with the

(10) LOCATION OF WELL:
County MALHEUR Driller's well number 2
NE 1/4 NE 1/4 Section 23 T. 155 R. 42 E W.M.
Tax Lot # _____ Lot _____ Blk _____ Subdivision _____
Address at well location: _____

(11) WATER LEVEL: Completed well.
Depth at which water was first found 150 ft.
Static level 35 ft. below land surface. Date 1-18-82
Artesian pressure _____ lbs. per square inch. Date _____

(12) WELL LOG: Diameter of well below casing 12"
Depth drilled 600 ft. Depth of completed well _____ ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	BWL
Soil	0	8	
Small boulders	8	12	
Brown clay	12	150	
Brown clay pine gravel (brown)	150	175	35
Brown clay	175	260	35
gravel br clay pine	260	285	35
br clay brown	285	530	35
br clay pine gravel	530	550	
mostly brown			
brown clay	550	600	35

Work started 1-16 19 82 Completed 2-10 19 82
Date well drilling machine moved off of well 2-11 19 82

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
(Signed) Arthur H. Bowman Date 2-24 19 82
(Drilling Machine Operator)
Drilling Machine Operator's License No. 1406

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name Hyzell PHMPT Drilling
Address 30175
(Type or print)
(Signed) Hyzell
(Water Well Contractor)
Contractor's License No. 396 Date 2-10 19 82

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
SP-12000-000
within 30 days from the date of well completion

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report
are to be filed with the

RECEIVED WELL REPORT

WATER RESOURCES DEPARTMENT
SALEM, OREGON 97310
within 30 days from the date
of well completion.

JUN 29 1981 STATE OF OREGON
(Please type or print)
WATER RESOURCES DEPT
SALEM, OREGON

Math 107
nc
State Well No. 15S/42E-23ba
State Permit No.

(1) OWNER:

Name Craig Seddoway
Address BABGAN ORE.

(2) TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Driven
Cable Jetted
Dug Bored

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other

CASING INSTALLED:

Threaded Welded
1" Diam. from 0 ft. to 19 ft. Gage 250
" Diam. from " ft. to " ft. Gage
" Diam. from " ft. to " ft. Gage

PERFORATIONS:

Perforated? Yes No

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? Yes No

Manufacturer's Name _____ Model No. _____
Type _____ Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes No If yes, by whom Owner
Yield: 700 gal./min. with 210 ft. drawdown after 2 hrs.

Ball test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.

(9) CONSTRUCTION:

Well seal—Material used Portland Cement
Well sealed from land surface to 19 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 12 in.
Number of sacks of cement used in well seal 35 sacks
How was cement grout placed? Pump

Was a drive shoe used? Yes No Plugs _____ Size: location _____ ft.
Did any strata contain unusable water? Yes No
Type of water? _____ depth of strata _____
Method of sealing strata off _____
Was well gravel packed? Yes No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

(10) LOCATION OF WELL:

County Malheur Driller's well number _____
N.E. 1/4 Section 23 T. 15S R. 42E W.M.
Bearing and distance from section or subdivision corner _____

(11) WATER LEVEL: Completed well.

Depth at which water was first found 125 ft.
Static level 30 ft. below land surface. Date 4-10-81
Artesian pressure _____ No. per square inch. Date _____

(12) WELL LOG:

Diameter of well below casing 12
Depth drilled 450 ft. Depth of completed well 450 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Soil with boulders	0	8	
Brown clay (sticker)	8	30	
Brown clay	30	65	
Brown clay (hard)	65	125	30
Brown clay	125	190	30
Brown clay (med grain)	190	192	30
Brown clay	192	335	30
Brown clay (med grain)	335	345	30
fine gravel soil brown	345	349	30
solid conglomerate with thin layers of clay	349	375	30
crushed clay	375	450	30

RECEIVED

MAY 22 1981

WATER RESOURCES DEPT
SALEM, OREGON

Work started 2-6 1981 Completed 4-19 1981
Date well drilling machine moved off of well 4-24 1981

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) Robert H. Bourman Date 5-18, 1981
(Drilling Machine Operator)

Drilling Machine Operator's License No. 1406

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Russell King & Priddy
(Person, firm or corporation) (Type or print)

Address Box 351 Vale Ore

(Signed) Russell King
(Water Well Contractor)

Contractor's License No. 396 Date 5-18, 1981

(USE ADDITIONAL SHEETS IF NECESSARY)

SP-6000-110

WATER WELL REPORT
STATE OF OREGON

RECEIVED

MAY 21 1986

PLEASE TYPE or PRINT IN INK

Malh
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153/42E-23
ac

State Well No.

State Permit No.

(1) OWNER: WATER RESOURCES DEPT
Name **Bob Mayhall** SALEM, OREGON
Address **P.O. box 16**
City **Jamieson Or.** State **OR.**

(2) TYPE OF WORK (check):
New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL: (4) PROPOSED USE (check):
Rotary Air Driven Domestic Industrial Municipal
Rotary Mud Dug Irrigation Test Well Other
Bored Thermal Withdrawal ReInjection

CASING INSTALLED: Steel Plastic
Threaded Welded
12" Diam. from +1 ft. to 36" ft. Gauge .250

LINER INSTALLED:
"Diam. from " ft. to " ft. Gauge "

(6) PERFORATIONS: Perforated? Yes No
Type of perforator used
Size of perforations in. by in.
perforations from " ft. to " ft.
perforations from " ft. to " ft.
perforations from " ft. to " ft.

(7) SCREENS: Well screen installed? Yes No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from " ft. to " ft.
Diam. Slot Size Set from " ft. to " ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? **Driller**
at 1000 gal./min. with 80 ft. drawdown after 1 hr.
Air test gal./min. with drill stem at " ft. hrs.
Ballor test gal./min. with " ft. drawdown after hrs.
Water flow g.p.m.
Temperature of water 60° Depth artesian flow encountered " ft.

(9) CONSTRUCTION: Special standards: Yes No
Well seal—Material used **Portland cement**
Well sealed from land surface to 30 ft.
Diameter of well bore to bottom of seal 16 in.
Diameter of well bore below seal 12 in.
Number of sacks of cement used in well seal 36 sacks
How was cement grout placed? **Grout pump**

Was pump installed? **No** Type HP Depth ft.
Was a drive shoe used? Yes No Flugs Size location ft.
Did any strata contain unusable water? Yes No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? Yes No Size of gravel
Gravel placed from " ft. to " ft.

(10) LOCATION OF WELL:
County **Malheur** Driller's well number
S.W. 1/4 N.E. 1/4 Section **23** T15 S. R42 E. W.M.
Tax Lot # Lot Blk Subdivision
Address at well location:

(11) WATER LEVEL: Completed well.
Depth at which water was first found 220 ft.
Static level 70 ft. below land surface. Date 1-4-85
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing
Depth drilled 605 ft. Depth of completed well 595 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Soil	0	3	
Br. clay s. blk. & br. boulders	3	25	
Br. clay (hard)	25	60	
Br. clay	60	120	
Br. clay (hard sandy)	120	220	
Br. clay br. blk. & red gravel (fine) W.B.	220	222	70
Br. clay	222	285	70
Br. blk. & red gravel (fine) br. sand (med.)	285	290	70
Br. clay br. blk. & red gravel (fine)	290	330	70
Br. clay	330	485	70
Br. clay br. blk. & red gravel (fine)	485	510	70
Bl./blk./r./red/gravel			
Br. clay	510	552	70
Br. blk. & red gravel (fine)	552	560	70
Br. clay br. blk. & red gravel (fine)	560	600	70
Br. clay	600	605	70
Work started 10-14 1985 Completed 5-16 86			
Date well drilling machine moved off of well 5-17 86			

(unbonded) Water Well Constructor Certification (if applicable):
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
(Signed) _____ Date _____, 19__

Bonded Water Well Constructor Certification:
Bond **1-7933149** Issued by: **Miller of Texas**
(Number) (Surety Company Name)
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name **Bowman Drilling**
(Person, firm or corporation) (City and State)
Address **P.O. box 41 Jamieson Or. 97909**
(Signed) **Herbert A. Bowman**
Water Well Constructor
Date **5-19 86**

NOTICE TO WATER WELL CONSTRUCTOR
The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion.

SP-45283-880

Math 112

RECEIVED Malheur 11/2 158/42E/24dd (START CARD) # 5336

STATE OF OREGON WATER WELL REPORT (as required by ORS 637.705)

(1) OWNER: Well Number: 2 WA Name Patrick & Marcia McGourty Address P.O. Box 181 City Brogan State Or Zip 97903

(2) TYPE OF WORK: [X] New Well [] Deepen [] Recondition [] Abandon

(3) DRILL METHOD: [] Rotary Air [] Rotary Mud [X] Cable [] Other

(4) PROPOSED USE: [] Domestic [] Community [] Industrial [X] Irrigation [] Thermal [] Injection [] Other

(5) BORE HOLE CONSTRUCTION: Special Construction approval Yes No [] [X] Depth of Completed Well 900 ft. Explosives used [] [X] Type Amount

Table with columns: HOLE Diameter, SEAL Material, Amount sacks or pounds. Rows: 18 0 18 cement 0 18 14sacks; 14 18 62; 12 62 900

How was seal placed: Method [] A [] B [X] C [] D [] E [] Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER: Table with columns: Diameter, From, To, Gauge, Steel, Plastic, Welded, Threaded. Rows for Casing and Liner.

Final location of shoe(s) 62

(7) PERFORATIONS/SCREENS: Table with columns: From, To, Slot size, Number, Diameter, Tele/pipe size, Casing, Liner.

(8) WELL TESTS: Minimum testing time is 1 hour [X] Pump [] Roller [] Air [] Flowing [] Artesian Yield gal/min 450 Drawdown 240 Drill stem at Time 1 hr.

Temperature of water 70° Depth Artesian Flow Found Was a water analysis done? [] Yes By whom Did any strata contain water not suitable for intended use? [] Too little [] Salty [] Murky [] Other [] Colored [] Other Depth of strata: 2'

(9) LOCATION OF WELL by legal description: County Malheur Latitude Longitude Township 158 N or S, Range 42E E or W, WM. Section 24 S.E. 1/4 S.E. 1/4 Tax Lot Lot Block Subdivision Street Address of Well (or nearest address) 3024 Waters Lane Brogan Or.

(10) STATIC WATER LEVEL: 9 ft. below land surface. Date 9-20-88 Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES: Table with columns: From, To, Estimated Flow Rate, SWL. Row: 250 252 300 Gal. 9

(12) WELL LOG: Table with columns: Material, From, To, SWL. Rows: Soil 0 8; Brn. clay brn. sand (fine) 8 25; Brn. clay brn. gravel (large) 25 60; brn. sand (fine) 60 165; Brn. clay (hard) 60 165; Blue clay (hard & soft mix) 165 250; Brn. & blk. gravel (fine) brn. sand (fine) W.B. 250 252 9; Brn. clay brn. & blk. gravel (fine) 252 285 9; Brn. clay 285 310 9; Blue-gray clay 310 355 9; Brn. clay 355 405 9; Brn. clay brn. & blk. gravel (fine) 405 500 9; Blue clay 500 520 9; Brn. clay 520 525 9; Blue clay 575 605 9; Brn. clay 605 695 9; Blue clay 695 705 9; Brn. clay brn. & blk. gravel (fine) 705 725 9; Brn. clay 725-875 brn. clay 875 900 9. Date started 9-21-88 Completed 10-10-88

(unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief. WWC Number Signed Date

(bonded) Water Well Constructor Certification: I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief. WWC Number 1308 Signed Herbert H. Bowman Date 11-3-88