PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 11/18/2010

FROM: Ground Water/Hydrology Section Jen Woody
Reviewer's Name

SUBJECT: Application G- 17430 Supersedes review of **n/a**
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review ground water applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation**.

A. GENERAL INFORMATION: **Applicant's Name**: Orchard Glade Water District **County: Jackson**

A1. Applicant(s) seek(s) 0.10 cfs from 1 well(s) in the Rogue subbasin Quad Map: Shady Cove

A2. Proposed use: Domestic Expanded Seasonality: year-round

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	JACK 728		Low yield Bedrock	0.10	34S/1W- 16 SW SE	615' N, 195' E fr S cor S 16
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	**1510**	**54**	**55.43**	**12/09/2010**	**123**	**0-38**	**0-38**	**0-123**	**40-123**	**47**		**p**

Use data from application for proposed wells.

A4. **Comments:**

A5. ☒ **Provisions of the** Upper Rogue Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments:

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area:
Comments:

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* for the proposed use:

a. ☐ **is** over appropriated, ☐ **is not** over appropriated, *or* ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the ground water portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) 7J, 7N, 7P;
   ii. ☐ The permit should be conditioned as indicated in item 2 below.
   iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water reservoir between approximately _____ ft. and _____ ft. below land surface;

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Ground Water Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Ground water availability remarks:** In recent years, the Department has received many complaints about insufficient and decreasing well yields in Shady Cove. While some of these problems appear to be related to inefficient and/or aging wells, others reflect increasing pressure on the groundwater resource coupled with the low-yielding nature of the aquifer. In many cases, domestic exempt well owners are trucking water to supplement their well water supply, even through winter months. Due to the fractured-dominated porosity, neighboring wells can behave quite differently, depending on the arrangement of fractures relative to wells. There are few groundwater rights, no municipal water systems, and a plethora of domestic exempt wells. It is not unusual to see neighborhoods with a well on every taxlot in Shady Cove, or to see multiple households relying on a shared well that yields less than 10 gpm.

This is a fractured aquifer with limited storage. As shown in Figure 1, winter levels indicate the aquifer is recharging each year, summer levels show that storage is depleted earlier in the season than it was 15 years ago. This trend is especially dramatic in the north end of town (Section 10). The proposed use is in the south end of town (Section 16), where water levels show a less dramatic summer response. Hydraulic connection to the Rogue River may be buffering the impact of concentrated well use in the south end of town. Well density is also lower in the south end of town. There have been fewer water supply complaints in the applicant's area, and a recent pump test demonstrates Orchard Glade's well can produce about 45 gpm for 4 hours.

Although water levels and well yields currently look reliable at Orchard Glade, in light of the groundwater problems observed in Shady Cove, I recommend Condition 7N. This requires an annual water level measurement taken in March to monitor the impact of the proposed use over the long term.

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

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Fractured Volcaniclastic rocks of W. Cascades**	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: According to the well log, the static water level is above the water-bearing zone. The water level on 12/09/2010 was coincident with the first water bearing zone.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Rogue River**	**1456**	**1380**	**1280**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The well is less than ¼ mile from the Rogue River, but appears to be in a confined or semi-confined system. The static water level is above with the river elevation, indicating hydraulic connection.

Water Availability Basin the well(s) are located within: ID #: 31530708 ROGUE R > PACIFIC OCEAN - AB HOG CR

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**	☒	☐	**none**	**none**	☐	**1020**	☐		☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: Qw = 0.10 cfs, 1% of 80% = 10.2 cfs, so Qw < 1% of 80% natural flow.
The proximity of this well to the Rogue River triggers PSI, but WARS indicates there is water available in the Rogue River year-round.
There are no aquifer test data to provide reasonable aquifer parameters for this location, and the models available are not appropriate for use in this fractured aquifer environment. Therefore, interference calculations were not conducted. However, in a fractured rock aquifer, the cone of depression is expected to be steep and narrow, intersecting surface water over a limited area. For this reason, surface water greater than ¼ mile away was not evaluated for interference.

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

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation:

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or ground water use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s) ;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

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

References Used:

Hladkey, Frank R., 1992, Geology and Mineral Resources of Shady Cove Quadrangle, Jackson County, Oregon, Department of Geology and Mineral Industries, GMS-52, 2p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: _____ **Logid:** _____

D2. **THE WELL does not meet current well construction standards based upon:**
- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency**:
- a. ☐ constitutes a health threat under Division 200 rules;
- b. ☐ commingles water from more than one ground water reservoir;
- c. ☐ permits the loss of artesian head;
- d. ☐ permits the de-watering of one or more ground water reservoirs;
- e. ☐ other: (specify) _____

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

D5. **THE WELL**
- a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.
- b. ☐ I don't know if it met standards at the time of construction.

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

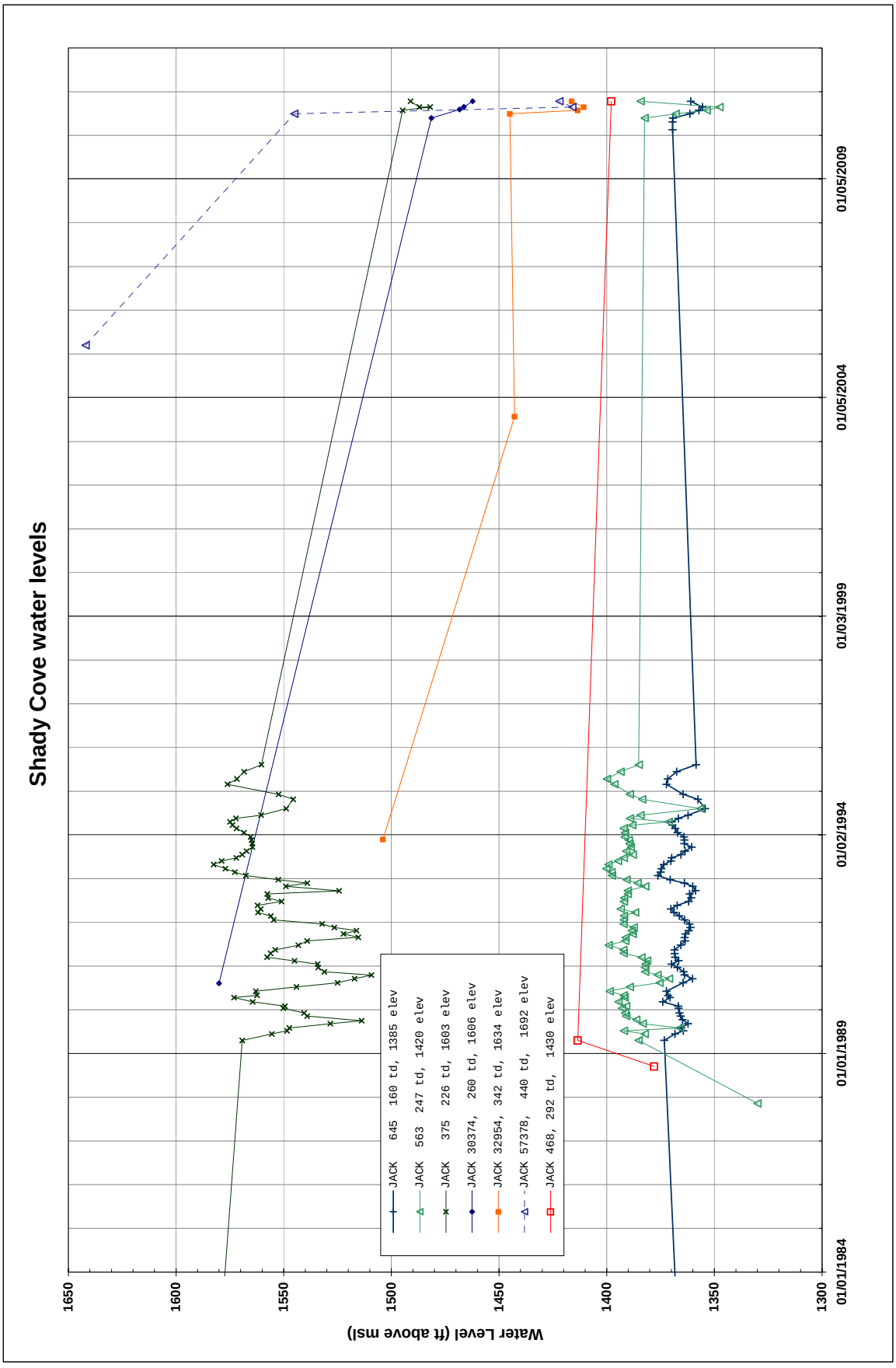
THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

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

_____ _____, 200____.
(Enforcement Section Signature)

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

Water Level Data



Water Availability

Water Availability Analysis

Detailed Reports

ROGUE R > PACIFIC OCEAN - AB HOG CR

ROGUE BASIN

Water Availability as of 11/17/2010

Watershed ID #: 31530708

Exceedance Level: 80%

Date: 11/17/2010

Time: 12:42 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Water Availability Calculation

Monthly Streamflows in Cubic Feet per Second
Storage 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	1,860.00	928.00	932.00	0.00	0.00	932.00
FEB	2,260.00	1,810.00	455.00	0.00	0.00	455.00
MAR	2,300.00	1,610.00	687.00	0.00	0.00	687.00
APR	2,420.00	1,060.00	1,360.00	0.00	0.00	1,360.00
MAY	2,500.00	384.00	2,120.00	0.00	0.00	2,120.00
JUN	1,670.00	391.00	1,280.00	0.00	0.00	1,280.00
JUL	1,250.00	379.00	871.00	0.00	0.00	871.00
AUG	1,080.00	365.00	715.00	0.00	0.00	715.00
SEP	1,020.00	344.00	676.00	0.00	0.00	676.00
OCT	1,080.00	242.00	838.00	0.00	0.00	838.00
NOV	1,210.00	281.00	929.00	0.00	0.00	929.00
DEC	1,620.00	420.00	1,200.00	0.00	0.00	1,200.00
STO	1,640,000.00	491,000.00	1,150,000.00	0.00	0.00	1,150,000.00

Well location Map