

** Superseded - by review 10/16/2011*

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **August 5, 2011**
FROM: Ground Water/Hydrology Section Karl Wozniak
SUBJECT: Application G- 17294 Reviewer's Name
Supersedes review of **March 23, 2010** 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: Carlton Nursery Co LLC County: Yamhill

A1. Applicant(s) seek(s) 1.0 cfs from 3 well(s) in the Willamette Basin,
Yamhill subbasin Quad Map: Dayton

A2. Proposed use Nursery 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	YAMH 557	1	Alluvium	1.0	5S/3W-16 NW/NW	70' N, 5' E fr NW cor DLC 56
2	YAMH 6409	2	Alluvium	1.0	5S/3W-8 SE/SE	150' N, 390' W fr NW cor DLC 56
3	Proposed	3	Alluvium	1.0	5S/3W-8 SE/SE	1120' N, 1120' W fr NW cor DLC 56
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	160	55	10	2/27/1978	146	0-20	0-146		60-65 105-135	100		Air
2	150		13	/22/1986	261	0-22	-1-126		80-101	190		Air
3	160				350	>80	>=20		100-350			

Use data from application for proposed wells.

A4. **Comments:** The interval from 125-247 was backfilled in Well 2 (YAMH 6409) with clay and bentonite so the well is effectively only 125 feet deep. Well 1 (YAMH 557) is gravel packed from 20-146 feet. Well 2 (YAMH 6409) is gravel packed from 22-125 feet. Construction details for Well 3 are those as proposed on the application. **The original review of March 23, 2010 incorrectly entered 1% of the 80% natural flow in column 8 of Table C3a rather than the actual 80% flows. This re-review corrects those numbers. However, this does not change any of the potential for substantial interference findings.**

A5. Provisions of the Willamette 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: The wells will produce from a confined aquifer so the pertinent basin rules do not apply.

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) 7C, Large water-use reporting;
 - 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 alluvial 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: _____

Over 200 feet of predominantly fine-grained sediments occur in the vicinity of the proposed wells. Productive sand and gravel beds are found at various depths but are generally less than 10 feet thick and rarely have a combined thickness of more than 25 feet. Some sand beds occur at depths less than 80 feet. Well yields in the area are variable but large diameter wells are capable of producing 150 gpm. The water table occurs at shallow depths, generally less than 20 feet. Warner and Palmer Creeks are incised to depths of of 30-50 feet below the valley floor in the area. Wells that produce from sand or gravel beds near or above this level will have a direct hydraulic connection to these streams. Wells that produce from sand and gravel beds below this level will have an indirect hydraulic connection to these streams. Lambert Slough occurs in the Holocene floodplain of the Willamette River which lies about 80 below the elevation of the valley floor in the vicinity of the proposed POAs. Holocene gravels in the floodplain are equivalent in elevation to water-bearing sand beds that occur at depths of around 80-100 feet in YAMH 557 and YAMH 6409. This geometry indicates that the sands in the wells are in direct connection with the Holocene floodplain gravels which are hydraulically connected to Lambert Slough.

Very few water levels are available from alluvial wells in the surrounding area. Because water-level data is sparse and the aquifer is thin, water-level measurement and decline conditions are recommended if a permit is issued.

The well log for YAMH 6409 indicates that gravel beds found at depths of 249-261 feet contain highly mineralized groundwater.

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	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	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: Static water levels generally occur above the producing sand and gravel beds identified on well logs in the area. This is consistent with the occurrence of relatively thin sand and gravel beds in a thick column of predominantly fine-grained sediments.

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	Warner Creek	140	110-150	420	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Palmer Creek	140	110-130	5000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Lambert Slough	140	75	4800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Warner Creek	140	110-150	10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Palmer Creek	140	110-130	4600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	Lambert Slough	140	75	5200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	Warner Creek	140	110-150	1020	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	2	Palmer Creek	140	110-130	3500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	3	Lambert Slough	140	75	5800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Water table maps indicate that groundwater flows toward and discharges into Warner Creek, Palmer Creek, and Lambert Slough.

Water Availability Basin the well(s) are located within: Yamhill R > Willamette R - At Mouth and WILLAMETTE R > COLUMBIA R - AB MOLALLA R

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 checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	>25	<input checked="" type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	>25	<input checked="" type="checkbox"/>
1	3	<input type="checkbox"/>	<input type="checkbox"/>	MF-182A	1500	<input type="checkbox"/>	3830	<input type="checkbox"/>		<input type="checkbox"/>
2	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	>25	<input checked="" type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	>25	<input checked="" type="checkbox"/>
2	3	<input type="checkbox"/>	<input type="checkbox"/>	MF-182A	1500	<input type="checkbox"/>	3830	<input type="checkbox"/>		<input type="checkbox"/>
3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	<<25	<input checked="" type="checkbox"/>
3	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	56.5	<input checked="" type="checkbox"/>	<<25	<input checked="" 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: The wells are located in the Yamhill River water availability basin but will also impact streams in the Willamette River WAB. Sstream depletion of Warner and Palmer Creeks at 30 days was presumed to be >25% for Wells 1 and 2 because some production from shallow water-bearing zones will occur because of existing perforations or gravel packs that extend above depths of 80 feet. Stream depletion due to Well 3 is likely to be much less than 25% after 30 days if the well is constructed, as proposed, to prevent any production from water-bearing zones at depths less than 80 feet. Stream depletion of Lambert Slough cannot be readily quantified because of the change in aquifer conditions (confined to unconfined and low permeability to high permeability) at the boundary between Pleistocene sediments penetrated by the wells and the Holocene floodplain gravels to the east.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													

(D) = (A) > (C)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100	%	%	%	%	%	%	%	%	%	%	%	%

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

Basis for impact evaluation: Proposed Well 3 is hydraulically connected, but greater than 1 mile from Lambert Slough. However, stream depletion impacts were not estimated in Table C4a since the maximum pumping rate will always be less than 1% of the 80% natural flow of the Willamette River water availability basin.

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** Special Condition: Well 3 shall be constructed to prevent production from water-bearing zones shallower than 80 feet.

Land surface elevation at the proposed well locations is about 160 feet. Local streams are incised to elevations as low as 110 feet within distances of 1 mile. To prevent direct impacts to streams, Well 3 should not produce from sand and gravel beds near or above this level. This can be accomplished by the above condition (30 feet was added as a margin of safety). This will not preclude hydraulic connection with local streams but it will decrease the efficiency of the connection to the streams by ensuring that productive water-bearing beds and stream beds will be separated by at least 20-30 feet of fine-grained materials.

References Used:

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

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

Price, D., and Johnson, N.A., 1965, Selected ground water data in the Eola-Amity Hills area, northern Willamette Valley, Oregon: Oregon Water Resources Department Ground Water Report No. 7.

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, 82p.

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 Availability Tables

**YAMHILL R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN**

Water Availability as of 1/19/2010

Watershed ID #: 30200801

Exceedance Level: 80% ▼

Date: 1/19/2010

Time: 12:10 PM

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	1,840.00	67.60	1,770.00	0.00	31.70	1,740.00
FEB	2,070.00	65.40	2,000.00	0.00	31.70	1,970.00
MAR	1,760.00	43.00	1,720.00	0.00	31.70	1,690.00
APR	1,060.00	51.50	1,010.00	0.00	31.70	977.00
MAY	523.00	69.30	454.00	0.00	31.70	422.00
JUN	232.00	93.00	139.00	0.00	31.70	107.00
JUL	108.00	117.00	-8.84	0.00	31.70	-40.50
AUG	66.90	101.00	-34.50	0.00	31.70	-66.20
SEP	56.50	65.40	-8.87	0.00	31.70	-40.60
OCT	72.50	19.60	52.90	0.00	31.70	21.20
NOV	462.00	40.20	422.00	0.00	31.70	390.00
DEC	1,670.00	64.50	1,610.00	0.00	31.70	1,570.00
STO	1,180,000.00	48,200.00	1,130,000.00	0.00	23,000.00	1,110,000.00

**WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN**

Water Availability as of 3/23/2010

Watershed ID #: 182

Exceedance Level: 80%

Date: 3/23/2010

Time: 4:52 PM

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	21,400.00	2,250.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,440.00	15,800.00	0.00	1,500.00	14,300.00
MAR	22,400.00	7,220.00	15,200.00	0.00	1,500.00	13,700.00
APR	19,900.00	6,870.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,200.00	12,400.00	0.00	1,500.00	10,900.00
JUN	8,740.00	2,050.00	6,690.00	0.00	1,500.00	5,190.00
JUL	4,980.00	1,870.00	3,110.00	0.00	1,500.00	1,610.00
AUG	3,830.00	1,720.00	2,110.00	0.00	1,500.00	614.00
SEP	3,890.00	1,470.00	2,420.00	0.00	1,500.00	918.00
OCT	4,850.00	717.00	4,130.00	0.00	1,500.00	2,630.00
NOV	10,200.00	851.00	9,350.00	0.00	1,500.00	7,850.00
DEC	19,300.00	924.00	18,400.00	0.00	1,500.00	16,900.00
STO	15,200,000.00	2,250,000.00	13,000,000.00	0.00	1,090,000.00	11,900,000.00

Location Map

