

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 12/14/2015
 FROM: Groundwater Section Phillip I. Marcy/Karl C. Wozniak
Reviewer's Name
 SUBJECT: Application G- 18051 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: Steven Duyck County: Washington

A1. Applicant(s) seek(s) 0.22 cfs from 1 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (33.5 acres) Seasonality: March 1st – 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	Proposed	1	Basalt	0.22	2N/3W-33 SE-NW	1420'S, 190'W fr N ¼ cor S 33
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	222	?	?	NA	680±	?	?	?	?	?	?	NA

Use data from application for proposed wells.

A4. **Comments:** Proposed depth is similar to nearby City of Banks well (WASH 62373), currently the deepest well in the area that penetrates multiple interflow zones between CRB basalt flows. No information is given concerning the proposed case and seal depth within the well. Surface elevation of the well head is derived from the proposed location metes and bounds, and is also similar to the surface elevation of WASH 62373.

A5. **Provisions of the** Willamette (690-502-0020) 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: If properly constructed, withdrawal of groundwater from the proposed POA is unlikely to impair surface water uses resulting from hydraulic connection between groundwater and surface water.

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) 7I – Willamette Basalt; “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 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 has proposed one well that will produce from water-bearing zones in the Columbia River Basalt Group (CRBG). The CRBG consists of a series of lava flows that range up to 300 feet thick in the vicinity of the proposed well. Although unconfined ground water occurs near the surface of the basalts, most water occurs in confined aquifers that occupy thin rubble zones (interflow zones) that occur at the contacts between lava flows. The thick interiors of the basalt flows generally have very low porosity and permeability and act as confining beds. This physical geometry generally produces a stack of thin aquifers (interflow zones) separated by thick confining beds (flow interiors). In the area of the proposed wells, the basalt aquifers are truncated by local stream drainages which have eroded to various levels through the basalt column (see attached map). Because the aquifers are confined (storativity is estimated to be 0.0001), pumping impacts will propagate outward at rapid rates and are likely to reach aquifer boundaries (streams, faults, and truncated basalt flow margins) within fractions of an hour. Using aquifer parameters appropriate for the basalts, it can be shown that the cone of depression from a pumped well will produce measurable impacts at a distance of 1 mile within several hours. Therefore, hydraulic interference with nearby wells will occur rapidly once pumping begins. The presence of local aquifer boundaries will increase the degree of interference with nearby wells that are completed in the same water-bearing zones.

Water levels in nearby wells do not show significant declines (see attached hydrograph). These wells produce from basalt aquifers below at least one dense flow interior, with WASH 5956 penetrating multiple water-bearing zones (see attached log).

Special Conditions:

1. Best management practices shall be used to maximize the efficiency of water use.
2. The well shall be continuously cased and continuously sealed to a depth of at least 220 feet, and at least 10 feet into the competent bedrock unit overlying the production zone.
3. The well shall be open to a single aquifer in the Columbia River Basalt Group and shall meet applicable well construction standards (OAR 690-200 and OAR 690-210). In addition, the open interval shall be no greater than 50 feet. However, a larger open interval may be approved by the Department if the applicant can demonstrate to the satisfaction of the Department that each well is only open to a single aquifer. Following well completion, the well shall be thoroughly developed to remove cuttings and drilling fluids. Substantial evidence of a single aquifer completion may be collected by video log, downhole flowmeter, water chemistry and temperature, or other downhole geophysical methods approved by the

Department. These methods shall characterize the nature of the basalt rock and assess whether water is moving in the borehole. Any discernable movement of water within the well bore when the well is not being pumped shall be assumed as evidence of the presence of multiple aquifers in the open interval.

4. A dedicated water-level measuring tube shall be installed in the production well. The measuring tube shall meet the standards described in OAR 690-215-0060. When requested, access to the well shall be provided to Departmental staff in order to make water-level measurements.

5. Whenever possible, cuttings shall be collected at intervals of 10' in addition to depths at which a change in lithology is noted. These samples shall then be provided to the groundwater section upon completion of the well.

The intent of the special conditions regarding well construction is to isolate production of groundwater within the deeper basalt aquifer system to avoid hydraulic connection to, and interference with, several local streams. This deeper system is likely to be shared by nearby basalt wells WASH 5956 and WASH 3127 (see attached hydrographs) whose head elevations do not correspond to elevations of nearby surface waters. Measurements of nearby WASH 7581 (seal depth of 125') show fairly close correspondence to surface water elevations, therefore it is likely hydraulically connected to surface water. Interpretation of this well log indicates the next water-bearing zone occurs at or near sea level. Assuming similar subsurface geometry at the proposed POA location, a considerably greater case and seal depth (at least 220 feet) is required to isolate production from this depth.

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
		%	%	%	%	%	%	%	%	%	%	%	%
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: This section does not apply.

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:**

References Used:

Gannett and Caldwell, 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-A

Woodward, Gannett and Vaccaro, 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-B

Walton, William, 1962, Selected Analytical Methods for Well and Aquifer Evaluation, Bulletin 49, Illinois State Water Resources.

Freeze and Cherry, 1979, Groundwater, Prentice-Hall, Inc.

Conlon and Others, 2005, Ground-Water Hydrology of the Willamette Basin, Oregon, Scientific Report 2005-5168, USGS.

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

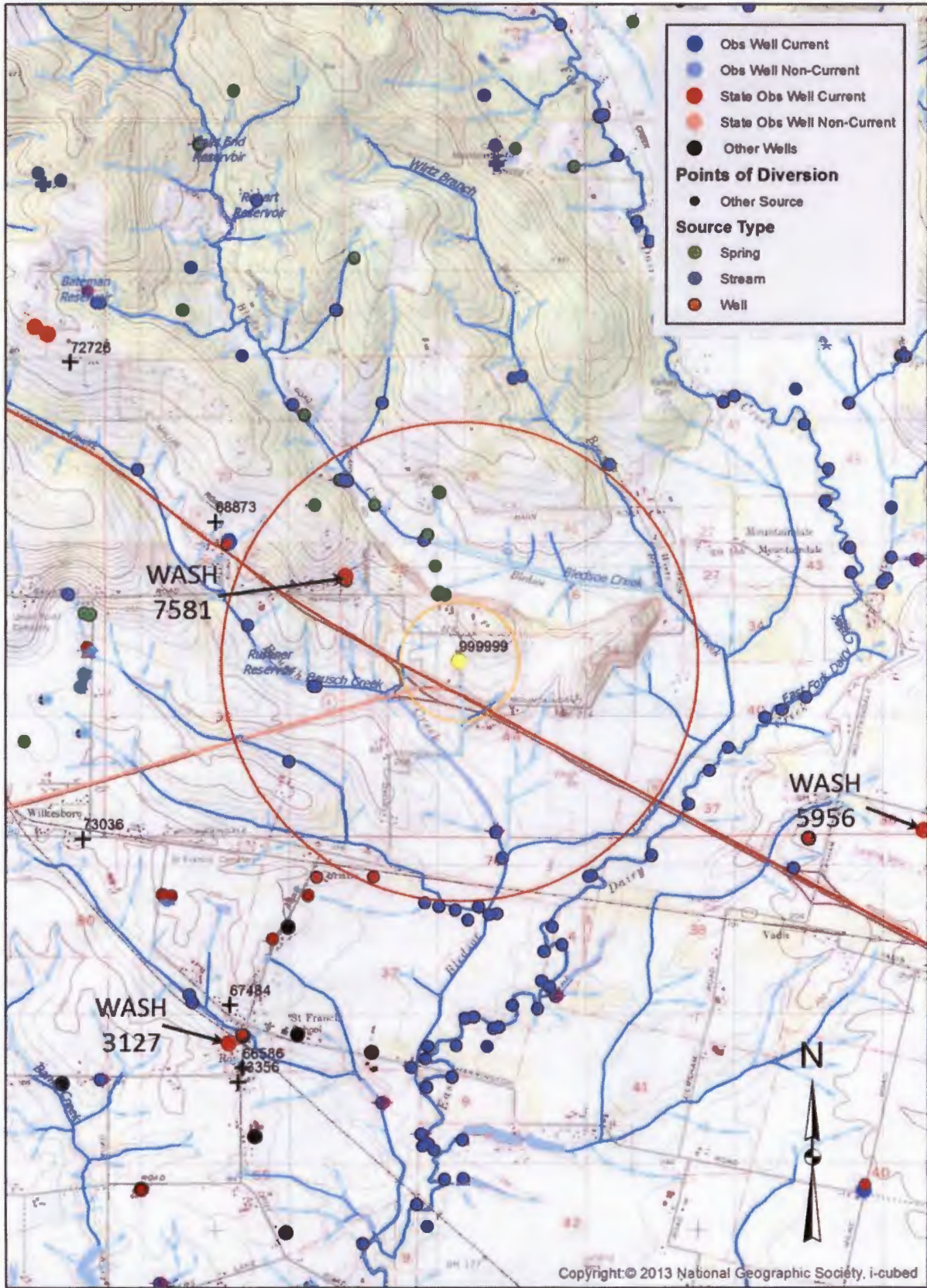
Watershed ID #: 30201004
Time: 12:57 PM

E FK DAIRY CR > DAIRY CR - AT MOUTH
Basin: WILLAMETTE

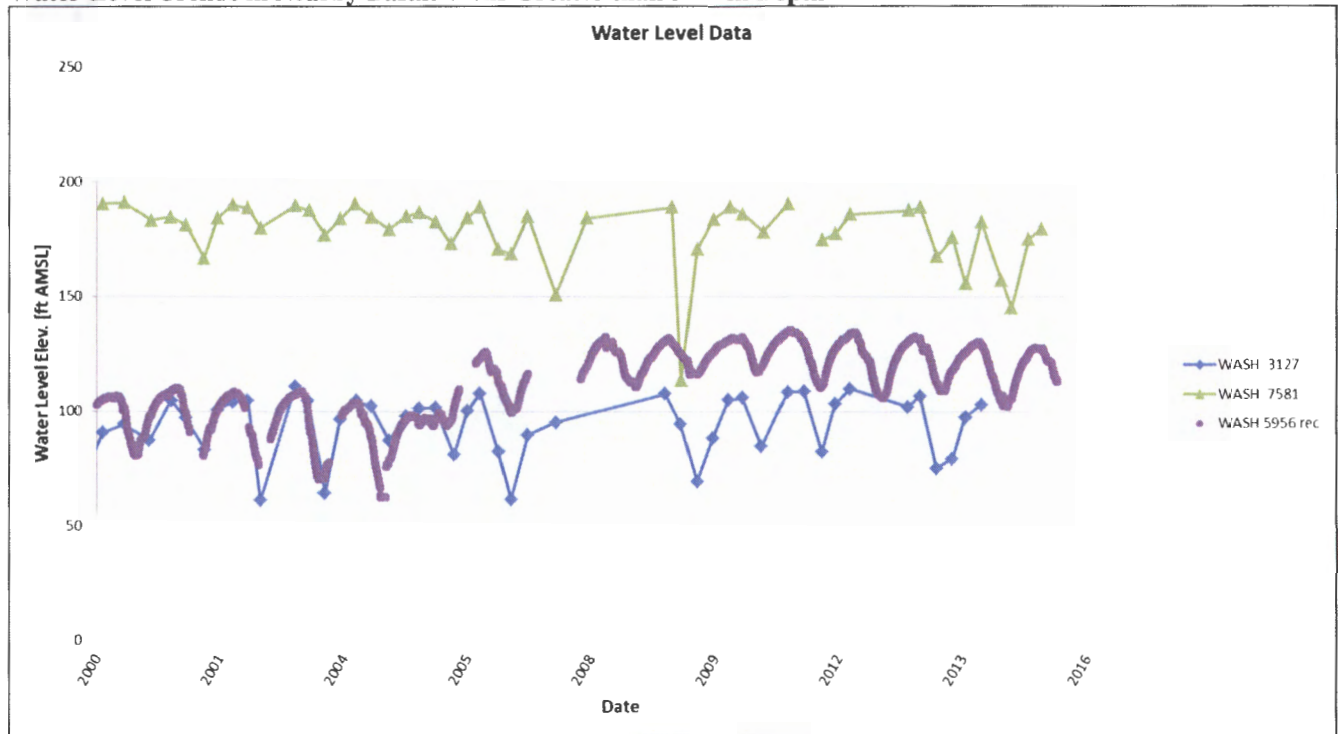
Exceedance Level: 80
Date: 12/14/2015

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	130.00	2.17	128.00	0.00	0.00	128.00
FEB	167.00	2.18	165.00	0.00	0.00	165.00
MAR	134.00	1.83	132.00	0.00	0.00	132.00
APR	86.10	1.57	84.50	0.00	0.00	84.50
MAY	49.00	7.98	41.00	0.00	0.00	41.00
JUN	28.10	9.88	18.20	0.00	0.00	18.20
JUL	15.40	13.10	2.28	0.00	0.00	2.28
AUG	12.40	11.20	1.24	0.00	0.00	1.24
SEP	11.40	6.70	4.70	0.00	0.00	4.70
OCT	13.50	1.12	12.40	0.00	0.00	12.40
NOV	21.30	1.32	20.00	0.00	0.00	20.00
DEC	86.60	2.07	84.50	0.00	0.00	84.50
ANN	82,000	3,710	78,300	0	0	78,300

Well Location Map



Water-Level Trends in Nearby Basalt Wells Greater than 500' in Depth



Well Logs Included:

WASH 62373 – Drilled to similar depth as proposed, nearly same elevation

WASH 5956 – Similar depth as proposed, nearby recorder well

WASH 3127 – Similar depth as proposed, long-term water level record

WASH 7581 – Less than 1 mile from proposed POA location, penetrates at least one CRB interflow zone

WASH 67028 – Well in NW/NW of section 33 in similar topographic setting, showing depth to basalt (180').

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

JUN 02 2005

WELL I.D. # L 75346

START CARD # 173577

WATER RESOURCES DEPT SALEM, OREGON

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

(1) LAND OWNER Well Number City of Banks Address 100 South Main Street City Banks State Or Zip 97106

(2) TYPE OF WORK [X] New Well [] Deepening [] Alteration (repair/recondition) [] Abandonment [] Conversion

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

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

(5) BORE HOLE CONSTRUCTION Special Construction: [] Yes [X] No Depth of Completed Well 665 ft Explosives used: [] Yes [X] No Type Amount

Table with columns: BORE HOLE (Diameter, From, To), SEAL (Material, From, To), Sacks or Pounds. Row 1: 16, 0, 300, Cem/Bent, 0, 300, 115 sks. Row 2: 12, 300, 665.

How was seal placed: Method [] A [X] B [X] C [] D [] E 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. Casing: 12, +2, 300, .250, [X], [], [X], []. Liner: [], [], [], [].

Drive Shoe used [] Inside [] Outside [X] None Final location of shoe(s)

(7) PERFORATIONS/SCREENS Table with columns: From, To, Slot Size, Number, Diameter, Tele/pipe size, Casing, Liner. Includes checkboxes for Perforations and Screens.

(8) WELL TESTS: Minimum testing time is 1 hour. Table with columns: Yield gal/min, Drawdown, Drill stem at, Time. Row 1: 650+, 275-280, 660, 1hr. Row 2: 275-280, 200, 200, 1hr.

Temperature of water 57°F Depth Artesian Flow Found Was a water analysis done? [X] Yes By whom A.M.J. Did any strata contain water not suitable for intended use? [] Too little [] Salty [] Muddy [] Odor [] Colored [] Other Depth of strata:

(9) LOCATION OF WELL (legal description) County Washington Tax Lot 402 Township 2N N or S Range 3W E or W WM Section 31 NE 1/4 NW 1/4 Lat Long

Street Address of Well (or nearest address) 42000 NW Banks Rd. Banks, Or

(10) STATIC WATER LEVEL 48 ft. below land surface. Date 5-25-05 Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES Table with columns: From, To, Estimated Flow Rate, SWL. Row 1: 378, 468, 350 gpm, 48. Row 2: 615, 660, 300 gpm, 48.

(12) WELL LOG Table with columns: Material, From, To, SWL. Rows include: Brn & red-brn cly sticky, firm (0-69), Red-brn basalt, very weathered (69-102), Green clay soft (102-121), Gry-brn clay firm (121-155), Red-brn basalt very weathered (155-179), Brn basalt, weathered (179-201), Gry-brn basalt (201-206), Gry/gry-blk basal thrd (206-231), Gry-brn basalt w/ interbeds (231-251), Gry-gry blk basalt hr (251-313), Brn basalt interbed (313-325). Date Started 3-22-05, Completed 5-25-05.

(unbonded) Water Well Constructor Certification I certify that the work I performed on the construction, deepening, 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 533 Date 5-31-2005 Signed [Signature]

(bonded) Water Well Constructor Certification I accept responsibility for the construction, deepening, 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 1266 Date May 31, 2005 Signed [Signature]

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

JUN 02 2005

WELL I.D. # L 75346

START CARD # 173577

WATER RESOURCES DEPT

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

(1) LAND OWNER Well Number _____
Name City of Banks Conti. Page 2
Address 100 South Main Street
City Banks State OR Zip 97106

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

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

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

(5) BORE HOLE CONSTRUCTION Special Construction: Yes No
Depth of Completed Well 665 ft
Explosives used: Yes No Type _____ Amount _____

BORE HOLE			SEAL			Sacks or Pounds
Diameter	From	To	Material	From	To	

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

(6) CASING/LINER

Casing/Liner	Diameter	From	To	Gauge	Drive		
					Steel	Plastic	Welded Threaded

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

(7) PERFORATIONS/SCREENS

From	To	Slot Size	Number	Diameter	Tubing/pipe size	Casing/Liner	
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

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

Yield gal/min	Drawdown	Drill stem at	Time

Temperature of water _____ 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 Muddy Odor Colored Other _____
Depth of strata: _____

(9) LOCATION OF WELL (legal description)
County Washington
Tax Lot 402 Lot _____
Township 2N N or S Range 3W E or W WM
Section 31 NE 1/4 NW 1/4

Lat _____ or _____ (degrees or decimal)
Long _____ or _____ (degrees or decimal)

Street Address of Well (or nearest address)
42000 NW Banks Rd., Banks, OR

(10) STATIC WATER LEVEL
48 ft. below land surface. Date 05/25/2005
_____ ft. below land surface. Date _____
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES
Depth at which water was first found _____

From	To	Estimated Flow Rate	SWL

(12) WELL LOG Ground Elevation

Material	From	To	SWL
Blk basalt, frags, occ soapstone.	325	378	
Brn/gry-brn basalt frac broken occ red-brn basalt/lava streaks	378	420	48
Blk/gry blk basalt/lava	420	468	
Blk/gry blk basalt, hard occ frags.	468	615	
Blk basalt interbed, occ claystone occ lava streaks.	615	660	48
Blk/gry-blk basalt, frags.	660	665	

Date Started 3-22-2005 Completed 5-25-2005

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, 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 577 Date 5-31-2005
Signed [Signature]

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, 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 1266 Date May 31, 2005
Signed _____

WASH
5956

WATER WELL REPORT
STATE OF OREGON

State Well No. W 34-2A

State Permit No.

(1) **OWNER:**
Name Remi Cassens
Address ROUTE 3, HILLSBORO, OREGON

(2) **LOCATION OF WELL:**
County Washington Owner's number, if any—
NE 1/4 NE 1/4 Section 2 T. 1. N R. 3W W.M.
Bearing and distance from section or subdivision corner The Well is Located 312 South and 312 West, from the North-East Corner of the Land

(3) **TYPE OF WORK (check):**
New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 11.

(4) **PROPOSED USE (check):** (5) **TYPE OF WELL:**
Domestic Industrial Municipal Rotary Driven
Irrigation Test Well Other Cable Jetted
Dug Bored

(6) **CASING INSTALLED:** Threaded Welded
12" Diam. from 0 ft. to 318 ft. Gage 3/8"
" Diam. from _____ ft. to _____ ft. Gage _____
" Diam. from _____ ft. to _____ ft. Gage _____

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

(8) **SCREENS:** Well screen installed Yes No
Manufacturer's Name _____ Type _____ Model No. _____
_____ Slot size _____ Set from _____ ft. to _____ ft.
_____ Slot size _____ Set from _____ ft. to _____ ft.

(9) **CONSTRUCTION:**
Was well gravel packed? Yes No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.
Was a surface seal provided? Yes No To what depth? _____ ft.
Material used in seal—
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(10) **WATER LEVELS:**
Static level 35 ft. below land surface Date 1/20/60
Artesian pressure _____ lbs. per square inch Date _____

Log Accepted by: _____
[Signed] _____ Date _____, 19____
(Owner)

(11) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? Glenn Hart
Yield: 130 gal./min. with 315 ft. drawdown after 10 hrs.

Ballot test gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

(12) **WELL LOG:** Diameter of well 12" 10" inches.
Depth drilled 618 ft. Depth of completed well 618 ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
TOP SOIL and blue clay	0	47
Brown Sand with mica	47	55
Blue Clay	55	106
Black Sand	106	112
Blue Clay	112	198
Black Sand	198	201
Blue Clay	201	262
Red Clay	262	367
Weathered Basalt	268	307
Grey Basalt	307	363
Red Inner Flow - Water	363	366
Grey Basalt	366	397
Red Inner Flow - Water	397	399
Grey Basalt	399	520
Brown Weathered Zone		
Making Some Water	520	530
Grey Basalt	530	582
Blue Clay	582	585
Black Basalt That	585	618
Washed Clean When drilled. Herb Schlicker told me it showed quartz, iron pyrites and washed grains, indicating circulation.		

Work started Sept. 23 1959 Completed Jan. 20 1960

(13) **PUMP:** Manufacturer's Name Pacific Pump
Type: Turbine H.P. 75

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME HARTY Brothers (Type or print)
Address 3340 S.W. Seymour
Portland, Oregon
Driller's well number _____
[Signed] Glenn Hart (Well Driller)
License No. 116B Date 2/4, 1960

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

WASH 3 327
- 1 1993

WATER RESOURCES DEPT.

(START CARD) # 54446

1N/3W/6dc

(1) OWNER: Well Number _____
Name ROGER MCNURLIN
Address 10255 NW ROY RD.
City CORNELIUS State OR Zip 97113

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

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

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

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well 585 ft.
Explosives used Yes No Type _____ Amount _____

HOLE			SEAL			Amount
Diameter	From	To	Material	From	To	sacks or pounds
10	0	545	Cement	0	60	15 sks.
			Drill gel	60	465	
			Cement	465	545	20 sks.
6	545	585				

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

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 6	+1	545	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Tube/pipe size	Casing	Liner
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

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

Yield gal/min	Drawdown	Drill stem at	Time
30		580	1 hr.
20		300	"

Temperature of Water 53°F Depth Artesian Flow Found _____
Was a water analysis done? Yes By whom AMJ
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata _____

(9) LOCATION OF WELL by legal description:
County WASHINGTON Latitude _____ Longitude _____
Township 1N N or S. Range 3W E or W. WM
Section 6 SW 4 SE 4
Tax Lot 00602 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 10255 NW ROY RD
CORNELIUS, OR 97113

(10) STATIC WATER LEVEL:
62 ft. below land surface. Date 05/21/93
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 562

From	To	Estimated Flow Rate	SWL
562	581	30 gpm	62

(12) WELL LOG:

Ground elevation _____

Material	From	To	SWL
Topsoil	0	1	
Soft brown clay	1	19	
Soft gray clay	19	42	
Sticky gray-brown clay	42	54	
Sticky red-brown clay	54	117	
Sticky gray-brown clay	117	190	
Soft gray-green sandy clay	190	199	
Sticky blue-gray clay	199	342	
Fine to coarse black sand	342	354	
Sticky blue-gray clay	354	384	
Fine to coarse black sand	384	388	
Soft gray clay	388	444	
Brown clay	444	461	
Decomp brown basalt	461	526	
Soft brown basalt	526	535	
Firm gray-brown basalt	535	542	
Hard gray basalt	542	562	
Soft gray-black basalt	562	581	
Hard gray basalt	581	585	

Date started 05/12/93 Completed 05/21/93
(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.
Signed _____ Date _____ WWC Number _____
(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.
Signed [Signature] Date 05/25/93 WWC Number 1266

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

STATE ENGINEER, SALEM, OREGON 97310
within 30 days from the date
of well completion.

WASH
7581

WATER WELL REPORT

STATE OF OREGON

(Please type or print)

(Do not write above this line)

RECEIVED

OCT 18 1973

State Well No.

20/3W-28

STATE ENGINEER
SALEM, OREGON

State Permit No.

(1) OWNER:

Name Donald R. Olson
Address 15919 S. E. Taylor Portland, Oregon

(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

(5) CASING INSTALLED:

Threaded Welded
6" Diam. from 0 ft. to 125 ft. Gage 280
" Diam. from " ft. to " ft. Gage "
" Diam. from " ft. to " ft. Gage "

(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?
Yield: gal./min. with ft. drawdown after hrs.
" " " " " "
" " " " " "
Packer test 25 gal./min. with 135 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water _____ Depth artesian flow encountered _____ ft.

(9) CONSTRUCTION:

Well seal—Material used Cement
Well sealed from land surface to 125 ft.
Diameter of well bore to bottom of seal 9 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 11 sacks
Number of sacks of bentonite used in well seal _____ sacks
Brand name of bentonite _____
Number of pounds of bentonite per 100 gallons of water _____ lbs./100 gals.
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 Washington Driller's well number _____
1/4 Section 28 T. 2-N R. 3-W W.M.
Bearing and distance from section or subdivision corner _____

(11) WATER LEVEL: Completed well.

Depth at which water was first found 67 trace ft.
Static level 75 ft. below land surface. Date 10-2-73
Artesian pressure _____ lbs. per square inch. Date _____

(12) WELL LOG:

Diameter of well below casing 6
Depth drilled 230 ft. Depth of completed well 230 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
Top soil	0	2	
Brown clay	2	23	
Red clay	23	67	
Brown sandy clay	67	119	
Blue med. rock	119	146	
Brown med. rock	146	178	
Blue hard rock	178	197	
Brown lava rock	197	225	
Blue hard rock	225	230	

Work started 10-1-73 19 Completed 10-2-73 19
Date well drilling machine moved off of well 10-2-73 19

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] Ralph Turner Date 10-14-73 19
(Drilling Machine Operator)

Drilling Machine Operator's License No. 254

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 Ralph Turner Drilling Co.
(Person, firm or corporation) (Type or print)

Address Rte 1, Box 141 Hillsboro, Oregon 97103

[Signed] Ralph Turner
(Water Well Contractor)

Contractor's License No. 247 Date 10-14-73 19

(USE ADDITIONAL SHEETS IF NECESSARY)

SP-60035-119

WASH 67028

STATE OF OREGON
WATER SUPPLY WELL REPORT
 (as required by ORS 537.765 & OAR 690-285-0210)

WELL LABEL # L 95438

START CARD # 198410

(1) LAND OWNER Owner Well I.D. _____

First Name Robert & Patricia Last Name VanDomslein
 Company _____
 Address 34800 NW Harrison Rd
 City Banks State OR Zip 97106

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

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

(4) PROPOSED USE Domestic Irrigation Community
 Industrial/ Commercial Livestock Dewatering
 Thermal Injection Other _____

(5) BORE HOLE CONSTRUCTION Special Standard Attach copy
 Depth of Completed Well 260 ft

BORE HOLE			SEAL			units/
Dia	From	To	Material	From	To	lbs
10	0	50	Bentonite	0	50	56 S
8	50	190	Cement	50	190	20 S
5.5	190	260				

How was seal placed Method A B C D E
 Other Pour Slowly & Prodded
 Backfill placed from _____ ft to _____ ft Material _____
 Filter pack from _____ ft to _____ ft Material _____ Size _____
 Explosives used Yes Type _____ Amount _____

(6) CASING/LINER

Casing	Liner	Dia	From	To	Gauge	Std	Plac	Wid	Thrd
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6	2	190	250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Shoe Inside Outside Other Location of shoe(s) 190
 Temp casing Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS

Perf/Screen	Casing/Screen	Dia	From	To	Screen/slot width	Slot length	# of slots	Total pipe size

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

Pump Boiler Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
12		260	1
12		220	.25
10		180	.25

Temperature 54 °F Lab analysis Yes By _____
 Water quality concerns? Yes (describe test) _____
 From _____ To _____ Description _____ Units _____

(9) LOCATION OF WELL (legal description)

County WASHINGTON Twp 2 N NS Range 3 W E/W WM
 Sec 33 NW 1/4 of the NW 1/4 Tax Lot 900
 Tax Map Number _____ Lot _____
 Lat _____ " or _____ DMS or DD
 Long _____ " or _____ DMS or DD
 Street address of well Nearest address

38400 NW Harrison Rd

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL (psi)	+ SWL (ft)
Completed Well	<u>06-23-2008</u>		<u>51</u>

Flowing Artesian? Dry Hole?

WATER BEARING ZONES Depth water was first found 210

SWL Date	From	To	Est Flow	SWL (psi)	+ SWL (ft)
<u>06-23-2008</u>	<u>210</u>	<u>232</u>	<u>12</u>		<u>51</u>

(11) WELL LOG Ground Elevation _____

Material	From	To
Top soil	0	2
Brown clay	2	16
Sticky brown, gray-brown clay	16	35
Sticky gray clay	35	40
Brown clay	40	53
Red-brown sandy clay	53	103
Brown sandy clay	103	151
Soft brown sandstone	151	164
Soft red-brown sandstone	164	180
Gray-brown basalt	180	210
Gray-black basalt	210	217
Gray-brown & brown basalt	217	232
Gray basalt	232	260

Date Started 06-18-2008 Completed 06-23-2008

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, 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.
 License Number 1492 Date 06-26-2008
 Password (if filing electronically) _____
 Signed Allen Bigsby

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, 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.
 License Number 1266 Date 06-26-2008
 Password (if filing electronically) _____
 Signed [Signature]
 Contact info (optional) _____

