

Groundwater Application Review Summary Form

Application # G- 18495

GW Reviewer Phil Mavey Date Review Completed: 4/3/2018

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18495
Date: September 19, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Philip Marcy reviewed the application. Please see Phillip's Groundwater Review and the Well Log.

Applicant's Well #1 (LINN 61817): Based on a review of the well report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Applicant's Well #1 may not satisfy hydraulic connection issues.

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL I.D. LABEL# L 122818
START CARD # 1031908
ORIGINAL LOG #

OCT 14 2016

(1) LAND OWNER Owner Well I.D. 5717
First Name _____ Last Name _____
Company Mark Cox Farms
Address 35554 Spicer Dr.
City Lebanon State OR Zip 97355

SALEM, OR
(9) LOCATION OF WELL (legal description) LINN 61817
County LINN Twp 11 S N/S Range 2 W E/W WM
Sec 30 NW 1/4 of the NE 1/4 Tax Lot 501
Tax Map Number _____ Lot _____

(2) TYPE OF WORK New Well Deepening Conversion
 Alteration (complete 2a & 10) Abandonment (complete 5a)

(2a) PRE-ALTERATION
Dia + From To Gauge Stl Plstc Wld Thrd
Casing:
Material From To Amt sacks/lbs
Seal: _____

Lat _____ " or _____ DMS or DD
Long _____ " or _____ DMS or DD
 Street address of well Nearest address

Across from 35554 Spicer Dr. - Lebanon, OR 97355

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

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Pre-Alteration _____
Completed Well 09-27-2016 _____ 12
Flowing Artesian? Dry Hole?

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

WATER BEARING ZONES Depth water was first found 19
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
Depth of Completed Well 300 ft.

BORE HOLE			SEAL			
Dia	From	To	Material	From	To	Amt sacks/lbs
16	0	19	Bentonite	0	19	30 S
12	1	159			Calculated	22
10	2	160			Calculated	

09-21-2016	19	60	100		12
09-21-2016	63	200	500		12
09-22-2016	200	300	400		12

How was seal placed: Method A B C D E
 Other Poured dry

Backfill placed from _____ ft. to _____ ft. Material _____

Filter pack from _____ ft. to _____ ft. Material _____ Size _____

Explosives used: Yes Type _____ Amount _____

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount Pounds Actual Amount Pounds

(6) CASING/LINER
Casing Liner Dia + From To Gauge Stl Plstc Wld Thrd
 10 2 160 250

Shoe Inside Outside Other Location of shoe(s) _____

Temp casing Yes Dia 12 From 1 To 159

(7) PERFORATIONS/SCREENS
Perforations Method _____
Screens Type _____ Material _____

Perf	Casing	Screen	Dia	From	To	Scr/slot width	Slot length	# of slots	Tele/ pipe size
			10	20	160	.375	11	1,000	

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)
550 _____ 140 1
1,000 _____ 300 1

Temperature 53 °F Lab analysis Yes By _____

Water quality concerns? Yes (describe below) TDS amount 78

From	To	Description	Amount	Units

(11) WELL LOG Ground Elevation _____

Material	From	To
Topsoil	0	2
Brown clay with gravel	2	15
Cemented sand & gravel	15	30
Cemented gravel & sand	30	32
Brown clay	32	40
Cemented sand & gravel	40	57
Sand & gravel	57	60
Grey clay	60	63
Sand & gravel	63	95
Cemented sand & gravel	95	107
Gray clay with gravel	107	111
Cemented sand & gravel	111	115
Gray clay	115	118
Sand & gravel	118	130
Cemented sand & gravel	130	135
Blue gray clay	135	140
Sand & gravel with wood	140	152
Brown clay	152	155
Gray clay	155	170

Date Started 09-20-2016 Completed 09-27-2016

(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 1888 Date 09-20-2016

Signed *Ken Bell*

(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 1684 Date 09-30-2016

Signed _____

Contact Info (optional) jonesdrilling@hotmail.com

WATER SUPPLY WELL REPORT - continuation page

WELL I.D. LABEL# I	122818
START CARD #	1031908
ORIGINAL LOG #	

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Material		From	To	Amt sacks/lbs				

(5) BORE HOLE CONSTRUCTION

BORE HOLE			SEAL		sacks/	
Dia	From	To	Material	From	To	Amt lbs
						Calculated
						Calculated
						Calculated
						Calculated

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/S creen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Water Quality Concerns

LINN 61817

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)

(11) WELL LOG

Material	From	To
Blue sand & gravel	170	180
Dark gray clay	180	195
Black sand & gravel	195	200
Brown clay	200	210
Cemented sand & gravel	210	215
Gray clay	215	235
Sand & gravel	235	242
Black sand	242	270
Gray clay	270	289
Sand & gravel	289	300
Formation caved around casing as 12" removed.		
12" casing broke off at 60' below ground level.		
12" from 60' - 159' still in the hole		

Comments/Remarks

RECEIVED BY OWRD
 OCT 14 2016
 SALEM, OR

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 04/03/2018
 FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name
 SUBJECT: Application G- 18495 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: Robert Mark Cox County: Linn

- A1. Applicant(s) seek(s) 0.958 cfs from 1 well(s) in the Willamette Basin,
 _____ subbasin
- A2. Proposed use Irrigation (76.6 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	LINN 61817	1	Alluvium	0.958	11S/2W-30 NW-NE	800'S, 460'E fr S ¼ cor, S 19
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	285	19	12	09/17/2016	300	19	0-160	-	20-160	1000	NA	Air

Use data from application for proposed wells.

- A4. **Comments:** The proposed POA well is constructed to produce from alluvium from 20' to 300' BLS.

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

- 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) **“Large Water Use Reporting”; 7N – Annual Measurement** ;
 - 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:** There is little groundwater data available for this area. Nearby right GR 2406 is less than one quarter mile from the proposed point of appropriation (POA) well (LINN 6910), but is owned at this time by the applicant. Interference may become an issue, however, if ownership were to change of one or both of these POA wells. For this reason, expected drawdown was calculated at LINN 6910. The result of This time-drawdown analyses predict that under most likely scenarios for unconfined sand and gravel aquifers, seasonal drawdown is expected to be less than 10 feet over the duration of the pumping season.

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	Missoula Flood Deposits/Quaternary Alluvium	<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"/>

Basis for aquifer confinement evaluation: No significant confining layer exists in the area. In addition, water level elevation reported within the POA well is effectively equivalent to nearby surface waters and the elevation of first water observed within the well.

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	Oak Creek	273	301	11800	<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"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: No significant confining layer exists between productive zone within the proposed POA and nearby surface water sources. Albany-Santiam canal is not a perennial surface water body, and so will not be evaluated for potential to substantially interfere with surface water.

Water Availability Basin the well(s) are located within: Willamette R > Columbia River – Above Mill Creek at Gage 14191000 (ID # 183)

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"/>

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	%	%	%	%	%	%	%	%	%	%	%	%
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													
(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: Due to the distance to perennial surface waters, and reasonably high hydraulic conductivity expected for this system, minimal interference to Oak Creek is expected due to pumping at the proposed POA location and given rate.

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:** Due to the lack of groundwater data in this area, evaluations of the relationship between local surface water and groundwater are somewhat incomplete. Caution should be exercised when evaluating ongoing development of the alluvial aquifer in this area. Therefore, continued monitoring of groundwater elevation is recommended via condition 7N, requiring annual water level measurements during the month of March for the duration of this water right, should a permit be approved.

References Used: Application file G-18495, local well logs

O'Connor, J. E., Sarna-Wojcicki, A., Wozniak, K. C., Polette, D. J., and Fleck, R. J., 2001, Geologic map of Quaternary units in the Willamette Valley, Oregon: Reston, Va., U.S. Geological Survey, Professional Paper 1620, map scale 1:250,000.

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) _____

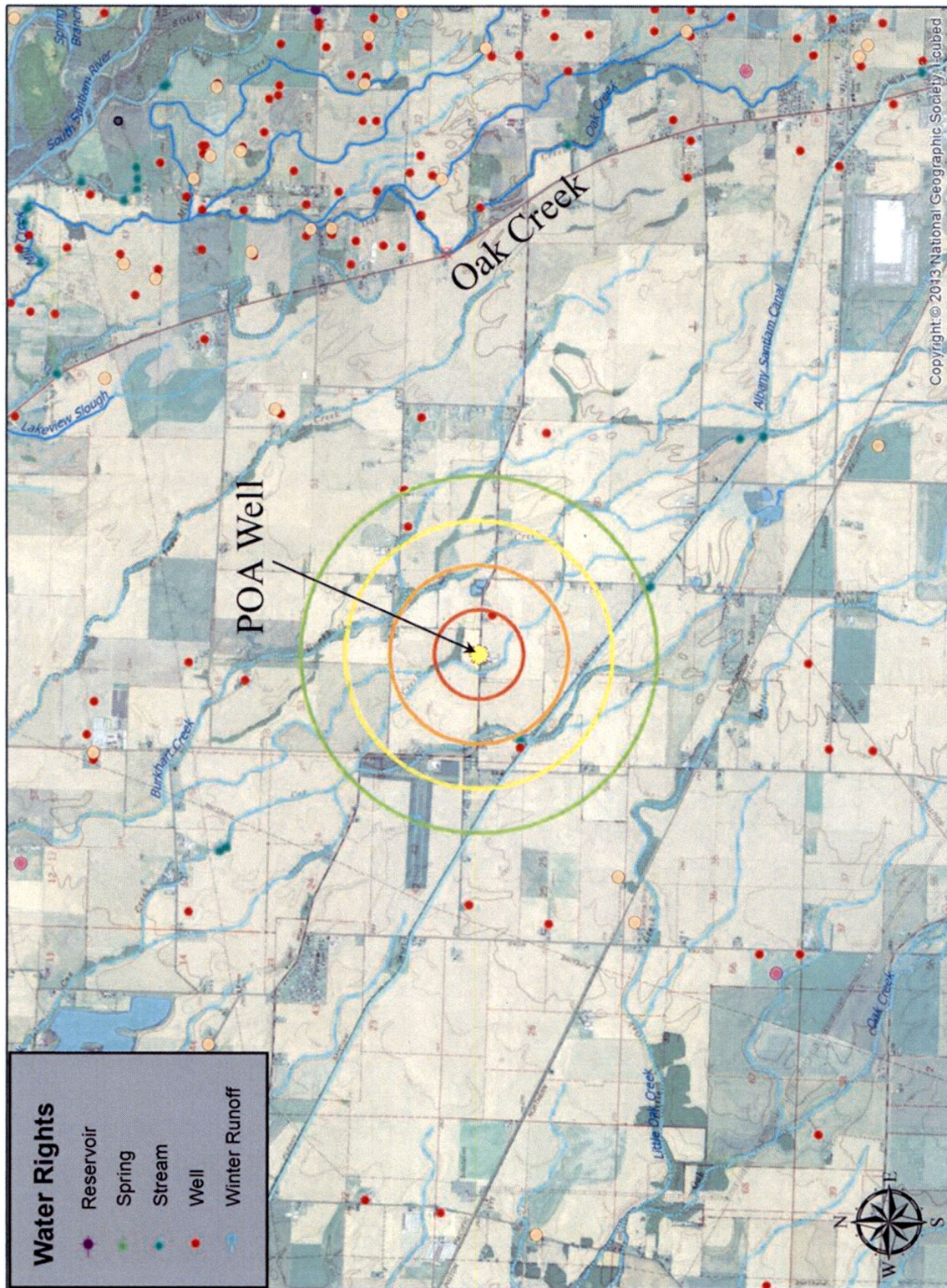
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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 #: 183		WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000			Exceedance Level: 80	
Time: 1:31 PM		Basin: WILLAMETTE			Date: 04/03/2018	
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	18,400.00	2,240.00	16,200.00	0.00	1,300.00	14,900.00
FEB	20,100.00	7,430.00	12,700.00	0.00	1,300.00	11,400.00
MAR	19,600.00	7,210.00	12,400.00	0.00	1,300.00	11,100.00
APR	18,000.00	6,870.00	11,100.00	0.00	1,300.00	9,830.00
MAY	15,500.00	4,160.00	11,300.00	0.00	1,300.00	10,000.00
JUN	8,310.00	1,690.00	6,620.00	0.00	1,300.00	5,320.00
JUL	4,710.00	1,440.00	3,270.00	0.00	1,300.00	1,970.00
AUG	3,620.00	1,330.00	2,290.00	0.00	1,300.00	992.00
SEP	3,680.00	1,150.00	2,530.00	0.00	1,300.00	1,230.00
OCT	4,650.00	745.00	3,910.00	0.00	1,300.00	2,610.00
NOV	9,400.00	853.00	8,550.00	0.00	1,300.00	7,250.00
DEC	16,700.00	913.00	15,800.00	0.00	1,300.00	14,500.00
ANN	13,500,000	2,150,000	11,300,000	0	942,000	10,400,000

Well Location Map



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1:48,000

Water-Level Trends in Nearby Wells

No suitable observation wells exist nearby.