

WATER RESOURCES DEPARTMENT

MEMO

Date: September 26, 2016TO: Application: 18349FROM: GW: Aurora C. Bouchier
(Reviewer's Name)SUBJECT: Scenic Waterway Interference & General/Local Surface Water
Evaluation for Deschutes Ground Water Study AreaThe source of appropriation is within or above the Deschutes
Scenic Waterway.

Use the Scenic Waterway condition (Condition 7J).

PREPONDERANCE OF EVIDENCE FINDING UNDER ORS 390.835:

Department has found that there is a preponderance of evidence that the proposed use of ground water will measurably reduce the surface water flows necessary to maintain the free-flowing character of the Deschutes Scenic Waterway in quantities necessary for recreation, fish and wildlife.

LOCALIZED IMPACT FINDING

- The proposed use of ground water will have a localized impact to surface water in the Little Deschutes River/Creek Subbasin.

If the localized impact box above is checked, then the water use under any right issued pursuant to this application is presumed to have a localized impact on surface water within the identified subbasin. Mitigation of the impact, originating from within the Local Zone of Impact identified by the Department, will be required before a permit may be issued for the proposed use.

If the localized impact box above is not checked, then the water use under any right issued pursuant to this application is presumed to have a general (regional) impact on surface water. Mitigation of the impact, originating anywhere within the Deschutes Basin above the Madras gage, will be required before a permit may be issued for the proposed use.

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date September 26, 2016
 FROM: Groundwater Section Aurora C Bouchier
 SUBJECT: Application G- 18349 Reviewer's Name Supersedes review of na
 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: Wanek Ranch, LLC County: Deschutes

A1. Applicant(s) seek(s) 1.875 cfs from 3 well(s) in the Deschutes Basin,
Little Deschutes subbasin (La Pine quadrangle)

A2. Proposed use irrigation (150 acres) Seasonality: April 1 – October 31

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	1.875	22S/10E-22 SE-SE	430'N, 1380' W fr SE cor S 22*
2	Proposed	2	Alluvium	1.875	22S/10E-27 NW-SE	3710'S, 2050' W fr NE cor S 27
3	Proposed	3	Alluvium	1.875	22S/10E-27 SW-NE	1440'S, 2090' W fr NE cor S 27

* 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	4232		Est 118**		Est 255	Est 4-158	Est 0-158		Est 159-254			
2	4240		Est 12***		Est ~50	Est 1-20	Est 0-18		Est 15-49			
3	4240		Est 12***		Est ~50	Est 1-20	Est 0-18		Est 15-49			

Use data from application for proposed wells.

A4. **Comments:** *The proposed location description for Well 1 places the well on the west side of Long Prairie Slough and in the SW1/4 of the SE1/4 of Section 22. The map shows Well 1 on the east side of the slough and in the SE1/4 of the SE1/4 of Section 22. The estimated static water levels and well construction are provided in the application based on basalt well DESC 55049** and alluvial well DESC 57682***.

The application states that no exploratory drilling has been conducted and that in order to obtain the necessary flow rate the applicant will need a well that produces from a deep basalt layer (according to the application, this may be 150 to 1400 feet below land surface at the proposed location) or drill multiple wells in the alluvium. Therefore, the application includes three POAs, producing water from two water sources, to irrigate 150 acres along Long Prairie Slough. These acres are currently irrigated under Certificate 60239 (T-12439 proposes instream transfer to generate mitigation credits) which has a POD on the Little Deschutes River with water being transported approximately 10 miles along canals.

A basalt source (Well 1) is proposed to be 255 feet deep, intended to be completed into a water-bearing basalt layer which the applicant hopes to encounter under relatively fine-grained basin-fill alluvium (see Section 3B for more information). A deep well seal in the well will probably delay interference with nearby stream reaches. The regional groundwater flow direction is towards the north-northeast (Gannett et al., 2001) with the closest probable groundwater-surface water interaction in the Little Deschutes River.

Alluvial wells (Wells 2 & 3) are proposed to be completed into shallow alluvium (approximately 50 feet total depth) along Long Prairie Slough. The USGS's published water table map for the area indicates that locally, the shallow groundwater is moving toward and discharging into the Long Prairie Slough (Morgan et al., 2007). The closest probable groundwater-surface water interaction with a surface water body is in the Long Prairie Slough.

A5. **Provisions of the Deschutes** 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: The proposed wells are within the USGS Deschutes Groundwater Study Area and therefore are subject to Division 690-505-0500 to 0620 rules.

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) 7N, large water user;
 - 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 100 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 proposed wells are located in approximately the center of the La Pine Graben, which contains some 1,800 to 2,400 feet of structural relieve and has been filled with predominately fine-grained sediment. Mainly at the margins of the graben, the fine-grained sediment is juxtaposed with, and potentially interbedded with, permeable lava flows, mainly from the Newberry Volcano (Lite and Gannett, 2002). For proposed Well 1, the applicant hopes to encounter conditions similar to those found in basalt well DESC 55049 (located approximately 3 miles to the northeast, closer to the margin of the graben/flank of the Newberry Volcano). In DESC 55049, water-bearing basalts were encountered from 133 to 179 feet and 191 to 254 feet below land surface (bls), with a static water level of 118 feet bls and a yield of 1300 gpm. Based on well logs for deep wells closer to proposed Well 1 (namely DESC 9173, DESC 56804 and DESC 56805), it is likely that fine-grained, low permeability material will be encountered at a depth of 255 feet (the estimated total depth provided in the application well construction table). The well logs for DESC 9173, DESC 56804 and DESC 56805 list water-bearing basalt layers first encountered at 522, 455, and 430 feet bls (respectively) and static water levels at approximately 50 feet bls, therefore it is likely that proposed Well 1 will need to be significantly deeper than the estimated 255 feet provided on the application. Within the entire Township and Range there are 7 wells with depths of 250 or greater which are completed into basalt. Of these, the yields listed on the well logs ranges from 20 to 1500 gpm, with a median value of 70 gpm. It is not certain that at the proposed location a permeable basalt layer would be encountered by the proposed well. It is also not certain that if a permeable basalt layer was encountered, it would be capable of producing the requested yield (841 gpm).

With regard to the proposed shallow alluvial wells (Well 2 and Well 3), the OWRD Well Log database show 19 domestic wells and 1 industrial well located in Sections 22 and 27, all have total depths of 60 feet or less. The listed yields range from 11 to 30 gpm, with a median value of 20 gpm (see statistics below). It is unlikely that proposed Wells 2 and 3 would, combined, be capable of producing the requested yield (841 gpm). Production out of proposed Well 2 and Well 3 would likely result in interference with the existing shallow domestic wells (based on similarities with the ongoing investigation in the nearby Deer Forest Drive community, located approximately 2.7 miles to the west, where shallow domestic wells appear to be impacted by production from water right permit G-17060/ application G-17553). Therefore, to stay consistent with

recent findings in the La Pine subbasin (namely application G-18292) to reduce this risk, and to minimize the potential for interference with Long Prairie Slough, I recommend **SPECIAL CONDITION: if a permit is issued, the alluvial wells should be continuously cased and continuously sealed to a minimum depth of 100 feet.**

The water level in DESC 9173 was measured periodically from 1994 through 2001. Over that time period the water level appeared to be in dynamic equilibrium and showed a similar trend as that seen in DESC 8109 (located approximately 2 miles to the north of proposed Well 1). DESC 8109 has been measured periodically since the 1980's through the present. The long term trend at DESC 8109 shows a decadal-scale water level fluctuation until 2007, the maximum amplitude of which was approximately 10 feet. Since 2007 the water level in DESC 8109 has remained at approximately 4186-4188 feet in elevation. In general, the water levels indicate a falling head with depth (see hydrograph below).

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
		<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 confinement evaluation: _____

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
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: _____

Water Availability Basin the well(s) are located within: _____

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: _____

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		%	%	%	%	%	%	%	%	%	%	%	%

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

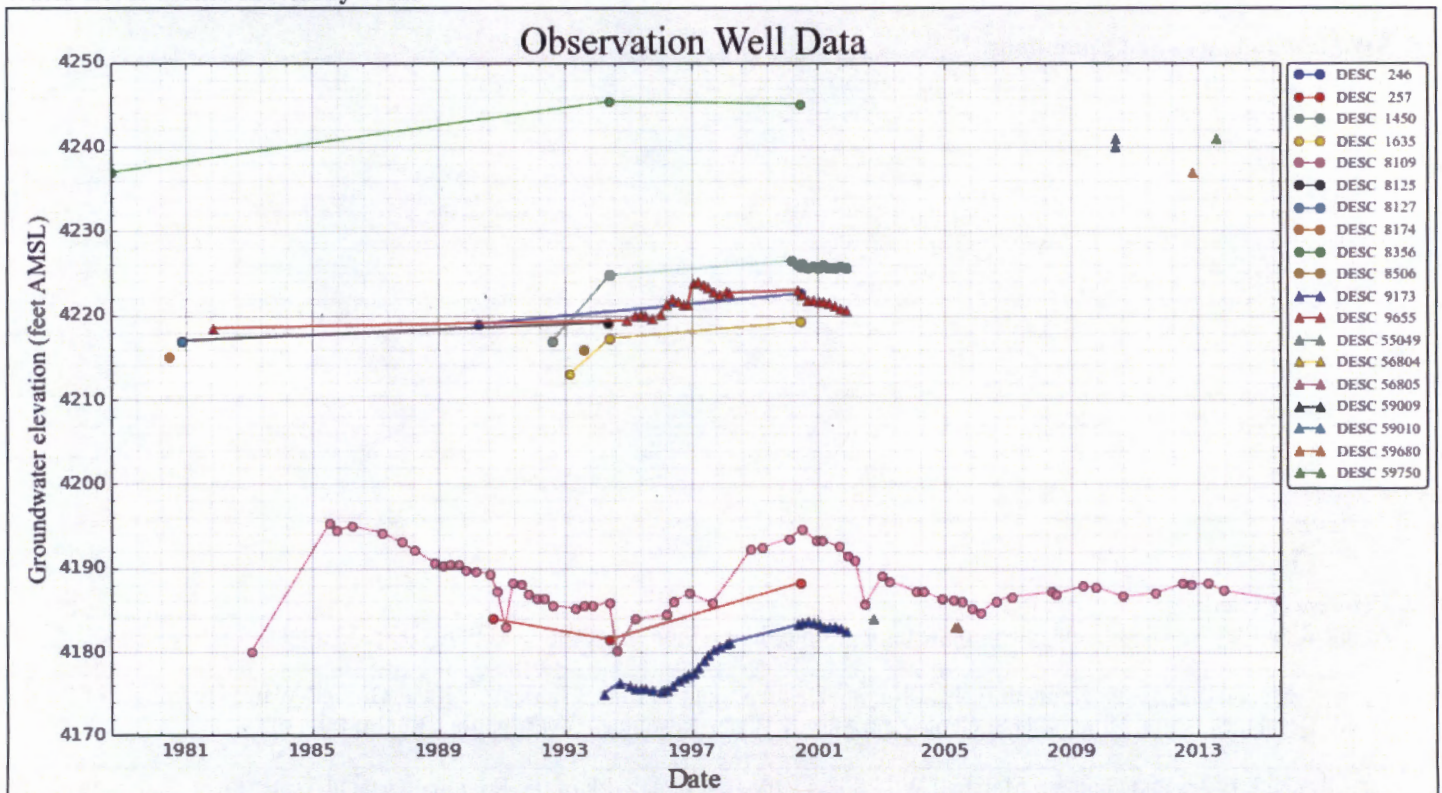
- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

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

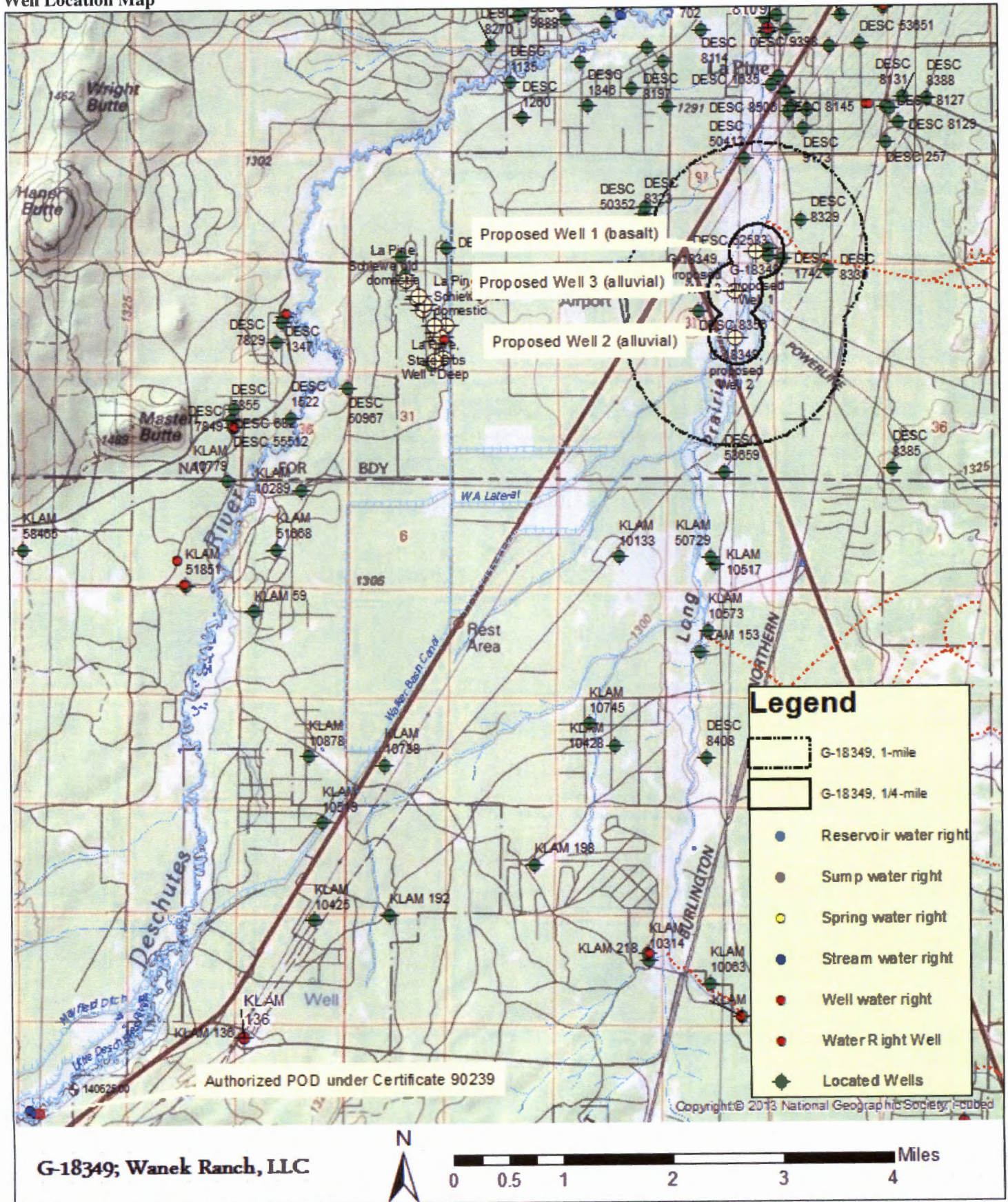
D4. Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables

Water-Level Trends in Nearby Wells



Well Location Map



Statistics for Wells in: T22S/R10E Sec 22 and 27

