PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **23 June 2008**

FROM: Ground Water/Hydrology Section **Gerald H. Grondin**
Reviewer's Name

SUBJECT: Application G- **16966** 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 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: **Oregon Ranching Co.** County: **Crook**

A1. Applicant(s) seek(s) **(1418 gpm) 3.16** cfs from **1** well(s) in the **Deschutes** Basin, **Upper Crooked River (note: Conrad Hollow)** subbasin Quad Map: **Liggett Table**

A2. Proposed use: **Irrigation (primary 252.6 acres)** Seasonality: **15 April – 15 October (184 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	**Not drilled**	**?**	**Likely Basalt**	**3.16**	**17S/22E-sec 2 DCC**	**90' N, 460' E fr S 1/4 cor sec 2**

* 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	**3860**	**P 250**	**P 120**		**P 400**	**P to 18**	**P to 20**	**P to 150**	**P none**			

Use data from application for proposed wells.

A4. **Comments:** **P in the table above means proposed**

Well not drilled. A stock well is 2800 feet to southwest of proposed well, likely CROO 50092 (ID tag L-03803)

The well site is located in Conrad Hollow drained by an intermittent creek that discharges to the Crooked River. Generally, alluvium, other sediments, and tuffaceous sedimentary rocks overly basalt in the area. The basalt is likely fractured, and ground water in the basalt is likely hydraulically connected to the overlying sediments, when saturated, and subsequently to surface water. At the proposed well site, exposed basalt is mapped. At livestock well CROO 50092, the reported static ground water level in 1996 is 169 feet below land surface.

A5. ☒ **Provisions of the Deschutes** 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 well is located outside the USGS Deschutes ground water study area.

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) **7B AND 7N**;
   ii. ☐ The permit should be conditioned as indicated in item 2 below.
   iii. ☒ The permit should contain special condition(s) as indicated in item 3 below;

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

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

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

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

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

B3. **Ground water availability remarks:** _____

Condition with 7B and 7N

Generally, alluvium, other sediments, and tuffaceous sedimentary rocks overly basalt in the area. The basalt is likely fractured, and ground water in the basalt is likely hydraulically connected to the overlying sediments, when saturated, and subsequently to surface water. At the proposed well site, exposed basalt is mapped. At well CROO 50092, the reported static ground water level in 1996 is 169 feet below land surface.

The nearest state observation well found is State Obs Well 96 (CROO 2929, open to alluvium and basalt with 3000 gpm yield), about 21 miles to the south. It was monitored periodically from 1964 to about 1985. State Observation Well 96 generally fluctuated less than 2-feet and a maximum of about 10-feet during the period of record.

The next nearest state observation well found is State Obs Well 97 (CROO 2936, also open to alluvium and basalt with 1100 gpm yield), about 23 miles to the south. It was monitored periodically from 1963 to present. State Observation Well 97 generally fluctuated less than 2-feet and a maximum of about 5-feet during the period of record.

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	**Likely Basalt**	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation:

The system is identified as generally unconfined with discontinuous low permeability layers causing local (limited, discontinuous) confinement.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Crooked River/Beaver Creek**	**3690**	**3620**	**11100**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation:

The well is not drilled. A stock well is 2800 feet to southwest of the proposed well, likely CROO 50092 (ID tag L-03803)

The static ground water elevation is based upon CROO 50092. It is above the Crooked River/Beaver Creek. There are uplands between the well site and the Crooked River/Beaver Creek. Swanson (1969) shows the well location within a syncline that plunges southwest toward the Crooked River/Beaver Creek, but truncated by a generally west to east trending block fault that exposes the John Day Formation, a generally low permeability and low yield formation. This likely precludes a hydraulic connection with the nearest reach of the Crooked River/Beaver Creek (6,200 feet). However, a hydraulic connection with the Crooked River/Beaver Creek likely exists via the Conrad Hollow drainage (11,100 feet) given Conrad Hollow does not follow the syncline, and stays west of the west to east trending block fault that exposes the John Day Formation. The geology Swanson (1969) shows for the Conrad Hollow drainage is Picture Gorge Basalt (Tcp) and tuffaceous sedimentary rocks (Tts).

The stream that drains Conrad Hollow is an intermittent stream. The hydraulic relationship with Watson Creek and Lower Watson Spring cannot be determined with the available data.

Water Availability Basin the well(s) are located within: CROOKED R > DESCHUTES R - AB SAND CR

C3a. **690-09-040 (4):** Evaluation of stream impacts for <u>each well</u> 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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts <u>by total appropriation</u> for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells**. Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments:

The proposed well is more than one mile from the Crooked River/Beaver Creek.

The proposed well is more than one mile from the stream that drains Conrad Hollow, but the stream is an intermittent stream.

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**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Well Q as CFS		**0.00**	**0.00**	**0.00**	**3.16**	**3.16**	**3.16**	**3.16**	**3.16**	**3.16**	**3.16**	**0.00**	**0.00**
Interference CFS		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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													
(A) = Total Interf.		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
(B) = 80 % Nat. Q		**78.9**	**175.0**	**337.0**	**598.0**	**404.0**	**261.0**	**80.1**	**38.7**	**45.2**	**47.3**	**60.6**	**76.5**
(C) = 1 % Nat. Q		**0.789**	**1.750**	**3.370**	**5.980**	**4.040**	**2.610**	**0.801**	**0.387**	**0.452**	**0.473**	**0.606**	**0.765**
(D) = (A) > (C)		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
(E) = (A / B) x 100		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

(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:

The proposed well is more than one mile from the Crooked River/Beaver Creek. Interference was not calculated awaiting site specific aquifer properties.

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:**

If a water right is issued, condition with 7B, 7N, and 7J

The well site is located in Conrad Hollow drained by an intermittent creek that discharges to the Crooked River. Generally, alluvium, other sediments, and tuffaceous sedimentary rocks overly basalt in the area. The basalt is likely fractured, and ground water in the basalt is likely hydraulically connected to the overlying sediments, when saturated, and subsequently to surface water. At the proposed well site, exposed basalt is mapped. At livestock well CROO 50092, the reported static ground water level in 1996 is 169 feet below land surface.

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The stream that drains Conrad Hollow is an intermittent stream. The hydraulic relationship with Watson Creek and Lower Watson Spring cannot be determined with the available data.

References Used:

Application File: G-16966

Swanson, D.A. 1969. Reconnaisance geologic map of the east half of the Bend quadrangle, Crook, Wheeler, Jefferson, Wasco, and Deschutes Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-568.

Gonthier, J.B. 1985. A description of aquifer units in eastern Oregon: U.S. Geological Survey Water Resources Investigations Report 84-4095, 39 p., maps.

Walker, G. W. (editor) 1990. Geology of the Blue Mountains region of Oregon, Idaho, and Washington; Cenozoic geology of the Blue Mountains region: U.S. Geological Survey Professional Paper 1437, 135 p.

Liggett Table quadrangle map (USGS map, 1:24,000 scale)

State Observation Wells: 96 (CROO 2929) and 97 (CROO 2936)

Multiple well reports (well logs) found for: T16S/R22E-sec 24 to 36 and T17S/R22E-sec 1 to 18

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: **1** **Logid: not drilled yet**

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

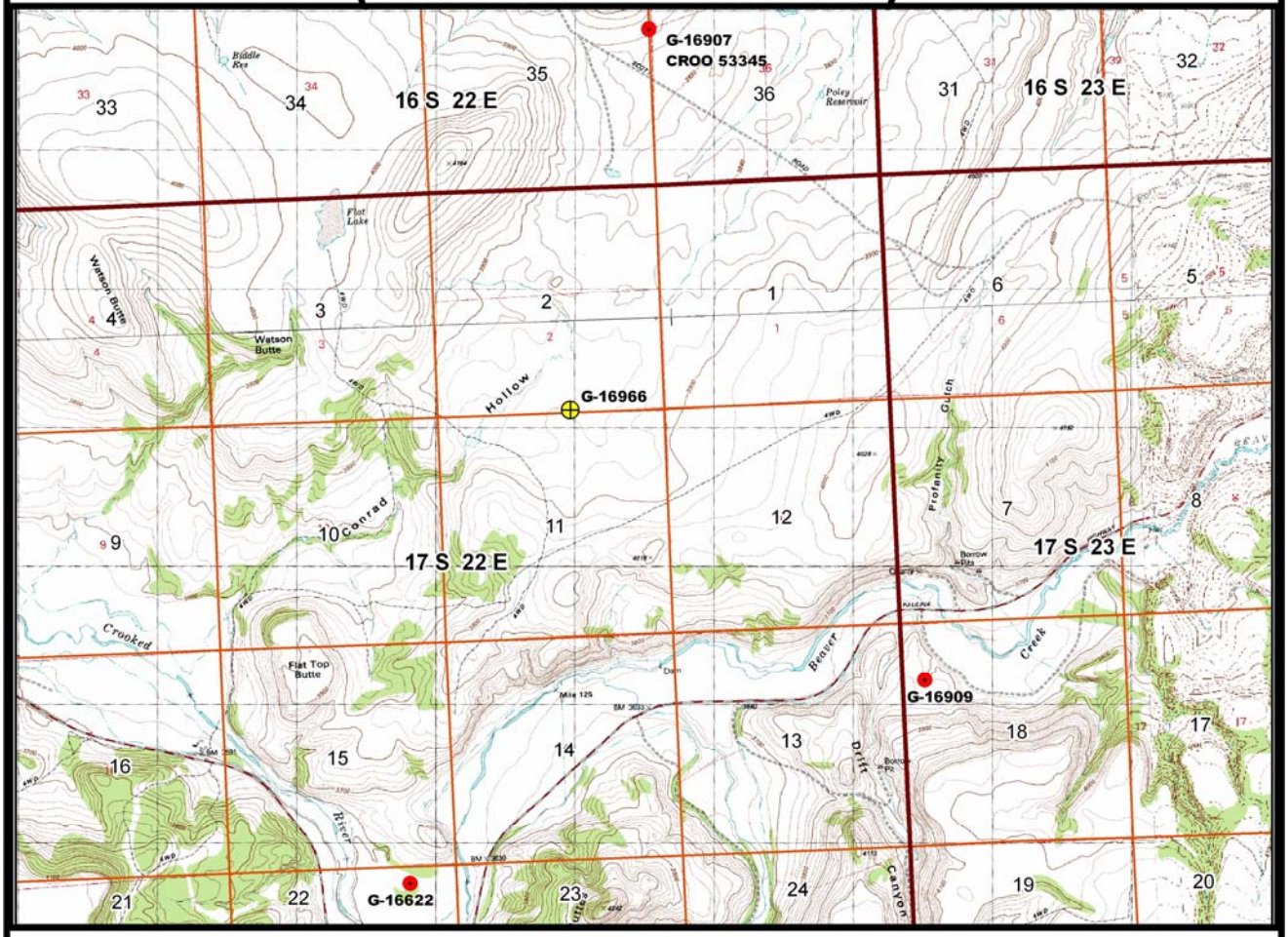
D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____ _____, 200____.

(Enforcement Section Signature)

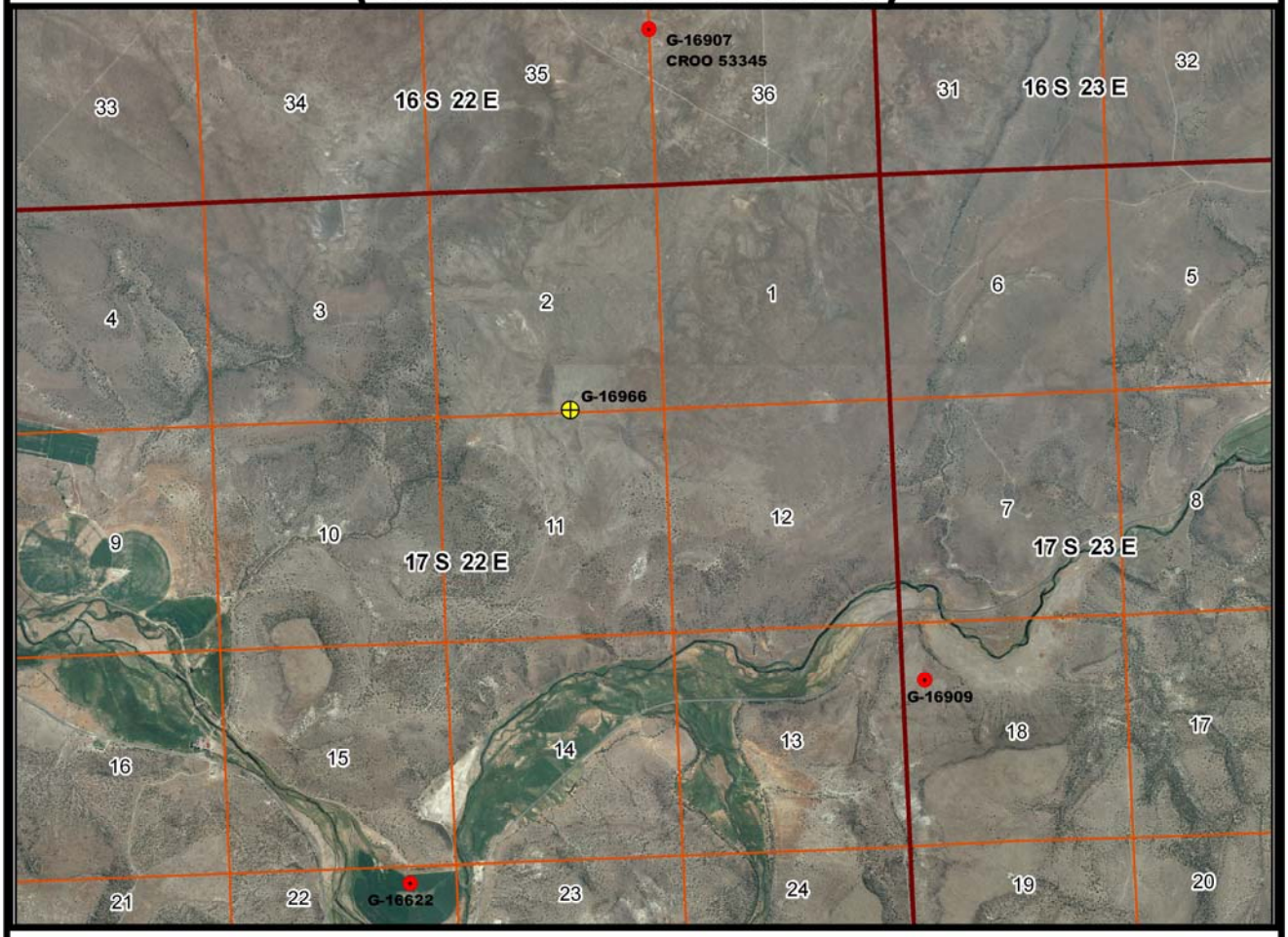
D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

Ground Water Application G-16966
Oregon Ranching Company
(Twin Buttes Ranch)



Proposed Well = yellow dot
Other Wells = red and blue dots
(existing or proposed)

Ground Water Application G-16966
Oregon Ranching Company
(Twin Buttes Ranch)



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Proposed Well = yellow dot
Other Wells = red and blue dots
(existing or proposed)