

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 7 November 2014

FROM: Groundwater Section Gerald H. Grondin
Reviewer's Name

SUBJECT: Application G- 17879 Supersedes review of N.A.
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: Silvies Valley Ranch Water Co. LLC County: Grant

A1. Applicant(s) seek(s) 3.899 (1750 gpm) cfs from 3 well(s) in the Malheur Lake Basin,
Silvies River subbasin Quad Map: Silvies

A2. Proposed use Quasi-Municipal Seasonality: Year Round (365 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	GRAN 51009	1	Marine Seds & Volcanic Deposit	3.899	17S/31E-sec 27 CBC	1346' N, 274' E fr SW cor S 27
2	Not Drilled Yet	2	Marine Seds & Volcanic Deposit	3.899	17S/31E-sec 27 DCA	820' N, 1940' W fr SE cor S 27
3	Not Drilled Yet	3	Marine Seds & Volcanic Deposit	3.899	17S/31E-sec 22 ADD	2255' S, 335' W fr NE cor S 22
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	4880	23	23	09/07/2009	346	0-18	+2-65	None	45-65	500	?	A
2	4880	?	?	N.A.	Est 500	Est 0-18	Est +2-65	?	40-500	Est 625	?	N.A.
3	4840	?	?	N.A.	Est 500	Est 0-18	Est +2-65	?	40-500	Est 625	?	N.A.

Use data from application for proposed wells.

A4. **Comments:** _____

The proposed aquifer is inferred from the mapped geology at the well locations. All three proposed POA wells are located in Grant County south of Seneca in uplands that are northwest and immediately adjacent to Silvies Valley. Camp Creek is to the south of the wells, and the upper portion of the Silvies River is east of the wells. Brown and Thayer (1966) mapped the well locations as Jurassic Age sedimentary and volcanic rocks that correspond to the Trowbridge and Lonesome Formations described by Luper (1941) and mapped by Dickinson and Vigrass (1965). The area's geology is discussed in more detail in section B3 (water availability).

One of the three POA wells exist (GRAN 51009). The water well report (well log) indicates the 346 feet deep well penetrated one-foot of soil, 19 feet of conglomerate, 25 feet of hard claystone, 15 feet of casing broken rock, and lastly, 286 feet of broken black basalt. Water was reportedly encountered from 23 to 346 feet depth and the static water level reportedly remained constant at 23 feet below land surface (4857 ft. elevation). Near the proposed POA wells, Camp Creek is about 4640 feet elevation and Silvies River is about 4600 feet elevation, which is more than 200 feet below the reported static water level at GRAN 51009.

A5. Provisions of the OAR 690-512-0040 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 rule states: "(1) Except as provided in section (3) of this rule, the Department shall not accept an application for permit, or issue a permit, for any use of surface water, or of groundwater the use of which has the potential to substantially interfere with surface water, in the Malheur Lake Basin unless the applicant shows, by a preponderance of evidence, that unappropriated water is available to supply the proposed use at the times and in the amounts requested. The evidence provided shall be prepared by a qualified hydrologist or other water resources specialist and shall include:

(a) Streamflow measurements of gage records from the source or, for use of groundwater, the stream in hydraulic connection with the source; or

(b) An estimate of water availability from the source or, for use of groundwater, the stream in hydraulic connection with the source which includes correlations with streamflow measurements or gage records on other, similar streams and considers current demands for water affecting the streamflows."

This review does find a potential for substantial interference with Camp Creek and the Silvies River.

A6. Well(s) # _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction. Name of administrative area: _____
Comments: _____

No administrative area identified

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, 7F, 7N, 7P, 7T, and other conditions noted below;
 - 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:** _____

It cannot be determined whether groundwater in the uplands that are northwest and immediately adjacent to Silvies Valley is over-appropriated or not. No groundwater level data series representing the uplands northwest and adjacent to Silvies Valley was found. The closest groundwater level data is related to one state observation well within the Silvies Valley below the uplands, well GRAN 800 (state observation well 150) located southeast of the proposed POA wells in T18S/R31E-sec 12 (more than 3.3 miles southeast of the proposed POA wells). The 130-foot deep well is likely completed in valley sediments (no lithologic data for the well, but the location is mapped as alluvium (Qa)) and likely in direct hydraulic connection with the Silvies River. The groundwater level data at well GRAN 800 (state observation well 150) likely does not appear to directly represent groundwater at the proposed POA wells given the apparent groundwater level difference of more than 200 feet. That does not mean groundwater in the uplands is not hydraulically connected with groundwater in Silvies Valley. They are most likely hydraulically connected, but inefficiently. The groundwater level data at well GRAN 800 (state observation well 150) is from the 1960s to present. That data shows seasonal and decadal groundwater level fluctuations, but no net decline.

The proposed use of 3.899 (1750 gpm) may or may not exceed the capacity of the resource.

All three proposed POA wells are located in Grant County south of Seneca in uplands that are northwest and immediately adjacent to Silvies Valley. Camp Creek is to the south of the wells, and the upper portion of the Silvies River is east of the wells. Brown and Thayer (1966) mapped the well locations as Jurassic Age sedimentary and volcanic rocks (Jtl) that correspond to the Trowbridge and Lonesome Formations described by Lopher (1941) and mapped by Dickinson and Vigrass (1965). The geologic unit is generally described by Brown and Thayer (1966) as marine deposited sedimentary and volcanic rocks that are mostly black and green mudstones, with greywacke, calcareous sandstone, and some felsite flows and conglomerate. Dickinson and Vigrass (1965) indicate the Trowbridge Formation was "...formed by fine clastic deposits laid down on an erosional surface of low relief as it foundered rapidly beneath the sea. The supply of clastic detritus apparently did not keep pace with the sinking, so that waters deepened during Trowbridge deposition. Contemporaneous rhyodacitic volcanism contributed appreciable sediment to the basin, largely during periodic outbursts of explosive eruption." They also indicate the Lonesome Formation likely had a compound source area, "...the implications are that the source may have been a tectonic highland which rose as an eroding welt while the site of deposition sank. The andesitic detritus in the sandstones may have been derived from pyroclastic blankets maintained by continuing volcanism in the source area."

Surrounding uplands that enclose the Jurassic Age sedimentary and volcanic rocks (Jtl) are mapped by Brown and Thayer (1966) as Triassic Age Picture Gorge and Yakima Basalts (Tcu) to the west and to the east, basaltic andesite related to the Strawberry Volcanics (Ts).

Brown and Thayer (1966) mapped the Silvies Valley as alluvium (Qa) described as silt, sand, and gravel.

If a permit is issued, the following conditions are recommended:

Condition 7B (interference condition)

Condition 7F (well location condition)

Condition 7N (groundwater level measurements and decline condition)

Condition 7P (well tag condition)

Condition 7T (measuring tube condition)

“Large” water use condition (totalizing flowmeter required for each well). Note that “The readings must be reported to the Department by 31 December each year.”

Condition for re-construction of existing POA well GRAN 51009: “Existing POA well GRAN 51009 (well tag L-99644) shall be reconstructed to have continuous casing and continuous seal from land surface or above to a depth of 65 feet or more below land surface.”

Condition for construction of new POA wells: “New POA well(s) shall meet current Oregon well construction standards and shall be constructed to have continuous casing and continuous seal from land surface or above to a depth to be determined in consultation with a Department Groundwater Section hydrogeologist in Salem and with the Department’s well enforcement staff in Salem.”

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	Marine Sediment and Volcanics Deposit Unit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Marine Sediment and Volcanics Deposit Unit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Marine Sediment and Volcanics Deposit Unit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: _____

Available data related to well 1 (GRAN 51009) indicates groundwater in the uplands composed of marine sedimentary and volcanic rocks (Jtl) is generally unconfined given the static water level was reportedly the same as where first water was encountered at the well and no change in static water level was reported with increasing well depth. If the water well report for GRAN 51009 is correct, the static groundwater level appears to be more than 200 feet above the nearby Silvies Valley and the groundwater within the Silvies Valley alluvium.

Groundwater at the proposed POA wells appears to be inefficiently connected to groundwater in the Silvies Valley given the apparently large static water level difference. However, the Silvies Valley is likely the groundwater discharge area for the uplands surrounding the valley.

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	Closest Spring (un-named)	4857	4860	385	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Closest Spring (un-named)	4857	4820	650	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	Closest Spring (un-named)	4857	4700	4155	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Camp Creek	4857	4640	5025	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Camp Creek	4857	4640	4990	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	2	Camp Creek	4857	4640	11050	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Silvies River	4857	4600	5105	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	Silvies River	4857	4600	2645	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	3	Silvies River	4857	4600	2065	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: _____

The "closest spring (un-named)" for each proposed POA well is different. All of the "closest springs" identified in the table are in the same geologic unit as the proposed POA wells. Therefore, the springs are identified as hydraulically connected to the wells. Each spring identified discharges to an intermittent creek. Consequently, each spring identified is considered intermittent also, and consequently, a potential for substantial interference cannot be assumed even though the well to spring distance is less than ¼ mile for two proposed POA wells. No water rights were found associated with the springs or their adjoining creek.

Camp Creek is located south of the POA wells. The creek is identified as perennial, and it is tributary to the Silvies River. It drains a relatively narrow valley whose lower reach is bounded by uplands composed of marine sedimentary and volcanic rocks (Jtl). Geologic mapping indicates the lowest creek reach flows on alluvium (Oa) and the reaches above flow on rock exposed in the adjoining upland. Groundwater at the proposed POA wells appears to be inefficiently connected to Camp Creek given the apparently large water elevation difference. However, the creek likely receives groundwater discharge from the uplands bounding the creek valley. No potential for substantial interference was assumed given the POAs are more than 0.25 mile from the creek as well as the apparently large water elevation difference.

Silvies River is located east of the POA wells. The river is identified as perennial. Locally, it drains a valley bounded by uplands composed of marine sedimentary and volcanic rocks (Jtl). Geologic mapping indicates the river flows on alluvium (Oa). Groundwater at the proposed POA wells appears to be inefficiently connected to river given the apparently large water elevation difference. However, the river likely receives groundwater discharge from the uplands bounding the river valley. No potential for substantial interference was assumed given the POAs are more than 0.25 mile from the river as well as the apparently large water elevation difference.

Water Availability Basin the well(s) are located within: CAMP CR > SILVIES R – AT MOUTH
SILVIES R > W FK SILVIES R – AB TROUT CR

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% natural flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	N.A.	<input type="checkbox"/>	See below	<input type="checkbox"/>
2	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	N.A.	<input type="checkbox"/>	See below	<input type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	N.A.	<input type="checkbox"/>	See below	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	0.43	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	0.43	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>
3	2	<input type="checkbox"/>	<input type="checkbox"/>	N.A.	N.A.	<input type="checkbox"/>	N.A.	<input type="checkbox"/>	See below	<input type="checkbox"/>
1	3	<input type="checkbox"/>	<input type="checkbox"/>	?	10.00	<input checked="" type="checkbox"/>	6.47	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>
2	3	<input type="checkbox"/>	<input type="checkbox"/>	?	10.00	<input checked="" type="checkbox"/>	6.47	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>
3	3	<input type="checkbox"/>	<input type="checkbox"/>	?	10.00	<input checked="" type="checkbox"/>	6.47	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>

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

SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: A potential for substantial interference with Camp Creek and Silvies River is assumed.

The un-named spring closest to each proposed POA well is less than one-mile from the respective POA well. Two of the springs are less than 0.25-mile from their respective POA well. Each spring is identified as hydraulically connected to the nearby proposed POA well. However, each spring identified discharges to an intermittent creek. Consequently, each spring identified is considered intermittent also, and consequently, a potential for substantial interference cannot be assumed. No water rights were found associated with the springs or their adjoining creek.

Camp Creek is less than one-mile from two of the three proposed POA wells. It is greater than one-mile from proposed POA well 3. The creek is identified as perennial. Groundwater at the proposed POA wells appears to be inefficiently connected to Camp Creek given the apparently large groundwater-surface water elevation difference. However, the creek likely receives groundwater discharge from the uplands bounding the creek valley. Thus, a potential for substantial interference is automatically assumed given the likely hydraulic connection. Calculating the groundwater interference with the creek at the end of 30 days would require developing a calibrated numerical groundwater flow model such as the USGS MODFLOW model which is beyond the scope of this review.

Silvies River is less than one-mile from all three proposed POA wells. The river is identified as perennial. Groundwater at the proposed POA wells appears to be inefficiently connected to the river given the apparently large groundwater-surface water elevation difference. Current data indicate the upper Silvies River base flow supported by groundwater is very little given the geographic area drained by the upper Silvies River. However, the river likely receives groundwater discharge from the uplands bounding the river valley. Thus, a potential for substantial interference is automatically assumed given the likely hydraulic connection. Calculating the groundwater interference with the river at the end of 30 days would require developing a calibrated numerical groundwater flow model such as the USGS MODFLOW model which is beyond the scope of this review.

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													
(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: _____

No evaluation. Camp Creek is greater than one-mile from proposed POA well 3. The creek is identified as perennial. Groundwater at the proposed POA wells appears to be inefficiently connected to Camp Creek given the apparently large groundwater-surface water elevation difference. However, the creek likely receives groundwater discharge from the uplands bounding the creek valley. Calculating the monthly groundwater interference with the creek for the first 365 days would require developing a calibrated numerical groundwater flow model such as the USGS MODFLOW model which is beyond the scope of this review.

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 _____

This review does potential for substantial interference with Camp Creek and Silvies River.

It cannot be determined whether groundwater in the uplands that are northwest and immediately adjacent to Silvies Valley is over-appropriated or not.

No groundwater level data series representing the uplands northwest and adjacent to Silvies Valley was found. The closest groundwater level data is related to one state observation well within the Silvies Valley below the uplands, well GRAN 800 (state observation well 150) located southeast of the proposed POA wells in T18S/R31E-sec 12 (more than 3.3 miles southeast of the proposed POA wells). The 130-foot deep well is likely completed in valley sediments (no lithologic data for the well, but the location is mapped as alluvium (Qa)) and likely in direct hydraulic connection with the Silvies River. The groundwater level data at well GRAN 800 (state observation well 150) likely does not appear to directly represent groundwater at the proposed POA wells given the apparent groundwater level difference of more than 200 feet. That does not mean groundwater in the uplands is not hydraulically connected with groundwater in Silvies Valley. They are most likely hydraulically connected, but inefficiently. The groundwater level data at well GRAN 800 (state observation well 150) is from the 1960s to present. That data shows seasonal and decadal groundwater level fluctuations, but no net decline.

The proposed use of 3,899 (1750 gpm) may or may not exceed the capacity of the resource.

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Surrounding uplands that enclose the Jurassic Age sedimentary and volcanic rocks (Jtl) are mapped by Brown and Thayer (1966) as Triassic Age Picture Gorge and Yakima Basalts (Tcu) to the west and to the east, basaltic andesite related to the Strawberry Volcanics (Ts).

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Condition 7N (groundwater level measurements and decline condition)

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Condition for construction of new POA wells: “New POA well(s) shall meet current Oregon well construction standards and shall be constructed to have continuous casing and continuous seal from land surface or above to a depth to be determined in consultation with a Department Groundwater Section hydrogeologist in Salem and with the Department’s well enforcement staff in Salem.”

References Used:

Oregon Administrative Rules: OAR 690-512

Brown, C.E. and T.P. Thayer. 1966. Geologic map of the Canyon City quadrangle, northeastern Oregon. USGS Miscellaneous Geologic Investigations Map I-447.

Dikenson, W.R. and L.W. Vigrass. 1965. Geology of the Dupree-Izee area Crook, Grant, and Harney Counties, Oregon. Oregon Department of Geology and Mineral Industries Bulletin 58.

Gonthier, J.B. 1985. A Description of Aquifer Units in Eastern Oregon. USGS Water Resources Investigations Report 84-4095.

OWRD water well reports, water level data, and/or hydrographs: GRAN 51009, GRAN 800 (state observation well 150)

USGS Quadrangle Map (1:24,000 scale): Silvies, Oregon

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 Logid: GRAN 51009

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: _____

Condition for re-construction of existing POA well GRAN 51009: "Existing POA well GRAN 51009 (well tag L-99644) shall be reconstructed to have continuous casing and continuous seal from land surface or above to a depth of 65 feet or more below land surface."

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

D1. Well #: 2 Logid: Not Constructed Yet

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: _____

Condition for construction of new POA wells: "New POA well(s) shall meet current Oregon well construction standards and shall be constructed to have continuous casing and continuous seal from land surface or above to a depth to be determined in consultation with a Department Groundwater Section hydrogeologist in Salem and with the Department's well enforcement staff in Salem."

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

D1. Well #: 3 Logid: Not Constructed Yet

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

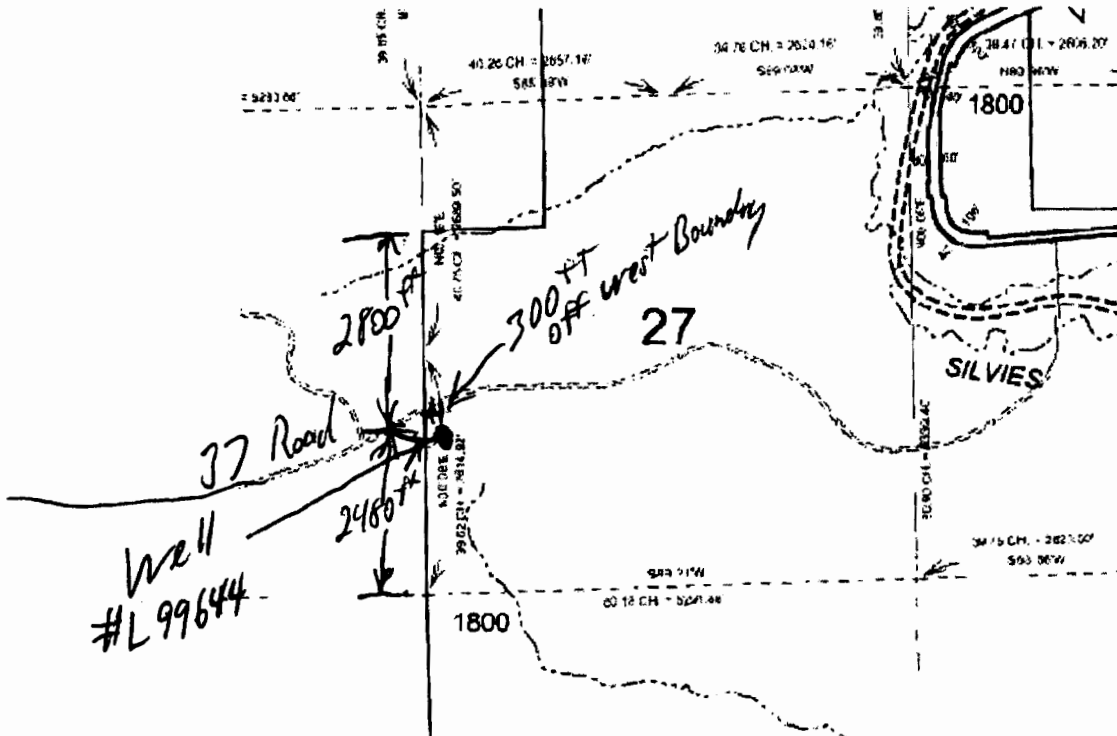
- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

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

Condition for construction of new POA wells: "New POA well(s) shall meet current Oregon well construction standards and shall be constructed to have continuous casing and continuous seal from land surface or above to a depth to be determined in consultation with a Department Groundwater Section hydrogeologist in Salem and with the Department's well enforcement staff in Salem."

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

EXEMPT USE WELL LOCATION MAP



Grant County

Assessor Map Reference Number: 17S 31E 27 SWSW Tax Lot ~~500~~

Street Address of Well, if Available: 37 Road Hwy 395, Seneca, OR

Well Label (ID) # L 99644

(Please Locate Well and Indicate distance From Property or Survey Corner, See Attached Sample Well Location Map.)

MAP NOT TO SCALE

RECEIVED

OCT 21 2009

WATER RESOURCES DEPT
SALEM, OREGON

LAND OWNER SUBMITTED MAP

Water Availability Analysis

CAMP CR > SILVIES R - AT MOUTH
MALHEUR LAKE BASIN
Water Availability as of 10/10/2014

Watershed ID #: 31200209 [\(Map\)](#)
Date: 10/10/2014

Exceedance Level: 80%
Time: 1:19 PM

[Download Data](#)

Water Availability

Select any Watershed for Details

Nesting Watershed Order	Stream Name ID #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	31200201 W FK SILVIES R> MALHEUR L - AT MOUTH	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes
2	31200212 SILVIES R> W FK SILVIES R - AB CAVE G	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes
3	71472 SILVIES R> W FK SILVIES R - AB TROUT CR	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes
4	31200209 CAMP CR> SILVIES R - AT MOUTH	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes

Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	1.22
FEB	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	2.08
MAR	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	5.36
APR	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	15.20
MAY	31200201	W FK SILVIES R > MALHEUR L - AT MOUTH	No	-318.00
JUN	31200201	W FK SILVIES R > MALHEUR L - AT MOUTH	No	-321.00
JUL	31200201	W FK SILVIES R > MALHEUR L - AT MOUTH	No	-112.00
AUG	31200201	W FK SILVIES R > MALHEUR L - AT MOUTH	No	-45.10
SEP	31200201	W FK SILVIES R > MALHEUR L - AT MOUTH	No	-20.40
OCT	71472	SILVIES R > W FK SILVIES R - AB TROUT CR	No	-2.21
NOV	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	0.83
DEC	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	1.03
ANN	31200209	CAMP CR > SILVIES R - AT MOUTH	Yes	3,260.00

Detailed Reports for Watershed ID #31200201

W FK SILVIES R > MALHEUR L - AT MOUTH
MALHEUR LAKE BASIN
Water Availability as of 10/10/2014

Watershed ID #: 31200201 [\(Map\)](#)
Date: 10/10/2014

Exceedance Level: 80%
Time: 1:19 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	31.50	4.13	27.40	0.00	0.00	27.40
FEB	53.00	5.77	47.20	0.00	0.00	47.20
MAR	132.00	55.40	76.60	0.00	0.00	76.60
APR	343.00	231.00	112.00	0.00	0.00	112.00
MAY	235.00	553.00	-318.00	0.00	0.00	-318.00
JUN	124.00	445.00	-321.00	0.00	0.00	-321.00
JUL	38.60	151.00	-112.00	0.00	0.00	-112.00
AUG	17.30	62.40	-45.10	0.00	0.00	-45.10
SEP	13.30	33.70	-20.40	0.00	0.00	-20.40
OCT	16.90	3.68	13.20	0.00	0.00	13.20
NOV	25.20	3.90	21.30	0.00	0.00	21.30
DEC	27.40	3.75	23.70	0.00	0.00	23.70
ANN	122,000.00	94,100.00	57,600.00	0.00	0.00	57,600.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	1.59	0.00	0.00	0.00	0.00	0.06	2.48	0.00	4.13
FEB	3.23	0.00	0.00	0.00	0.00	0.06	2.48	0.00	5.77
MAR	8.61	43.80	0.00	0.00	0.00	0.06	2.48	0.40	55.40
APR	16.70	212.00	0.00	0.00	0.00	0.06	2.48	0.40	231.00
MAY	10.70	540.00	0.00	0.00	0.00	0.06	2.47	0.00	553.00
JUN	4.94	438.00	0.00	0.00	0.00	0.06	2.47	0.00	445.00
JUL	1.39	147.00	0.00	0.00	0.00	0.06	2.46	0.00	151.00
AUG	0.66	59.20	0.00	0.00	0.00	0.06	2.46	0.00	62.40
SEP	0.49	30.70	0.00	0.00	0.00	0.06	2.46	0.00	33.70
OCT	0.59	0.16	0.00	0.00	0.00	0.06	2.46	0.40	3.68
NOV	0.96	0.00	0.00	0.00	0.00	0.06	2.48	0.40	3.90
DEC	1.21	0.00	0.00	0.00	0.00	0.06	2.48	0.00	3.75

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

No instream flow requirements were found for this watershed.

Detailed Reports for Watershed ID #31200212

SILVIES R > W FK SILVIES R - AB CAVE G
MALHEUR LAKE BASIN

Water Availability as of 10/10/2014

Watershed ID #: 31200212 ([Map](#))

Date: 10/10/2014

Exceedance Level: 80%

Time: 1:19 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	30.90	1.08	29.80	0.00	0.00	29.80
FEB	50.80	1.68	49.10	0.00	0.00	49.10
MAR	127.00	12.70	114.00	0.00	0.00	114.00
APR	334.00	48.60	285.00	0.00	0.00	285.00
MAY	231.00	113.00	118.00	0.00	0.00	118.00
JUN	121.00	90.30	30.70	0.00	0.00	30.70
JUL	38.10	30.40	7.70	0.00	0.00	7.70
AUG	17.10	12.50	4.60	0.00	0.00	4.60
SEP	13.20	6.75	6.45	0.00	0.00	6.45
OCT	16.80	0.69	16.10	0.00	0.00	16.10
NOV	25.00	0.84	24.20	0.00	0.00	24.20
DEC	27.00	0.95	26.10	0.00	0.00	26.10
ANN	117,000.00	19,300.00	98,100.00	0.00	0.00	98,100.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.56	0.00	0.00	0.00	0.00	0.06	0.46	0.00	1.08
FEB	1.16	0.00	0.00	0.00	0.00	0.06	0.46	0.00	1.68
MAR	3.32	8.90	0.00	0.00	0.00	0.06	0.46	0.00	12.70
APR	5.13	42.90	0.00	0.00	0.00	0.06	0.46	0.00	48.60
MAY	3.34	109.00	0.00	0.00	0.00	0.06	0.45	0.00	113.00
JUN	1.55	88.30	0.00	0.00	0.00	0.06	0.45	0.00	90.30
JUL	0.44	29.50	0.00	0.00	0.00	0.06	0.44	0.00	30.40
AUG	0.21	11.80	0.00	0.00	0.00	0.06	0.44	0.00	12.50
SEP	0.16	6.09	0.00	0.00	0.00	0.06	0.44	0.00	6.75
OCT	0.19	0.00	0.00	0.00	0.00	0.06	0.44	0.00	0.69
NOV	0.32	0.00	0.00	0.00	0.00	0.06	0.46	0.00	0.84
DEC	0.43	0.00	0.00	0.00	0.00	0.06	0.46	0.00	0.95

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

No instream flow requirements were found for this watershed.

Detailed Reports for Watershed ID #71472

SILVIES R > W FK SILVIES R - AB TROUT CR
 MALHEUR LAKE BASIN
 Water Availability as of 10/10/2014

Watershed ID #: 71472 [\(Map\)](#)
 Date: 10/10/2014

Exceedance Level: 80%
 Time: 1:19 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
 Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	13.90	0.61	13.30	0.00	10.00	3.29
FEB	22.40	0.96	21.40	0.00	12.00	9.44
MAR	58.10	9.28	48.80	0.00	15.00	33.80
APR	160.00	39.40	121.00	0.00	15.00	106.00
MAY	116.00	91.00	25.00	0.00	15.00	10.00
JUN	62.90	72.70	-9.79	0.00	15.00	-24.80
JUL	19.20	24.30	-5.14	0.00	10.00	-15.10
AUG	8.56	9.92	-1.36	0.00	10.00	-11.40
SEP	6.47	5.29	1.18	0.00	10.00	-8.82
OCT	8.21	0.42	7.79	0.00	10.00	-2.21
NOV	11.90	0.50	11.40	0.00	10.00	1.40
DEC	12.20	0.54	11.70	0.00	10.00	1.66
ANN	56,500.00	15,400.00	41,000.00	0.00	8,570.00	33,500.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.36	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.61
FEB	0.71	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.96
MAR	1.87	7.15	0.00	0.00	0.00	0.05	0.20	0.00	9.28
APR	4.68	34.50	0.00	0.00	0.00	0.05	0.20	0.00	39.40
MAY	3.17	87.60	0.00	0.00	0.00	0.05	0.20	0.00	91.00
JUN	1.53	70.90	0.00	0.00	0.00	0.05	0.20	0.00	72.70
JUL	0.43	23.70	0.00	0.00	0.00	0.05	0.20	0.00	24.30
AUG	0.20	9.47	0.00	0.00	0.00	0.05	0.20	0.00	9.92
SEP	0.15	4.89	0.00	0.00	0.00	0.05	0.20	0.00	5.29
OCT	0.17	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.42
NOV	0.25	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.50
DEC	0.29	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.54

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS71472A	APPLICATION	10.00	12.00	15.00	15.00	15.00	15.00	10.00	10.00	10.00	10.00	10.00	10.00
Maximum		10.00	12.00	15.00	15.00	15.00	15.00	10.00	10.00	10.00	10.00	10.00	10.00

Detailed Reports for Watershed ID #31200209

CAMP CR > SILVIES R - AT MOUTH
MALHEUR LAKE BASIN

Water Availability as of 10/10/2014

Watershed ID #: 31200209 ([Map](#))

Date: 10/10/2014

Exceedance Level: 80%

Time: 1:19 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
-------	---------------------	-------------------------------	----------------------	----------------------	---------------------------	---------------------

JAN	1.23	0.01	1.22	0.00	0.00	1.22
FEB	2.10	0.02	2.08	0.00	0.00	2.08
MAR	5.50	0.14	5.36	0.00	0.00	5.36
APR	15.80	0.63	15.20	0.00	0.00	15.20
MAY	9.33	1.52	7.81	0.00	0.00	7.81
JUN	4.11	1.23	2.88	0.00	0.00	2.88
JUL	1.32	0.41	0.91	0.00	0.00	0.91
AUG	0.57	0.17	0.40	0.00	0.00	0.40
SEP	0.43	0.09	0.34	0.00	0.00	0.34
OCT	0.54	0.01	0.53	0.00	0.00	0.53
NOV	0.84	0.01	0.83	0.00	0.00	0.83
DEC	1.04	0.01	1.03	0.00	0.00	1.03
ANN	5,110.00	257.00	4,850.00	0.00	0.00	4,850.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
FEB	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02
MAR	0.01	0.12	0.00	0.00	0.00	0.00	0.01	0.00	0.14
APR	0.04	0.58	0.00	0.00	0.00	0.00	0.01	0.00	0.63
MAY	0.02	1.49	0.00	0.00	0.00	0.00	0.01	0.00	1.52
JUN	0.01	1.21	0.00	0.00	0.00	0.00	0.01	0.00	1.23
JUL	0.00	0.40	0.00	0.00	0.00	0.00	0.01	0.00	0.41
AUG	0.00	0.16	0.00	0.00	0.00	0.00	0.01	0.00	0.17
SEP	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.09
OCT	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
NOV	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
DEC	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

No instream flow requirements were found for this watershed.

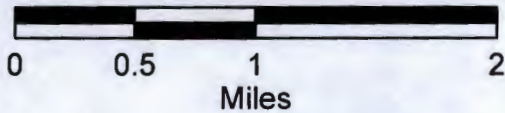
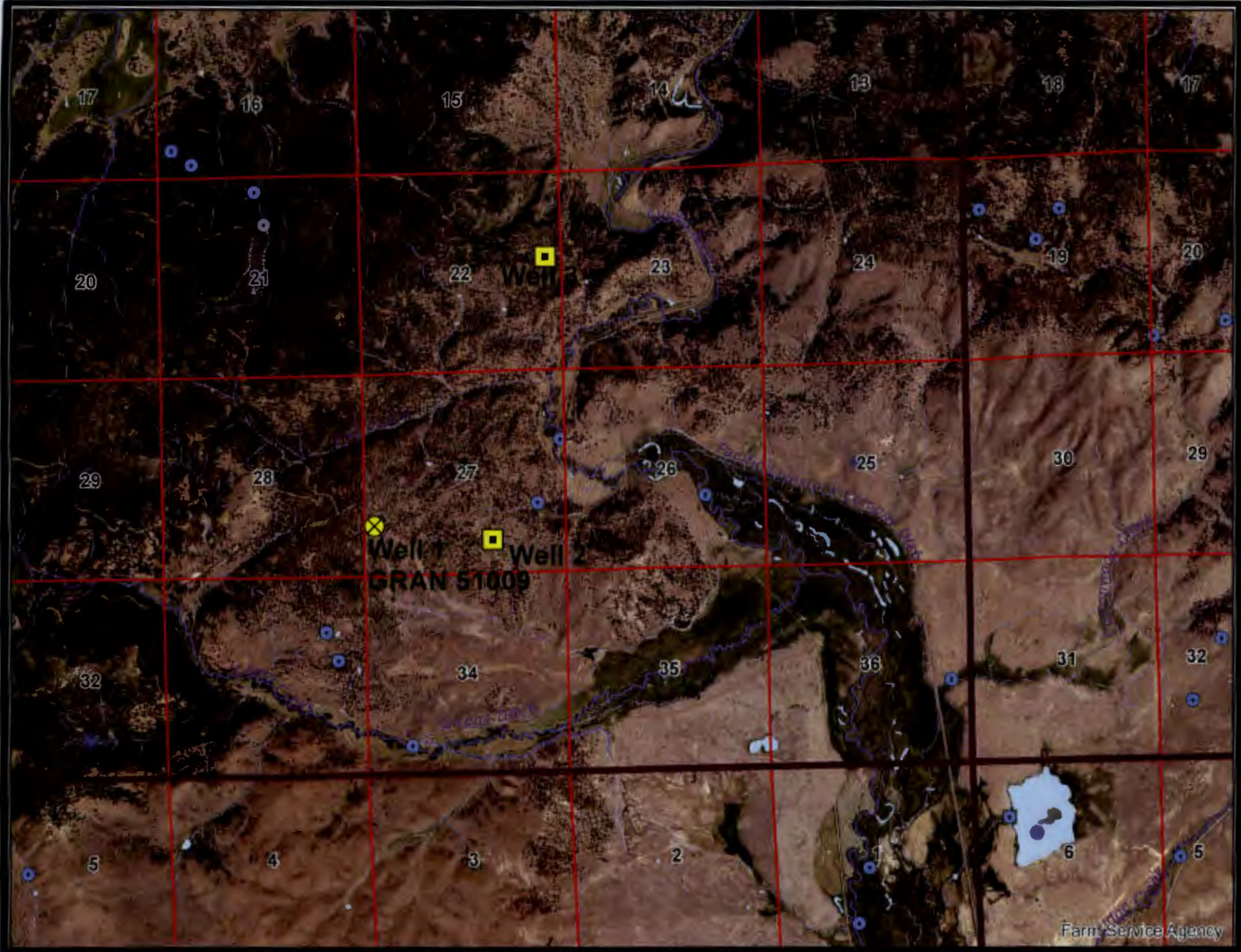
Groundwater Permit Application G-17879 Silvies Valley Ranch Water Co. LLC



Yellow = Application Noted Well(s)
Red = Other Existing or Proposed Wells
Blue and Other = surface water rights



Groundwater Permit Application G-17879 Silvies Valley Ranch Water Co. LLC



Yellow = Application Noted Well(s)
Red = Other Existing or Proposed Wells
Blue and Other = surface water rights

