



**PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS**

TO: Water Rights Section Date 6 August 2015  
 FROM: Ground Water/Hydrology Section Gerald H. Grondin  
Reviewer's Name  
 SUBJECT: Application G-18102 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: Dennis Flynn Ranch County: Lake

A1. Applicant(s) seek(s) (718 gpm) 1.60 cfs from 1 well(s) in the Goose and Summer Lakes Basin,  
Lower Chewaucan River watershed in the Lake Abert sub basin Quad Map Valley Falls

A2. Proposed use: Irrigation (67.96 acre primary, 60 acres Supplemental)  
 Seasonality: 1 April to 15 October (198 days)

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well 1	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	LAKE 52274	1	Basalt	1.60	35S/21E-sec 31 BCA	1395'S, 1324'E fr NW cor S 31
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	4305	18	12	4/27/2015	600	E 0-39 P 0-50	E +1-39 P 0-570	E None P ?	E None P 370-570	1500	?	A
2												

Use data from application for proposed wells.

A4. **Comments:** \_\_\_\_\_

**Note: "E" in the above table means the well as it exists at the time of this review and "P" means the well after proposed reconstruction. The applicant and their CWRE indicated the applicant may opt to drill a new well adjacent to the proposed POA well (LAKE 52274) rather than reconstruct the proposed POA well and subsequently make the new well the POA well (verbal communication).**

**Note: the proposed POA well location is less than 0.25 miles from Crooked Creek and in hydraulic connection with the creek. That automatically triggers a finding of potential for substantial interference (PSI) under OAR 690-009. This reviewer understands that the applicant plans to overcome the PSI finding via mitigation.**

**The proposed maximum pumping rate of 1.60 cfs (718 gpm) is what is typically allowed for 127.96 acres. The proposed total maximum annual volume of 383.9 ac-ft is the maximum typically allowed for 127.96 acres (3 acre-feet per acre).**

**The proposed aquifer is the predominantly basalt/volcanic rock and sediment unit below the predominantly basin-fill sediments unit. Geologic mapping (Walker 1963) indicates the surface geology at the proposed well site is sedimentary deposits (Ots). These deposits are described as lacustrine, fluvatile, and aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel. West of the proposed POA well site are exposures of tuff (Ttf) and basalt (Tb). The tuff may be tuff of rhyolitic and dacitic composition, and/or tuffaceous sedimentary rocks, and/or areally restricted rhyodacitic and andesitic flows. Immediately east of the proposed POA well site is alluvium (Oal) described as unconsolidated fluvial gravel, sand, and silt. The proposed POA well appears to have encountered the predominantly basalt/volcanic rock and sediment unit at 365 feet depth.**

The water well report (well log) for the proposed POA well indicate multiple water bearing zones in the predominantly basin-fill sediment unit as well as water in the predominantly basalt/volcanic rock and sediment unit below. The reported static water level for each water bearing zone is reported as the same indicating vertical hydraulic connection.

The existing and proposed casing and seal for the proposed POA well (LAKE 52274) does not and will not limit groundwater production from the predominantly basalt/volcanic rock and sediment unit as proposed in the application. To ensure groundwater production is from the predominantly basalt/volcanic rock and sediment unit, this review recommends a well construction permit condition that requires all POA well(s) to be constructed to obtain groundwater solely from the predominantly basalt/volcanic rock and sediment unit by having continuous casing and continuous seal from land surface to a depth of 5-feet or more into the predominantly basalt/volcanic rock and sediment unit below the predominantly basin fill sediment unit. At the currently proposed POA well (LAKE 52274), the continuous casing and continuous seal needs to be at minimum from land surface to 370 feet depth.

A5.  Provisions of the Goose & Summer Lakes 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: OAR 690-513-0050 (Chewaucan Subbasin) applies. Groundwater and surface water are classified. Agricultural use is allowed.

A6.  Well(s) # N.A., \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: \_\_\_\_\_

Comments: Currently, no administrative area.

**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 special conditions (see 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: \_\_\_\_\_

Multiple reports for the Goose and Summer Lakes Basin indicate ground water occurs within the alluvium within stream drainages, the predominantly basin-fill sediment unit generally found in valleys, and the predominantly basalt/volcanic rock and sediment unit below the basin-fill in the valleys and exposed in surrounding uplands. The water well report (well log) for the proposed POA well indicate multiple water bearing zones in the predominantly basin-fill sediment unit as well as water in the predominantly basalt/volcanic rock and sediment unit below. The static water level for each water bearing zone is reported as being the same indicating vertical hydraulic connection.

Due to limited data, groundwater level trend and availability cannot be determined for this area.

**If a permit is issued, recommend conditions 7B, 7F, 7N, 7P, 7T, and special conditions (see below)**

**Special condition 1:** water rights “large” permit condition that requires a flow meter. Please add that the flow meter must be located within 50 feet of the well with a clearly visible sign adjacent to the flow meter identifying the flow meter.

**Special condition 2: well construction**

“Each permitted well shall obtain groundwater solely from the predominantly basalt unit (which may contain some sedimentary layers) that underlies the predominantly basin-fill sediment unit (which may contain some basalt layers). Each well shall have continuous casing and continuous seal from land surface, through the predominantly basin-fill unit, and 5 feet into the predominantly basalt unit at minimum. Note: the depth to the predominantly basalt unit varies with location.”

**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	Basalt	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2		<input type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: \_\_\_\_\_

System is identified as generally unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. Generally, low transmissivity (low permeability) predominantly basin-fill sediments of varying thickness overlies a higher transmissivity (higher permeability) predominantly basalt unit. Available data indicates ground water occurs in both the sediment and basalt. Additionally, the data indicates groundwater is also vertically hydraulically connected.

The proposed aquifer is the predominantly basalt/volcanic rock and sediment unit below the predominantly basin-fill sediments unit. Geologic mapping (Walker 1963) indicates the surface geology at the proposed well site is sedimentary deposits (Qts). These deposits are described as lacustrine, fluvatile, and aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel. West of the proposed POA well site are exposures of tuff (Ttf) and basalt (Tb). The tuff may be tuff of rhyolitic and dacitic composition, and/or tuffaceous sedimentary rocks, and/or areally restricted rhodacitic and andesitic flows. Immediately east of the proposed POA well site is alluvium (Qal) described as unconsolidated fluvial gravel, sand, and silt. The proposed POA well appears to have encountered the predominantly basalt/volcanic rock and sediment unit at 365 feet depth.

The water well report (well log) for the proposed POA well indicate multiple water bearing zones in the predominant basin-fill sediment unit as well as water in the predominantly basalt/volcanic rock and sediment unit below. The reported static water level for each water bearing zone is reported as the same indicating vertical hydraulic connection.

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	Crooked Creek	4293	4295	1,025	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
						<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: \_\_\_\_\_

**Under OAR 690-009, a potential for substantial interference is automatically found given: available data indicating Crooked Creek is a perennial creek; groundwater in the area is unconfined and hydraulically connected to surface water; and the distance from the proposed POA well to the creek is less than 0.25 miles.**

Water Availability Basin the well(s) are located within: **CROOKED CR > CHEWAUCAN R - AT MOUTH**

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.		<input type="checkbox"/>	6.05	<input checked="" type="checkbox"/>	0.2%	<input checked="" 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"/>

Comments: \_\_\_\_\_

**The proposed POA well location is less than 0.25 mile from Crooked Creek.**

**Hunt (2003) was used to calculate the groundwater pumping interference with Crooked Creek. The calculation used a transmissivity of 2,100 ft<sup>2</sup>/day derived from specific capacity data for nearby well LAKE 1769, an intermediate storage coefficient of 0.001, a 0.042 ft/day vertical hydraulic conductivity for the basin fill (horizontal conductivity divided by 100), and a pro-rated pumping rate of 0.98 cfs (440 gpm) derived by dividing the proposed maximum annual volume (383.9 ac-ft) by the proposed total days of pumping (198 days).**

**Under OAR 690-009, a potential for substantial interference is automatically found given: available data indicating Crooked Creek is a perennial creek; groundwater in the area is unconfined and hydraulically connected to surface water; and the distance from the proposed POA well to the creek is less than 0.25 miles. Also, the proposed maximum pumping rate is greater than one-percent of the natural flow (80% exceedance).**

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.

<b>Non-Distributed Wells</b>													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
<b>Distributed Wells</b>													
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													
<b>(A) = Total Interf.</b>													
<b>(B) = 80 % Nat. Q</b>													
<b>(C) = 1 % Nat. Q</b>													
<b>(D) = (A) &gt; (C)</b>													
<b>(E) = (A / B) x 100</b>													

(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 analysis. The proposed POA well is less than one-mile from Crooked Creek.**

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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) **7B, 7F, 7N, 7P, 7T, and special conditions (see below)**;
  - ii.  The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions** \_\_\_\_\_

**Groundwater and surface water in the area is hydraulically connected.**

**System is identified as generally unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. Generally, low transmissivity (low permeability) predominantly basin-fill sediments of varying thickness overlies a higher transmissivity (higher permeability) predominantly basalt unit. Available data indicates ground water occurs in both the sediment and basalt. Additionally, the data indicates groundwater is also vertically hydraulically connected.**

**The proposed aquifer is the predominantly basalt/volcanic rock and sediment unit below the predominantly basin-fill sediments unit. Geologic mapping (Walker 1963) indicates the surface geology at the proposed well site is sedimentary deposits (Qts). These deposits are described as lacustrine, fluvatile, and aeolian sedimentary rocks, interstratified tuff, ashy diatomite, and unconsolidated clay, sand, silt, and gravel. West of the proposed POA well site are exposures of tuff (Ttf) and basalt (Tb). The tuff may be tuff of rhyolitic and dacitic composition, and/or tuffaceous sedimentary rocks, and/or areally restricted rhyodacitic and andesitic flows. Immediately east of the proposed POA well site is alluvium (Qal) described as unconsolidated fluvial gravel, sand, and silt. The proposed POA well appears to have encountered the predominantly basalt/volcanic rock and sediment unit at 365 feet depth.**

**The water well report (well log) for the proposed POA well indicate multiple water bearing zones in the predominantly basin-fill sediment unit as well as water in the predominantly basalt/volcanic rock and sediment unit below. The reported static water level for each water bearing zone is reported as the same indicating vertical hydraulic connection.**

**Under OAR 690-009, a potential for substantial interference is automatically found given: available data indicating Crooked Creek is a perennial creek; groundwater in the area is unconfined and hydraulically connected to surface water; and the distance from the proposed POA well to the creek is less than 0.25 miles. Also, the proposed maximum pumping rate is greater than one-percent of the natural flow (80% exceedance). This reviewer understands that the applicant plans to overcome the PSI finding via mitigation.**

**If a permit is issued, recommend conditions 7B, 7F, 7N, 7P, 7T, and special conditions (see below)**

**Special condition 1:** water rights "large" permit condition that requires a flow meter. Please add that the flow meter must be located within 50 feet of the well with a clearly visible sign adjacent to the flow meter identifying the flow meter.

**Special condition 2: well construction**

**"Each permitted well shall obtain groundwater solely from the predominantly basalt unit (which may contain some sedimentary layers) that underlies the predominantly basin-fill sediment unit (which may contain some basalt layers). Each well shall have continuous casing and continuous seal from land surface, through the predominantly basin-fill unit, and 5 feet into the predominantly basalt unit at minimum. Note: the depth to the predominantly basalt unit varies with location."**

References Used: References consulted were:

Hampton, E.R., 1964, Geologic factors that control the occurrence and availability of ground water in the Fort Rock Basin, Lake County, Oregon: USGS Professional Paper 383-B, 29 p.

McFarland, W.D. and Ryals, G.N., 1991, Adequacy of available hydrogeologic data for evaluation of declining ground-water levels in the Fort Rock Basin, south-central Oregon: USGS Water Resources Investigations Report 89-4057, 47 p.

Miller, D.W., 1984, Appraisal of ground-water conditions in the Fort Rock Basin, Lake County, Oregon: OWRD Open File Report, 157 p.

Miller, D.W., 1986, Ground-water conditions in the Fort Rock Basin, northern Lake County, Oregon: OWRD Ground Water Report No. 31, 196 p.

Morgan, D.S., 1988, Geohydrology and numerical model analysis of ground-water flow in the Goose Lake Basin, Oregon and California: USGS Water Resources Investigations Report 87-4058, 92 p.

Oregon Water Resources Department, 1989, Goose and Summer Lakes Basin report: OWRD Basin Report, 112 p.

Peterson, N.V. and McIntyre, J.R., 1970, The reconnaissance geology and mineral resources of eastern Klamath County and western Lake County, Oregon: DOGAMI Bulletin 66, 70 p.

Phillips, K.N. and VanDenburgh, A.S., 1971, Hydrology and geochemistry of Abert, Summer, and Goose Lakes, and other closed-basin lakes in south-central Oregon: USGS Professional Paper 502-B, 86p.

Sammel, E.A. and Craig, R.W., 1981, The geothermal hydrology of Warner Valley, Oregon: a reconnaissance study: USGS Professional Paper 1044-I, 147 p.

Walker, G.W., 1963, Reconnaissance geologic map of the eastern half of the Klamath Falls (AMS) quadrangle, Lake and Klamath Counties, Oregon: USGS Mineral Investigations Field Studies Map MF-260.

Waring, G.A., 1908, Geology and water resources of a portion of south-central Oregon: USGS Water Supply Paper 220, 85 p.

Goose and Summer Lakes Basin Program rules (OAR 690-513).

Water well reports for wells LAKE 52274, LAKE 1769

USGS quadrangle maps (1:24,000 scale): Valley Falls



**D. WELL CONSTRUCTION, OAR 690-200**

D1. Well #: 1 Logid: LAKE 52274

**The proposed aquifer is the predominantly basalt/volcanic rock and sediment unit below the predominantly basin-fill sediments unit. The existing and proposed casing and seal for the proposed POA well (LAKE 52274) does not and will not limit groundwater production from the predominantly basalt/volcanic rock and sediment unit as proposed in the application.**

**The applicant and their CWRE indicated the applicant may opt to drill a new well adjacent to the proposed POA well (LAKE 52274) rather than reconstruct the proposed POA well and subsequently make the new well the POA well (verbal communication).**

**To ensure groundwater production is from the predominantly basalt/volcanic rock and sediment unit, this review recommends a well construction permit condition that requires all POA well(s) to be constructed to obtain groundwater solely from the predominantly basalt/volcanic rock and sediment unit by having continuous casing and continuous seal from land surface to a depth of 5-feet or more into the predominantly basalt/volcanic rock and sediment unit below the predominantly basin fill sediment unit. At the currently proposed POA well (LAKE 52274), the continuous casing and continuous seal needs to be at minimum from land surface to 370 feet depth.**

**Special condition: well construction**

**“Each permitted well shall obtain groundwater solely from the predominantly basalt unit (which may contain some sedimentary layers) that underlies the predominantly basin-fill sediment unit (which may contain some basalt layers). Each well shall have continuous casing and continuous seal from land surface, through the predominantly basin-fill unit, and 5 feet into the predominantly basalt unit at minimum. Note: the depth to the predominantly basalt unit varies with location.”**

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.

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**THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL**

D7.  Well construction deficiency has been corrected by the following actions: \_\_\_\_\_

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\_\_\_\_\_, 200\_\_\_\_.  
(Enforcement Section Signature)

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

**Water Availability Tables**

**See attachments**

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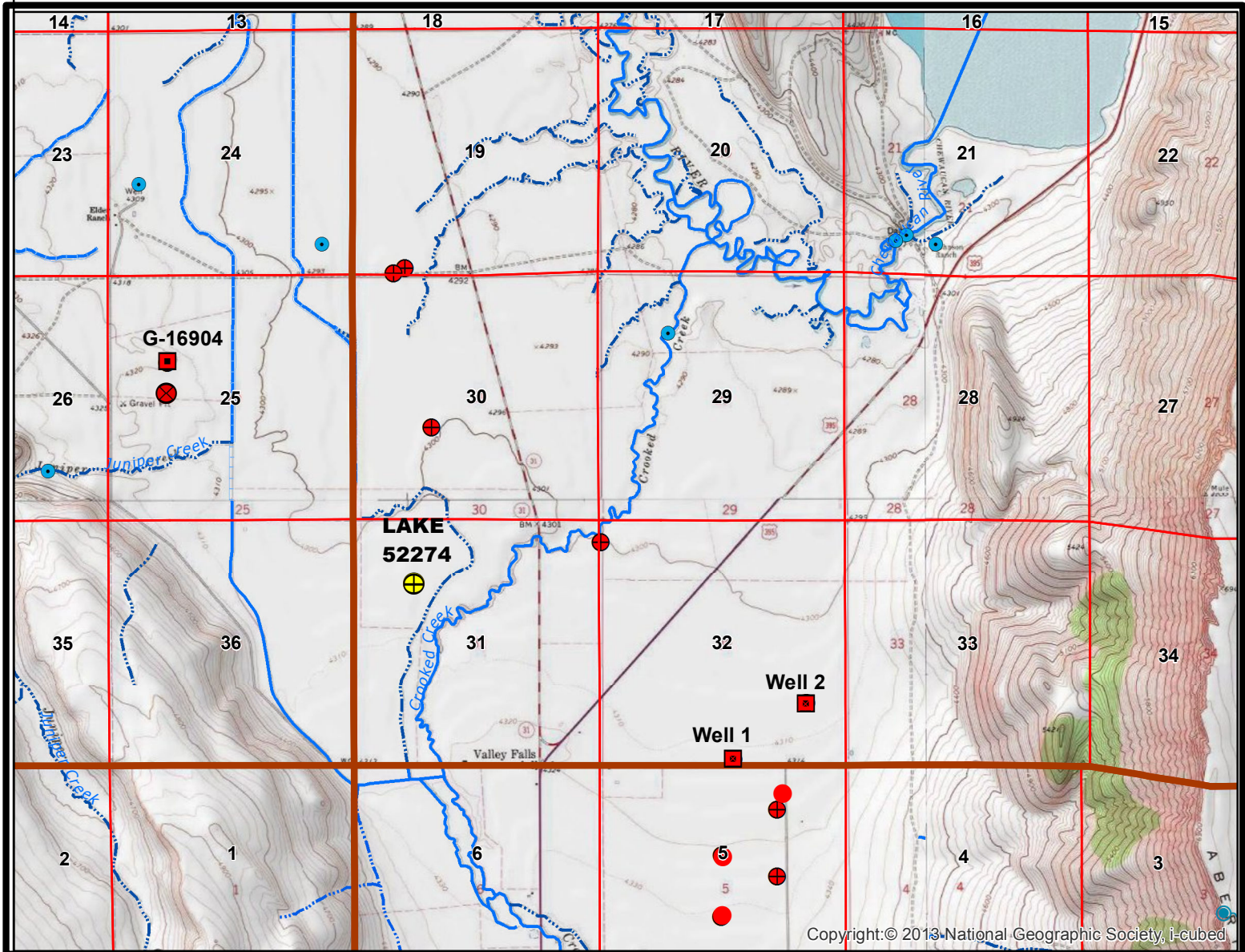


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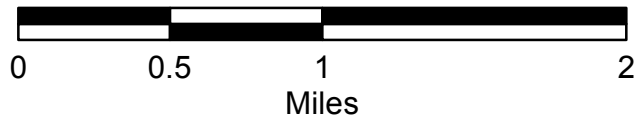
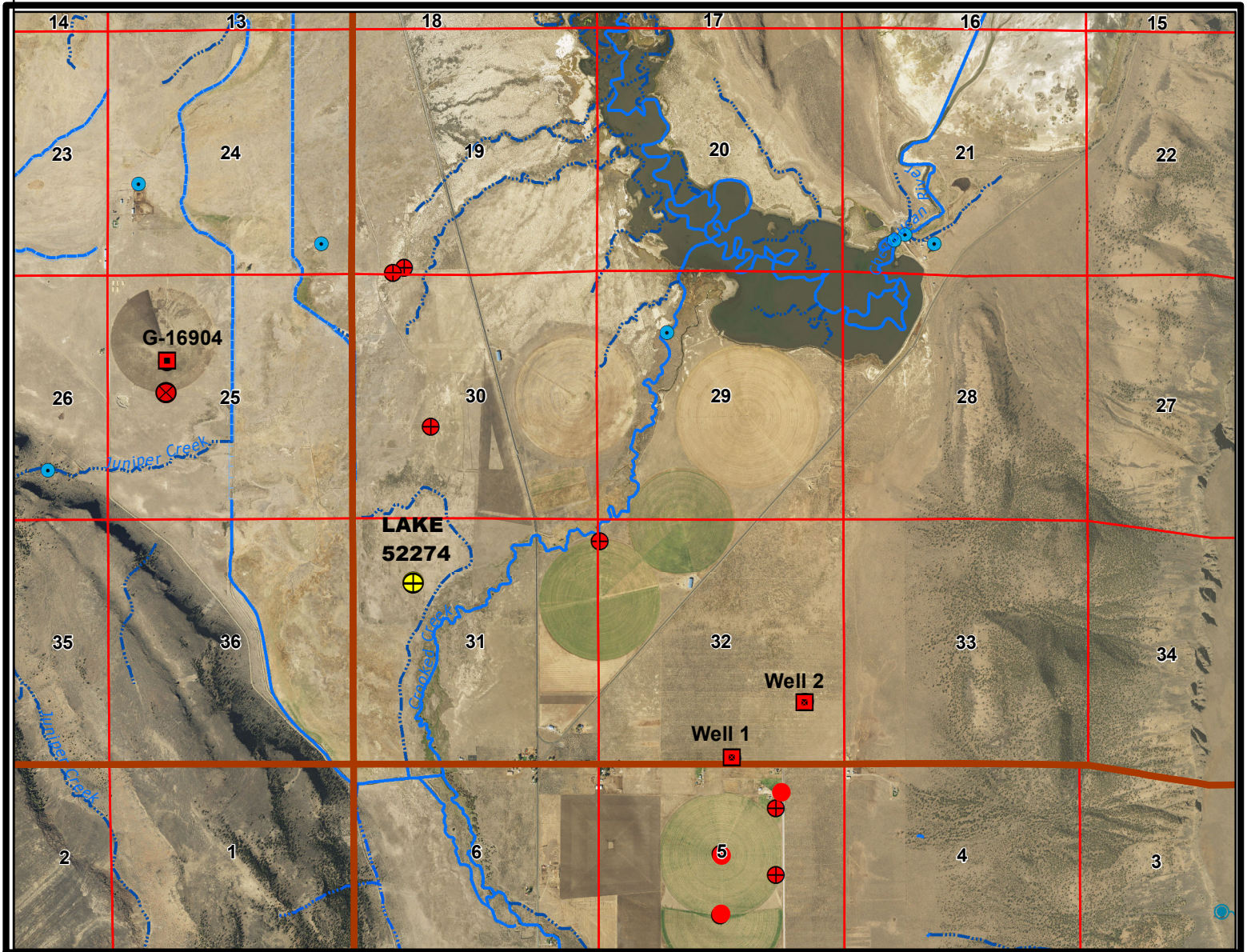
# Groundwater Permit Application G-18102 Dennis Flynn Ranch



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



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

11-16-2010

WELL LABEL # L 94396

START CARD # 1004810

(1) LAND OWNER

Owner Well I.D. \_\_\_\_\_

First Name DAVE Last Name ELDER
Company VALLEY FALLS RANCH, INC.
Address 31259 CLOVER FLAT ROAD
City LAKEVIEW State OR Zip 97630

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

(3) DRILL METHOD

[ ] Rotary Air [X] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE [ ] Domestic [ ] Irrigation [ ] Community

[ ] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [X] Other Exploratory

(5) BORE HOLE CONSTRUCTION Special Standard [ ] (Attach copy)

Depth of Completed Well 600.00 ft.

Table with columns: Dia, From, To, Material, SEAL From, To, Amt, sacks/lbs. Row 1: 12, 0, 39, Bentonite, 0, 39, 34, S.

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E

[X] Other Poured Dry

Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_

Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_

Explosives used: [ ] Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

(6) CASING/LINER

Table with columns: Casing, Liner, Dia, +, From, To, Gauge, Stl, Plstc, Wld, Thrd. Row 1: 8, 1, 39, .250, [X], [ ], [ ], [ ]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s) \_\_\_\_\_

Temp casing [ ] Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

(7) PERFORATIONS/SCREENS

Perforations Method \_\_\_\_\_
Screens Type \_\_\_\_\_ Material \_\_\_\_\_

Table with columns: Perf/S, Casing/Screen, Dia, From, To, Sern/slot width, Slot length, # of slots, Tele/pipe size

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

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 200, 60, 1

Temperature 80 °F Lab analysis [ ] Yes By \_\_\_\_\_

Water quality concerns? [ ] Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(9) LOCATION OF WELL (legal description)

County Lake Twp 35.00 S N/S Range 21.00 E E/W WM

Sec 31 NW 1/4 of the SE 1/4 Tax Lot 2300

Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_

Lat \_\_\_\_\_ " or \_\_\_\_\_ DMS or DD

Long \_\_\_\_\_ " or \_\_\_\_\_ DMS or DD

[ ] Street address of well [X] Nearest address

31259 Clover Flat Rd., Lakeview, OR 97630

(10) STATIC WATER LEVEL

Date SWL(psi) + SWL(ft)

Table with columns: Existing Well / Predeepening, Completed Well, Date, SWL(psi), SWL(ft). Row 1: Completed Well, 09-08-2008, 16

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 18

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), SWL(ft). Row 1: 09-04-2008, 18, 85, 15, 16

(11) WELL LOG

Ground Elevation \_\_\_\_\_

Table with columns: Material, From, To. Row 1: Silty Clay and Sandy Loam Top Soil, 0, 4

RECEIVED

JUN 28 2011

WATER RESOURCES DEPT
SALEM, OREGON

Date Started 09-03-2008 Completed 09-08-2008

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number \_\_\_\_\_ Date \_\_\_\_\_

Electronically Filed

Signed \_\_\_\_\_

(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 1385 Date 11-16-2010

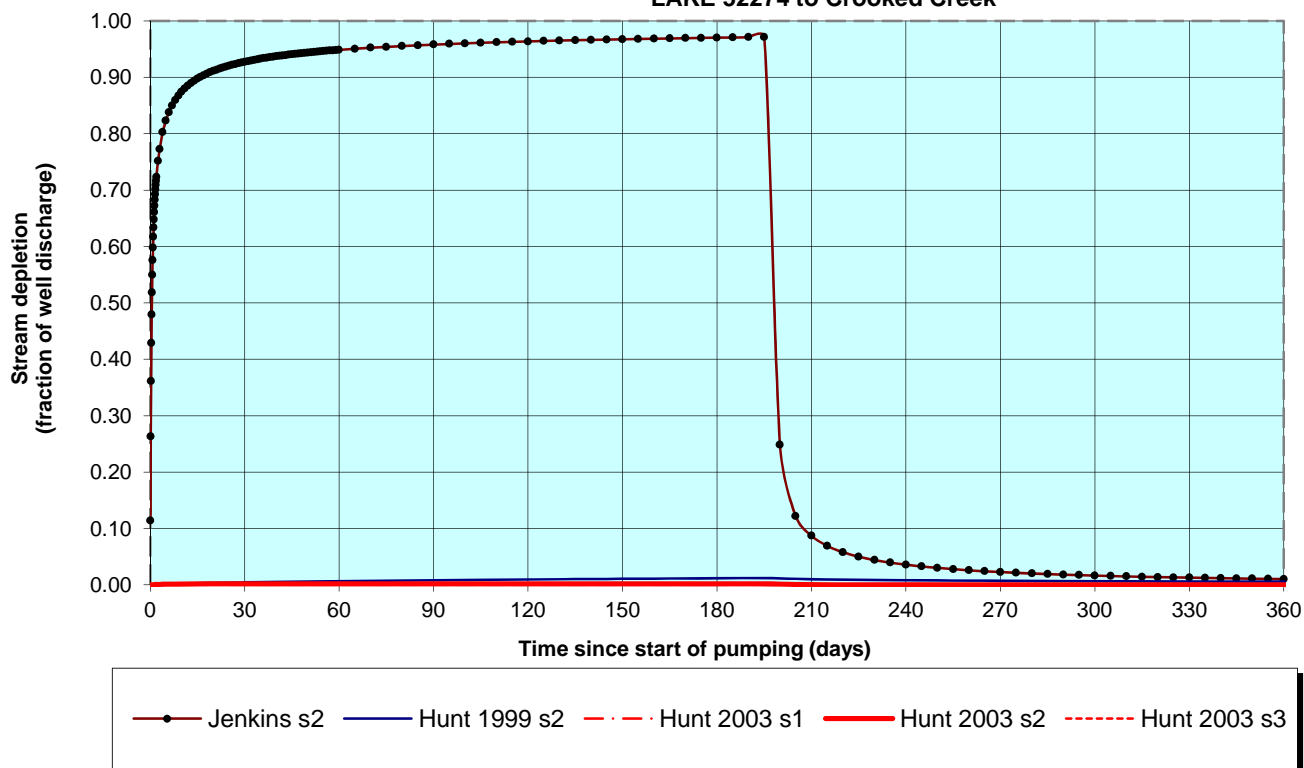
Electronically Filed

Signed ROBERT BUCKNER (E-filed)

Contact Info (optional)

## Transient Stream Depletion (Jenkins, 1970; Hunt, 1999, 2003)

LAKE 52274 to Crooked Creek



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 198 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	92.7%	94.9%	95.8%	96.4%	96.7%	97.0%	8.7%	3.6%	2.3%	1.6%	1.3%	1.0%
H SD 1999	0.5%	0.7%	0.8%	1.0%	1.1%	1.2%	1.0%	0.8%	0.7%	0.7%	0.6%	0.6%
H SD 2003	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Qw, cfs	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
H SD 99, cfs	0.004	0.006	0.008	0.009	0.011	0.012	0.010	0.008	0.007	0.006	0.006	0.006
H SD 03, cfs	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	0.98	0.98	0.98	cfs
Time pump on (pumping duration)	tpon	198	198	198	days
Perpendicular from well to stream	a	1025	1025	1025	ft
Well depth	d	600	600	600	ft
Aquifer hydraulic conductivity	K	4.2	4.2	4.2	ft/day
Aquifer saturated thickness	b	500	500	500	ft
Aquifer transmissivity	T	2100	2100	2100	ft*ft/day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	0.042	0.042	0.042	ft/day
Aquitard saturated thickness	ba	350	350	350	ft
Aquitard thickness below stream	babs	350	350	350	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	20	20	20	ft
Streambed conductance (lambda)	sbc	0.002400	0.002400	0.002400	ft/day
Stream depletion factor	sdf	0.500298	0.500298	0.500298	days
Streambed factor	sbfb	0.001171	0.001171	0.001171	
input #1 for Hunt's Q_4 function	t'	1.998810	1.998810	1.998810	
input #2 for Hunt's Q_4 function	K'	0.060036	0.060036	0.060036	
input #3 for Hunt's Q_4 function	epsilon'	0.005000	0.005000	0.005000	
input #4 for Hunt's Q_4 function	lamda'	0.001171	0.001171	0.001171	

<b>Theis_Equation_specific_capacity_to_transmissivity</b>				
<b>G-18102 (Dennis Flynn Ranch)</b>				
<b>Basin Fill &amp; Basalt</b>				
<b>Well County</b>	<b>Well Num</b>	<b>Transmissivity</b>	<b>Open Interval</b>	<b>Conductivity</b>
		<b>ft<sup>2</sup>/day</b>	<b>feet</b>	<b>ft/day</b>
LAKE	1769	2,101.20	475.00	4.42
		<b>2,101.20</b>	<b>Average</b>	<b>4.42</b>

# Water Availability Analysis

CROOKED CR > CHEWAUCAN R - AT MOUTH  
 GOOSE & SUMMER LAKE BASIN  
 Water Availability as of 8/6/2015

Watershed ID #: 31300603 [\(Map\)](#)  
 Date: 8/6/2015

Exceedance Level:   
 Time: 10:08 AM

[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	31300602 CHEWAUCAN R> L ABERT- AT MOUTH	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
2	31300603 CROOKED CR> CHEWAUCAN R- AT MOUTH	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	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	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	7.48
FEB	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	13.10
MAR	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	19.30
APR	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	32.30
MAY	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	14.90
JUN	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-15.10
JUL	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-0.76
AUG	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	No	-0.14
SEP	31300602	CHEWAUCAN R > L ABERT - AT MOUTH	Yes	1.93
OCT	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	4.57
NOV	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	6.70
DEC	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	6.95
ANN	31300603	CROOKED CR > CHEWAUCAN R - AT MOUTH	Yes	17,900.00

## Detailed Reports for Watershed ID #31300602

CHEWAUCAN R > L ABERT - AT MOUTH  
 GOOSE & SUMMER LAKE BASIN  
 Water Availability as of 8/6/2015

Watershed ID #: 31300602 [\(Map\)](#)  
 Date: 8/6/2015

Exceedance Level:   
 Time: 10:08 AM

## 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	33.80	0.82	33.00	0.00	0.00	33.00



FEB	64.90	1.10	63.80	0.00	0.00	63.80
MAR	103.00	23.80	79.20	0.00	0.00	79.20
APR	161.00	113.00	48.30	0.00	0.00	48.30
MAY	314.00	299.00	14.90	0.00	0.00	14.90
JUN	234.00	249.00	-15.10	0.00	0.00	-15.10
JUL	81.90	82.70	-0.76	0.00	0.00	-0.76
AUG	47.40	47.50	-0.14	0.00	0.00	-0.14
SEP	42.30	40.40	1.93	0.00	0.00	1.93
OCT	42.20	22.40	19.80	0.00	0.00	19.80
NOV	34.40	0.63	33.80	0.00	0.00	33.80
DEC	32.80	0.68	32.10	0.00	0.00	32.10
ANN	120,000.00	53,400.00	66,600.00	0.00	0.00	66,600.00

### 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	0.62	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.82
FEB	0.90	0.00	0.00	0.17	0.00	0.02	0.01	0.00	1.10
MAR	1.29	22.30	0.00	0.17	0.00	0.02	0.01	0.00	23.80
APR	2.32	110.00	0.00	0.17	0.00	0.02	0.01	0.00	113.00
MAY	3.72	295.00	0.00	0.17	0.00	0.02	0.01	0.00	299.00
JUN	1.88	247.00	0.00	0.17	0.00	0.02	0.01	0.00	249.00
JUL	0.55	81.90	0.00	0.17	0.00	0.02	0.01	0.00	82.70
AUG	0.30	47.00	0.00	0.17	0.00	0.02	0.01	0.00	47.50
SEP	0.32	39.90	0.00	0.17	0.00	0.02	0.01	0.00	40.40
OCT	0.32	21.90	0.00	0.17	0.00	0.02	0.01	0.00	22.40
NOV	0.43	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.63
DEC	0.48	0.00	0.00	0.17	0.00	0.02	0.01	0.00	0.68

### 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 #31300603

CROOKED CR > CHEWAUCAN R - AT MOUTH

GOOSE & SUMMER LAKE BASIN

Water Availability as of 8/6/2015

Watershed ID #: 31300603 ([Map](#))

Date: 8/6/2015

Exceedance Level:

Time: 10:08 AM

### 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	8.03	0.55	7.48	0.00	0.00	7.48
FEB	13.90	0.78	13.10	0.00	0.00	13.10

MAR	22.60	3.33	19.30	0.00	0.00	19.30
APR	44.50	12.20	32.30	0.00	0.00	32.30
MAY	55.40	29.60	25.80	0.00	0.00	25.80
JUN	26.90	22.80	4.11	0.00	0.00	4.11
JUL	9.06	6.55	2.51	0.00	0.00	2.51
AUG	6.09	4.12	1.97	0.00	0.00	1.97
SEP	6.05	3.60	2.45	0.00	0.00	2.45
OCT	6.65	2.08	4.57	0.00	0.00	4.57
NOV	7.08	0.38	6.70	0.00	0.00	6.70
DEC	7.43	0.48	6.95	0.00	0.00	6.95
ANN	23,100.00	5,240.00	17,900.00	0.00	0.00	17,900.00

## 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	0.53	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.55
FEB	0.76	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.78
MAR	1.30	2.01	0.00	0.01	0.00	0.01	0.00	0.00	3.33
APR	2.45	9.75	0.00	0.01	0.00	0.01	0.00	0.00	12.20
MAY	3.22	26.40	0.00	0.01	0.00	0.01	0.00	0.00	29.60
JUN	1.33	21.40	0.00	0.01	0.00	0.01	0.00	0.00	22.80
JUL	0.36	6.17	0.00	0.01	0.00	0.01	0.00	0.00	6.55
AUG	0.20	3.89	0.00	0.01	0.00	0.01	0.00	0.00	4.12
SEP	0.23	3.35	0.00	0.01	0.00	0.01	0.00	0.00	3.60
OCT	0.27	1.79	0.00	0.01	0.00	0.01	0.00	0.00	2.08
NOV	0.36	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.38
DEC	0.46	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.48

## 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.**