

Groundwater Application Review Summary Form

Application # G- 18456

GW Reviewer Gerald H. Grondin

Date Review Completed: 8 December 2017

Summary of Potential for Activating Basin Rules:

☒ Groundwater for the proposed use has the potential for activating basin rules per Section A5 of the attached review form.

Summary of GW Availability and Injury Review:

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

Summary of Potential for Substantial Interference Review:

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

Summary of Well Construction Assessment:

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

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

[illegible]

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 8 December 2017

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

SUBJECT: Application G- 18456 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: Crane Creek Ranch, LLC County: Lake

A1. Applicant(s) seek(s) 5.00 cfs (2,244 gpm) cfs from 1 well(s) in the Goose & Summer Lakes Basin,
Deep Creek watershed in the Warner Lakes subbasin Quad Map: Horse Prairie

A2. Proposed use: Supplemental Irrigation (400.0 acres) Seasonality: 1 March to 31 October (245 days)

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

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	Not Drilled	1	Basalt	5.00	39S/22E-sec 16 BBD	1000'S, 800'E fr NW qtr cor S 16
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	5598	*175	*75	*11/04/2007	P-750	P-0-250	P-0-250	N.A.	P-250-750	2244	?	?
2												

Use data from application for proposed wells.

A4. Comments: _____

The application requests a total maximum pumping rate of 5.00 cfs (2,244 gpm) and a total maximum annual volume of 1,200 acre-feet from one well to supplemental irrigate 400.0 acres (3.00 ac-ft per acre).

*** Means these values were derived from the water well report for nearby livestock well LAKE 52006.**

P means these are proposed by application G-18456.

The proposed maximum pumping rate and maximum annual volume are consistent for 400 POU acres.

NOTE: The proposed pumping rate may be overly optimistic. Driller water well reports were found for 10 wells in township T39S/R22E. These wells include wells obtaining groundwater from "basalt" (predominantly volcanic rock and sediments unit) as proposed by this application and wells obtaining groundwater from the overlying predominantly basin fill sediment unit. All the wells have yields less than 100 gpm.

NOTE: The proposed casing and seal depth may not be deep enough to extend through the predominantly basin fill sediment unit into the predominantly volcanic rock and sediments unit).

NOTE: The proposed well location is in the uplands between Goose Lake Valley and the Warner Lakes Valley where wells are few and aquifer property data is sparse to nil. For this application, the aquifer property data is inadequate to conduct any interference calculations.

- A5. ☒ Provisions of the in general OAR 690-513; particularly OAR 690-513-0040 (Warner Lakes sub-basin) Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☒ are possibly, or ☐ are not, activated by this application. (Not all basin rules contain such provisions.)

Comments: _____

OAR 690-513-0040 may possibly be activated by this application in relation to "alluvial" groundwater, Deep Creek and its tributaries. Deep Creek tributaries include Camas Creek and Crane Creek. The rule includes the following provisions:

(1) Objectives. The objectives of the Commission in managing the surface and ground water resources of the Warner Lakes Subbasin are to:

(a) Avoid additional conflicts over inadequate supplies of water from and protecting the remaining instream flows in Deep and Camas, Honey and Snyder, and Twentymile Creeks;

(2) Classifications. Except as otherwise provided in this subsection, the surface and ground waters of the Warner Lakes Subbasin are classified for agriculture, domestic, fish life, ground water recharge, industrial, instream, irrigation, mining, municipal, pollution abatement, power, recreation and stockwater uses.

(b) Surface waters of Deep Creek and tributaries above the point where Deep Creek enters Section 20, Township 40S, Range 22E are classified for any beneficial use of stored water, domestic, instream and stockwater uses;

(h) Ground water from alluvial aquifers within the Deep Creek drainage and above the point where Deep Creek enters Section 21, Township 39S, Range 24E is classified for domestic and stockwater uses only;

The possible ways the rule might be activated include:

1. The proposed POA well location is above the township, range, and section noted in section 2b and 2h above.
2. Based on the proposed well construction and the well driller water well report for nearby well LAKE 52006, the proposed casing and seal may or may not be deep enough to isolate groundwater inflow to the well to be solely from the predominantly volcanic rock and sediment unit (application says "basalt") below the predominantly basin fill sediments and stream channel and other alluvium putting the application at risk of activating part 2h of the rule.
3. The well driller water well report for nearby well LAKE 52006 indicates a local groundwater elevation approximately coincident with Camas Creek indicating a possible hydraulic connection with Camas Creek putting the application at risk of activating part 2b of the rule. The proposed POA well is about 1.45 miles south of the closest reach of Camas Creek.

- A6. ☐ Well(s) # N.A., _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: _____

Comments: _____

Currently, there is 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: _____

The proposed well location is in the uplands between Goose Lake Valley and the Warner Lakes Valley where wells are few. Groundwater level data is nil apart from what is reported on driller water well reports. Aquifer property data is sparse to nil.

For this application, the groundwater level data is inadequate to assess groundwater level trends.

For this application, the aquifer property data is inadequate to conduct any interference calculations.

Driller water well reports were found for 10 wells in township T39S/R22E. These wells include wells obtaining groundwater from "basalt" (predominantly volcanic rock and sediments unit) as proposed by this application and wells obtaining groundwater from the overlying predominantly basin fill sediment unit. All the wells have yields less than 100 gpm.

If a permit is issued, the following conditions should be included: 7B, 7F, 7N, 7P, 7T, and the following

"Large" water use condition: (require a totalizing flow meter at each well. Each flow meter shall be located within 50 feet of the wellhead and adjacent to each flow meter shall be a clearly visible monument with a sign noting the flow meter. Lastly, require for every flow meter the reading, recording (monthly at minimum), and annual reporting of the flow meter data, all flow meters).

Special Condition for groundwater production: "All POA wells under this permit shall comply with existing well construction standards. Groundwater production shall occur from the predominantly volcanic rock and sediment unit below the predominantly basin fill sediment unit by continuous casing and continuous seal through the predominantly basin fill sediment unit and into the predominantly volcanic rock and sediment."

Pump Test Condition: require conducting and reporting separate pump test for the proposed POA well and for well LAKE 52006. The pump test methodology must be consistent with OAR 690-217.

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 (as proposed and required by permit condition)	☐	☒
2		☐	☐

Basis for aquifer confinement evaluation: _____

Walker (1963) maps the surface geology at the proposed POA well site as the boundary between Qal (alluvium: unconsolidated fluvial gravel, sand, and silt) to the immediate north and east and Ttf (tuff of rhyolitic and dacitic composition, tuffaceous sedimentary rocks, and areally restricted rhyodacitic and andesitic flows). Nearby are surface exposures of Basalt (Tb) exposed in surrounding upland and exposures of pyroclastic rocks of basaltic cinder cones (QTp) exposed northwest of the proposed POA well site.

The groundwater system is identified as likely unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. Lower transmissivity (lower permeability) sediment (predominantly basin-fill sediment unit) of varying thickness likely overlies somewhat higher transmissivity (higher permeability) basalt (predominantly volcanic rocks and sediment unit). The few driller water well reports indicate groundwater occurs in both the predominantly basin-fill sediment unit and the predominantly volcanic rocks and sediment unit. Groundwater is likely vertically connected within each unit and between each unit.

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	Camas Creek	5523	5500	7580	☒	☐	☐	☐	☒
2						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: _____

Hydraulic connection with Camas Creek, a tributary of Depp Creek, is likely given the well driller water well report for nearby well LAKE 52006 indicates a local groundwater elevation approximately coincident with Camas Creek which indicates a possible hydraulic connection with Camas Creek.

Given the proposed POA well site is more than 0.25 mile from Camas Creek, there is NO finding for a potential for substantial interference under this sub-section.

Water Availability Basin the well(s) are located within: CAMAS CR > DEEP CR – AT MOUTH

Well	SW #	Well < 1/4 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	☐	☐	None	None	☐	No Calc.	☐	No Calc.	☐
2		☐	☐			☐		☐		☐

	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?
			☐			☐		☐		☐
			☐			☐		☐		☐

The proposed POA well site is more than 1.00 mile from Camas Creek. Consequently, there is no calculation and NO finding for a potential for substantial interference under this sub-section.

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: _____

This sub-section applies given the proposed POA well site is more than 1.00 mile from Camas Creek.

NOTE: No calculation conducted. The proposed well location is in the uplands between Goose Lake Valley and the Warner Lakes Valley where wells are few and aquifer property data is sparse to nil. For this application, the aquifer property data is inadequate to conduct any interference calculations. Given a likely hydraulic connection, some level of interference with Camas Creek is anticipated.

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

Given a likely hydraulic connection, some level of interference with Camas Creek is anticipated.

OAR 690-513-0040 may possibly be activated by this application in relation to "alluvial" groundwater, Deep Creek and its tributaries. See section A5.

If a permit is issued, the following conditions should be included: 7B, 7F, 7N, 7P, 7T, and the following

"Large" water use condition: (require a totalizing flow meter at each well. Each flow meter shall be located within 50 feet of the wellhead and adjacent to each flow meter shall be a clearly visible monument with a sign noting the flow meter. Lastly, require for every flow meter the reading, recording (monthly at minimum), and annual reporting of the flow meter data, all flow meters).

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Pump Test Condition: require conducting and reporting separate pump test for the proposed POA well and for well LAKE 52006. The pump test methodology must be consistent with OAR 690-217.

The groundwater system is identified as likely unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. Lower transmissivity (lower permeability) sediment (predominantly basin-fill sediment unit) of varying thickness likely overlies somewhat higher transmissivity (higher permeability) basalt (predominantly volcanic rocks and sediment unit). The few driller water well reports indicate groundwater occurs in both the predominantly basin-fill sediment unit and the predominantly volcanic rocks and sediment unit. Groundwater is likely vertically connected within each unit and between each unit.

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.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

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.

Theis, C.V. 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage. American Geophysical Union Transactions, 16 annual meeting, vol. 16, pg. 519-524.

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.

Walker, G.W. and Repenning, C.A., 1965, Reconnaissance geologic map of the Adel quadrangle, Lake, Klamath, and Malheur Counties, Oregon: USGS Miscellaneous Geologic Investigations Map I-446.

Walker, G.W., 1973, Preliminary geologic and tectonic maps of Oregon east of the 121st meridian: USGS Miscellaneous Field Studies Map MF-495

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 well LAKE 52006 and other wells in Township 39 South/Range 22 East.

USGS Horse Prairie and Sage Hen Butte quad maps (1:24,000 scale)

D. WELL CONSTRUCTION, OAR 690-200D1. Well #: 1 Logid: Not Drilled 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: _____

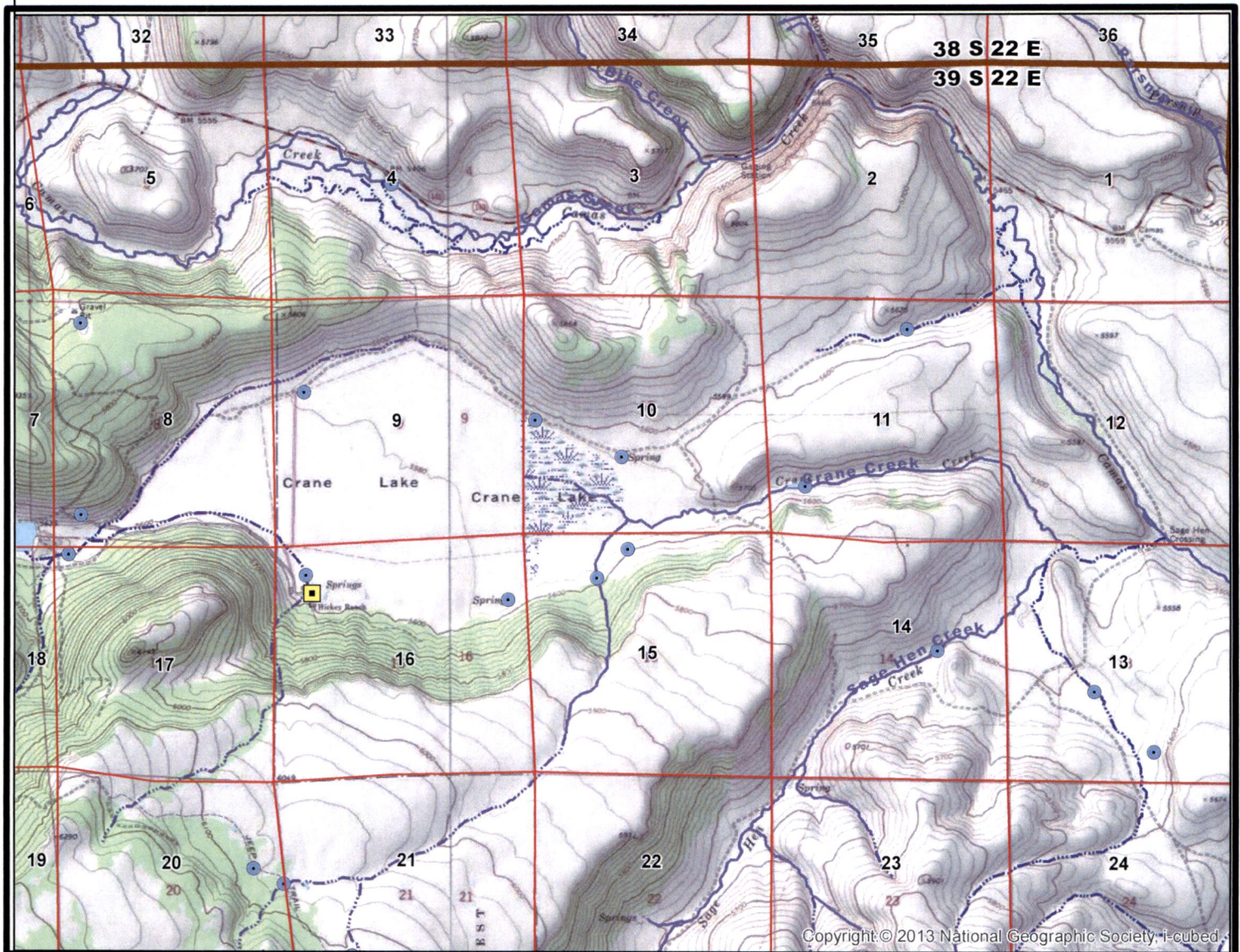
Special Condition for groundwater production: "All POA wells under this permit shall comply with existing well construction standards. Groundwater production shall occur from the predominantly volcanic rock and sediment unit below the predominantly basin fill sediment unit by continuous casing and continuous seal through the predominantly basin fill sediment unit and into the predominantly volcanic rock and sediment."

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

Water Availability Tables**Other Attachments**

Groundwater Permit Application G-18456

Crane Creek Ranch, LLC

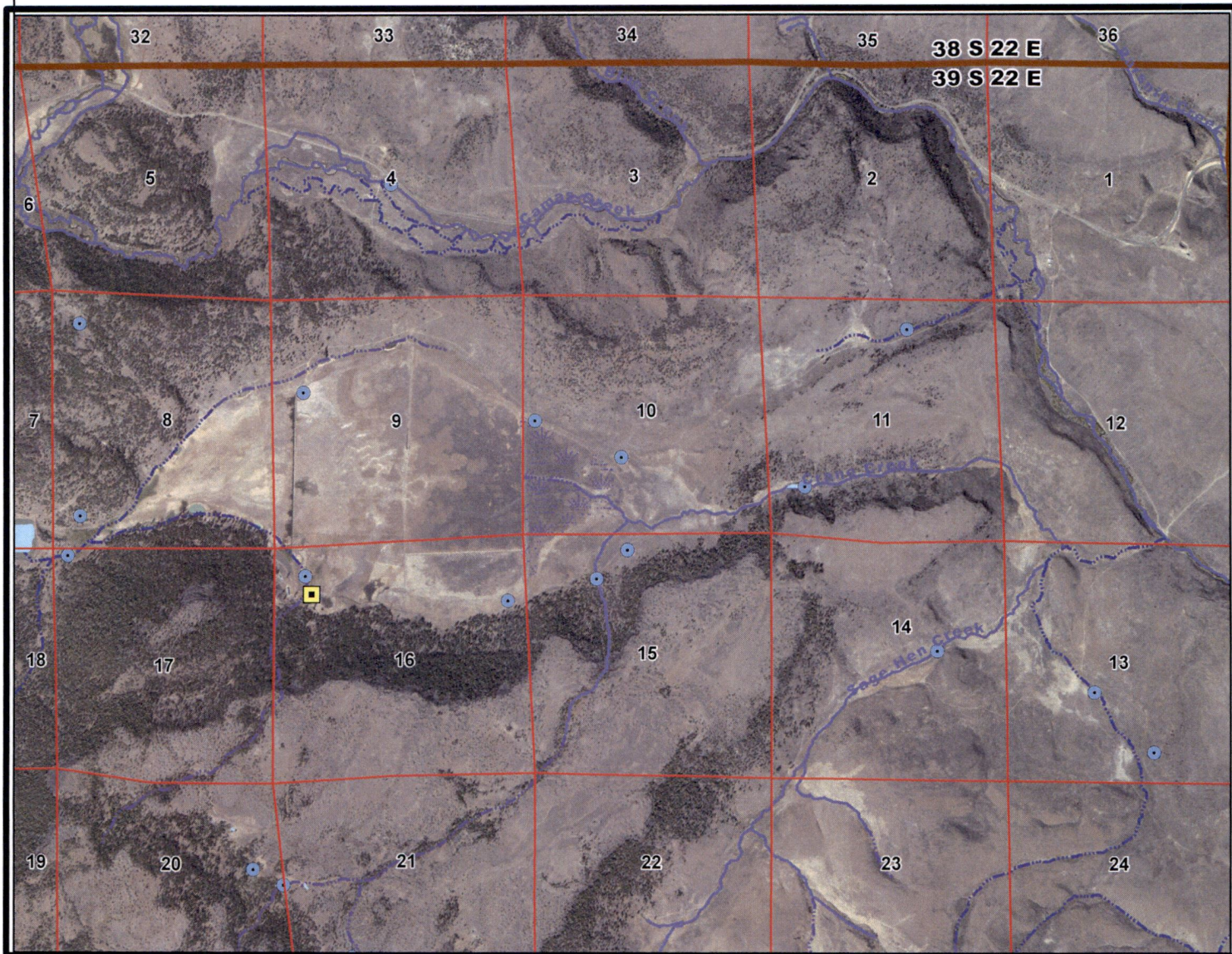


Yellow = Application Noted Well(s)
Red = Other Existing or Proposed Wells
Blue and Other = surface water rights



Groundwater Permit Application G-18456

Crane Creek Ranch, LLC



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





Water Availability Analysis

CAMAS CR > DEEP CR - AT MOUTH

GOOSE & SUMMER LAKE BASIN

Water Availability as of 12/8/2017

Watershed ID #: 31300706 ([Map](#))

Date: 12/8/2017

Exceedance Level:

Time: 12:13 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	31300704 DEEP CR> CRUMP L - AT MOUTH	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
2	31300705 DEEP CR> CRUMP L - AB DRAKE CR	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
3	31300706 CAMAS CR> DEEP CR - AT MOUTH	Yes	Yes	Yes	Yes	Yes	No	No	No	No	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	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	6.14
FEB	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	9.25
MAR	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	25.30
APR	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	63.50
MAY	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	47.50
JUN	31300704	DEEP CR > CRUMP L - AT MOUTH	No	-18.30
JUL	31300704	DEEP CR > CRUMP L - AT MOUTH	No	-41.00
AUG	31300704	DEEP CR > CRUMP L - AT MOUTH	No	-29.20
SEP	31300704	DEEP CR > CRUMP L - AT MOUTH	No	-17.10
OCT	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	2.68
NOV	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	5.55
DEC	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	7.19
ANN	31300706	CAMAS CR > DEEP CR - AT MOUTH	Yes	23,600.00

Detailed Reports for Watershed ID #31300704

DEEP CR > CRUMP L - AT MOUTH

GOOSE & SUMMER LAKE BASIN

Water Availability as of 12/8/2017

Watershed ID #: 31300704 ([Map](#))

Date: 12/8/2017

Exceedance Level:

Time: 12:13 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	25.30	1.38	23.90	0.00	0.00	23.90
FEB	33.70	1.69	32.00	0.00	0.00	32.00
MAR	72.20	11.40	60.80	0.00	0.00	60.80
APR	185.00	60.10	125.00	0.00	0.00	125.00
MAY	276.00	138.00	138.00	0.00	0.00	138.00
JUN	102.00	120.00	-18.30	0.00	0.00	-18.30
JUL	23.00	64.00	-41.00	0.00	0.00	-41.00
AUG	14.30	43.50	-29.20	0.00	0.00	-29.20
SEP	16.10	33.20	-17.10	0.00	0.00	-17.10
OCT	19.90	14.30	5.60	0.00	0.00	5.60
NOV	22.10	1.25	20.80	0.00	0.00	20.80
DEC	24.90	1.37	23.50	0.00	0.00	23.50
ANN	87,200.00	29,700.00	61,300.00	0.00	0.00	61,300.00

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	0.55	0.00	0.79	0.00	0.00	0.01	0.03	0.00	1.38
FEB	0.86	0.00	0.79	0.00	0.00	0.01	0.03	0.00	1.69
MAR	1.90	8.66	0.79	0.00	0.00	0.01	0.03	0.00	11.40
APR	4.56	54.70	0.79	0.00	0.00	0.01	0.03	0.00	60.10
MAY	6.10	131.00	0.79	0.00	0.00	0.01	0.03	0.00	138.00
JUN	2.69	117.00	0.79	0.00	0.00	0.01	0.03	0.00	120.00
JUL	0.46	62.70	0.79	0.00	0.00	0.01	0.03	0.00	64.00
AUG	0.28	42.40	0.79	0.00	0.00	0.01	0.03	0.00	43.50
SEP	0.31	32.10	0.79	0.00	0.00	0.01	0.03	0.00	33.20
OCT	0.37	13.10	0.79	0.00	0.00	0.01	0.03	0.00	14.30
NOV	0.42	0.00	0.79	0.00	0.00	0.01	0.03	0.00	1.25
DEC	0.54	0.00	0.79	0.00	0.00	0.01	0.03	0.00	1.37

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 #31300705

DEEP CR > CRUMP L - AB DRAKE CR

GOOSE & SUMMER LAKE BASIN

Water Availability as of 12/8/2017

Watershed ID #: 31300705 ([Map](#))

Exceedance Level: 80%

Date: 12/8/2017

Time: 12:13 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	18.70	1.08	17.60	0.00	0.00	17.60
FEB	22.50	1.24	21.30	0.00	0.00	21.30
MAR	56.90	1.80	55.10	0.00	0.00	55.10
APR	163.00	16.40	147.00	0.00	0.00	147.00
MAY	248.00	21.90	226.00	0.00	0.00	226.00
JUN	73.80	24.80	48.90	0.00	0.00	48.90
JUL	16.10	34.30	-18.20	0.00	0.00	-18.20
AUG	10.60	27.10	-16.50	0.00	0.00	-16.50
SEP	12.30	19.00	-6.72	0.00	0.00	-6.72
OCT	15.00	5.92	9.08	0.00	0.00	9.08
NOV	16.90	1.01	15.90	0.00	0.00	15.90
DEC	18.20	1.07	17.10	0.00	0.00	17.10
ANN	78,700.00	9,440.00	70,500.00	0.00	0.00	70,500.00

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	0.27	0.00	0.79	0.00	0.00	0.01	0.01	0.00	1.08
FEB	0.43	0.00	0.79	0.00	0.00	0.01	0.01	0.00	1.24
MAR	0.99	0.00	0.79	0.00	0.00	0.01	0.01	0.00	1.80
APR	2.64	13.00	0.79	0.00	0.00	0.01	0.01	0.00	16.40
MAY	3.61	17.50	0.79	0.00	0.00	0.01	0.01	0.00	21.90
JUN	1.56	22.50	0.79	0.00	0.00	0.01	0.01	0.00	24.80
JUL	0.22	33.20	0.79	0.00	0.00	0.01	0.01	0.00	34.30
AUG	0.13	26.20	0.79	0.00	0.00	0.01	0.01	0.00	27.10
SEP	0.14	18.10	0.79	0.00	0.00	0.01	0.01	0.00	19.00
OCT	0.17	4.94	0.79	0.00	0.00	0.01	0.01	0.00	5.92
NOV	0.20	0.00	0.79	0.00	0.00	0.01	0.01	0.00	1.01
DEC	0.26	0.00	0.79	0.00	0.00	0.01	0.01	0.00	1.07

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 #31300706

CAMAS CR > DEEP CR - AT MOUTH
GOOSE & SUMMER LAKE BASIN

Water Availability as of 12/8/2017

Watershed ID #: 31300706 ([Map](#))

Exceedance Level: 80% ▾

Date: 12/8/2017

Time: 12:13 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	6.76	0.62	6.14	0.00	0.00	6.14
FEB	10.10	0.85	9.25	0.00	0.00	9.25
MAR	26.90	1.62	25.30	0.00	0.00	25.30
APR	72.10	8.60	63.50	0.00	0.00	63.50
MAY	57.40	9.93	47.50	0.00	0.00	47.50
JUN	19.40	9.87	9.53	0.00	0.00	9.53
JUL	6.09	13.40	-7.30	0.00	0.00	-7.30
AUG	3.79	10.60	-6.77	0.00	0.00	-6.77
SEP	4.06	7.43	-3.37	0.00	0.00	-3.37
OCT	5.08	2.40	2.68	0.00	0.00	2.68
NOV	6.09	0.54	5.55	0.00	0.00	5.55
DEC	7.82	0.63	7.19	0.00	0.00	7.19
ANN	27,300.00	4,030.00	23,600.00	0.00	0.00	23,600.00

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	0.30	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.62
FEB	0.53	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.85
MAR	1.30	0.00	0.32	0.00	0.00	0.00	0.00	0.00	1.62
APR	3.28	5.00	0.32	0.00	0.00	0.00	0.00	0.00	8.60
MAY	2.87	6.74	0.32	0.00	0.00	0.00	0.00	0.00	9.93
JUN	0.89	8.66	0.32	0.00	0.00	0.00	0.00	0.00	9.87
JUL	0.26	12.80	0.32	0.00	0.00	0.00	0.00	0.00	13.40
AUG	0.16	10.10	0.32	0.00	0.00	0.00	0.00	0.00	10.60
SEP	0.15	6.96	0.32	0.00	0.00	0.00	0.00	0.00	7.43
OCT	0.18	1.90	0.32	0.00	0.00	0.00	0.00	0.00	2.40
NOV	0.22	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.54
DEC	0.31	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.63

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.