

Approved:



MEMO

To: Kristopher Byrd, Well Construction Manager
From: Tommy Laird, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18002
Date: February 5, 2024

The attached application was forwarded to the Well Construction Section by the Groundwater Section. Phillip Marcy reviewed the application. Please see Phillip's Groundwater Review and the Well Reports.

Applicant's Well #1 (MALH 723): Based on a review of the Well Report, Applicant's Well #1 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem is that according to the Water Supply Well Report, the well is not sealed to the proper depth. In addition, the 14 inch casing that is installed in the well does not meet the casing wall thickness requirements in OAR 690-210-0190. In order to meet minimum construction standards, the well must be resealed with an approved grout to a minimum depth of 225 feet and the casing must meet the casing requirements in OAR 690 Division 210.

My recommendation is that the Department **not issue** a permit for Applicant's Well #1 unless it is brought into compliance with current well construction standards or information is provided showing that it is constructed to meet current minimum well construction standards.

The repair of Applicant's Well #1 may not satisfy hydraulic connection issues.

Applicant's Well #2 (MALH 53231): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Applicant's Well #2 may not satisfy hydraulic connection issues.

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D. # L 91014

START CARD # 1000 743

Instructions for completing this report are on the last page of this form.

(1) LAND OWNER Well Number _____
Name MAYNARD ALVES
Address 16301 NORTHWEST O'NEIL HWY
City REDMOND State OR Zip 97756

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

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable Auger Cable Mud
 Other _____

(4) PROPOSED USE
 Domestic Community Industrial Irrigation
 Thermal Injection Livestock Other _____

(5) BORE HOLE CONSTRUCTION Special Construction: Yes No
Depth of Completed Well 450 ft.
Explosives used: Yes No Type _____ Amount _____

BORE HOLE				SEAL			
Diameter	From	To	Material	From	To	Sacks or Pounds	
<u>20</u>	<u>0</u>	<u>176</u>	<u>CEMENT</u>	<u>0</u>	<u>176</u>	<u>15,000</u>	
<u>14</u>	<u>176</u>	<u>350</u>					
<u>10</u>	<u>350</u>	<u>450</u>					

How was seal placed: Method A B C D E
 Other _____

Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

Casing:	Diameter	From	To	Gauge	Material			
					Steel	Plastic	Welded	Threaded
	<u>14</u>	<u>+2</u>	<u>176</u>	<u>14</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Drive Shoe used Inside Outside None
Final location of shoe(s) 176

(7) PERFORATIONS/SCREENS
 Perforations Method _____
 Screens Type _____ Material _____

From	To	Slot Size	Number	Diameter	Tele/pipe size	Casing	Liner
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
<u>1550</u>	<u>0</u>	<u>260</u>	<u>6 hr</u>

Temperature of water 62 Depth Artesian Flow Found _____
Was a water analysis done? Yes By whom _____
Did any strata contain water not suitable for use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata: 2-60

(9) LOCATION OF WELL (legal description)
County MALHEUR
Tax Lot 2600 Lot _____
Township 18S N or S Range 41E E or W WM
Section 25 SW 1/4 SW 1/4

Lat 43° 58' 39" or _____ (degrees or decimal)
Long 117° 38' 39" or _____ (degrees or decimal)

Street Address of Well (or nearest address) 500 YD EAST OF STAGE + DAHLE RD

(10) STATIC WATER LEVEL
168 ft. below land surface. Date 10-20-07
_____ ft. below land surface. Date _____
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES
Depth at which water was first found 2

From	To	Estimated Flow Rate	SWL
<u>2</u>	<u>60</u>	<u>300</u>	<u>2</u>
<u>220</u>	<u>440</u>	<u>3000+</u>	<u>168</u>

(12) WELL LOG Ground Elevation _____

Material	From	To	SWL
<u>gravel</u>	<u>0</u>	<u>60</u>	<u>2</u>
<u>Clay Ark Beam</u>	<u>60</u>	<u>83</u>	
<u>Clay green w/course</u>	<u>83</u>	<u>152</u>	
<u>SAND MIX</u>			
<u>ASCONIA</u>	<u>152</u>	<u>166</u>	
<u>BASALT</u>	<u>166</u>	<u>220</u>	
<u>FRACTURED BASALT</u>	<u>220</u>	<u>440</u>	<u>168</u>
<u>BASALT</u>	<u>440</u>	<u>450</u>	

Date Started 3-20-07 Completed 10-20-07

(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.

WWC Number _____ Date _____

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.

WWC Number 1867 Date 11-1-07

Signed Alan Whittemore

RECEIVED

NOV 05 2007

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 11/17/2022
 FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name
 SUBJECT: Application G- 18002 Supersedes review of 06/11/2015
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: William L. and Cindy R. Romans County: Malheur

A1. Applicant(s) seek(s) 4.16 cfs from 2 well(s) in the Malheur Basin,
Bully Creek subbasin

A2. Proposed use: Supplemental Irrigation (534.2 acres); Primary Irrigation (14.3 acres)
 Seasonality: March 1st to October 31st (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	MALH 723	1	Basalt and ash	3.11	18S/41E-26 NW-SE	1740'N, 2360'W fr SE cor S 26
2	MALH 53231	2	Basalt	3.11	18S/41E-25 SW-SW	3340'N, 850'E fr SW cor S 25
3						

* 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	2903	220	180	04/30/1987	590	0-36	+1.5-250	None	130-240	1320	5	?
2	2889	220	168	10/20/2007	450	0-176	+2-176	None	None	1550	Na	Air

Use data from application for proposed wells.

A4. **Comments:** Both wells are located within ¼ mile of Bully Creek and are subject to Division 9 rules. Well 1 (MALH 723) has been cased to 250 feet into a thick sequence of volcanic ash, with perforations located within a basalt flow and upper volcanic ash deposit. Well 2 (MALH 53231) is continuously cased and sealed into the upper 10 feet of an unfractured basalt flow. The applicant wishes to have the option to produce water from either well, therefore the full requested rate will be used to evaluate both proposed POAs.

This re-review addresses the finding of over-appropriation in Section B1 of the review form.

A5. **Provisions of the** Malheur (690-510) Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water **are**, or **are not**, activated by this application. (Not all basin rules contain such provisions.)

Comments: _____

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

Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
- i. The permit should contain condition #(s) Modified 7N (see language in section C6);
 - ii. The permit should be conditioned as indicated in item 2 below.
 - iii. The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
- b. **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
- c. **Condition** to allow groundwater production only from the Fractured basalt groundwater reservoir between approximately 220 ft. and 440 ft. below land surface;
- d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): MALH 723 is not properly sealed into a confining unit, and has the potential to commingle waters from the shallow alluvial aquifer and the deeper basalt aquifer system. The shallow alluvial aquifer system is likely in good hydraulic connection to nearby Bully Creek, and would trigger PSI according to Division 9 rules. Therefore, if a permit is issued, MALH 723 would require reconstruction in order to be used for production of groundwater. Required changes to the current construction include a seal depth at least 5 feet into unfractured basalt overlying the designated fractured basalt production zone, and replacing the existing length of 14” casing with unperforated casing having a thickness of at least 0.250 inches (currently 0.219).

- B3. **Groundwater availability remarks:** Groundwater elevation data from nearby State Observation Well 573 (MALH 711) shows fluctuations of less than 7 feet through the past 40 years. This is a shallow well, reported at only 49 feet in depth, and may not represent the deeper aquifer system the applicant is proposing to produce groundwater from. Groundwater levels in the applicant’s well 1 (MALH 723) are very near their original elevation upon completion of the well in 1987 (see attached).

Local geologic maps (Ferns and others, 1993) place the applicant’s wells in Quaternary alluvium, with outcrops of two separate basalt units nearby. Well logs for the applicant’s wells show a thick sequence of ash above water-bearing basalts in each well that is most likely Bully Creek Formation (Tsbc) and/or Tuff of Bully Creek (Ttbl). In this context, the fractured basalt at depth is probably the Hunter Creek Basalt (Tbhc) of Miocene age.

At this time, there does not exist sufficient evidence of over-appropriation in the area surrounding the proposed POA wells. Updated hydrographs below do not indicate excessive declines based upon available data.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Basalt	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Basalt	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Well logs for both wells show head elevations significantly higher than the elevations of their respective water-bearing zones. Groundwater elevations in both wells are vastly different than those at nearby MALH 711 (see attached), which likely reflect the shallow alluvial aquifer system in connection with local surface waters with similar head elevations. The evaluation of aquifer confinement in well 1 (MALH 723) relies on well reconstruction as described in Section D. Without this reconstruction, this well shall not be used for production of groundwater.

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	Bully Creek	2727	2894	120	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Bully Creek	2708	2887	420	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Head elevations in wells are much lower (>150 feet) than surface waters within 1 mile. If a hydraulic connection to Bully Creek from the proposed groundwater source exists, it is likely greater than 25,000 feet away, where the surface water elevation in the creek corresponds to the groundwater elevation in the applicant’s well. No springs were located nearby. Note that the evaluation of hydraulic connection for the applicant’s well 1 (MALH 723) relies on well reconstruction described in Section D.

Water Availability Basin the well(s) are located within: Bully Cr > Malheur R – AB Unn Stream

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

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

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

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

Comments: This section does not apply.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

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

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 85261 Logid: MALH 723

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:** The seal depth is not adequate to prevent production from shallower zones within the well, and also has the potential to comingle groundwater from multiple aquifer systems. In order to correct this deficiency, the well shall be continuously cased and sealed to a depth at least 5 feet into the consolidated bedrock above the water-bearing zone within the well. In addition, the entire length of 14" casing shall be replaced with unperforated casing having a thickness of at least 0.250 inches, in accordance with current well construction standards.

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

Water Availability Tables

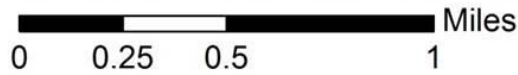
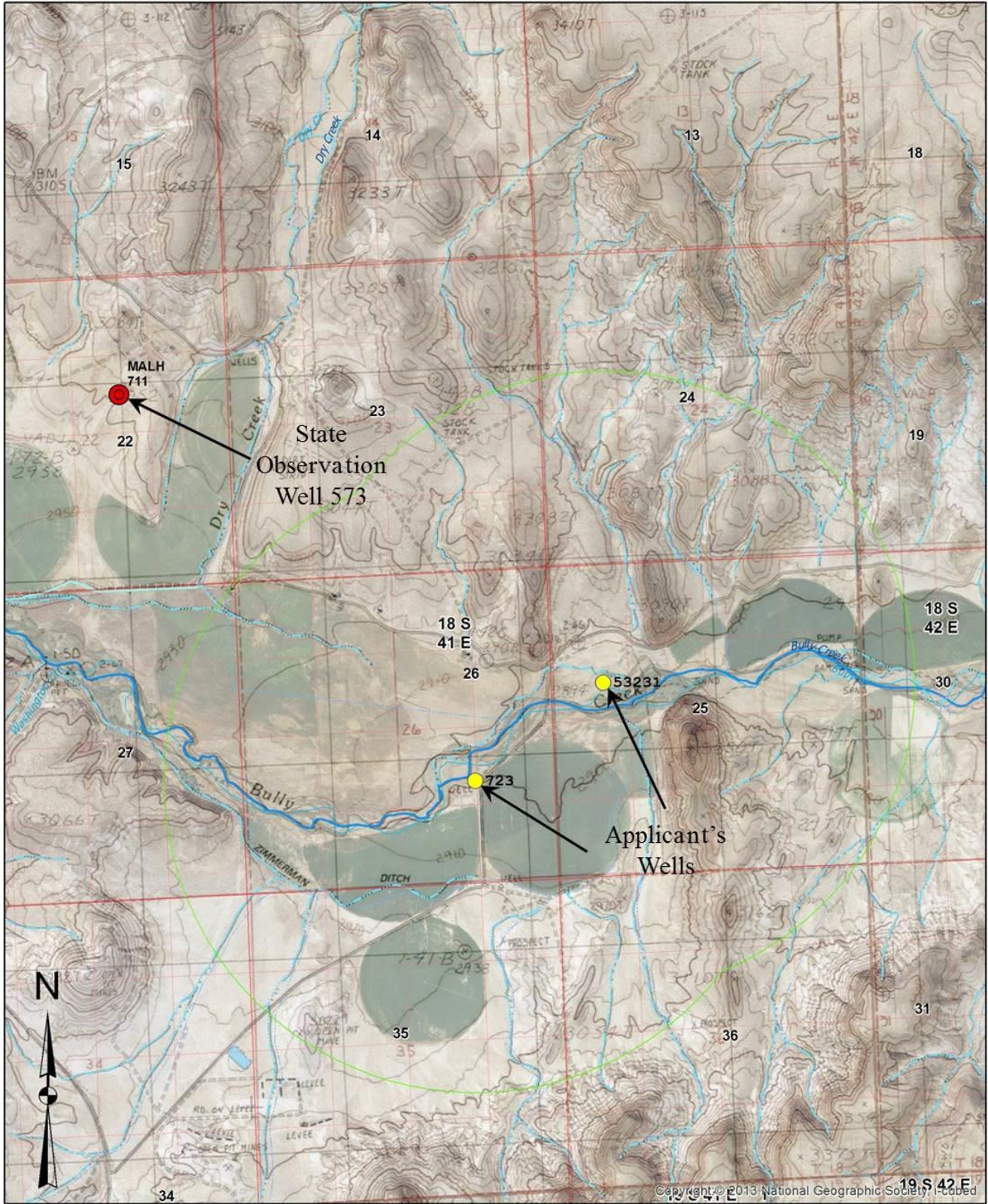
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

BULLY CR > MALHEUR R - AB UNN STR
Basin: MALHEUR

watershed ID #: 71451 Exceedance Level: 80
Time: 2:09 PM Date: 06/11/2015

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	9.41	1.31	8.10	0.00	10.00	-1.90
FEB	21.20	5.31	15.90	0.00	10.00	5.89
MAR	37.40	14.30	23.10	0.00	10.00	13.10
APR	51.70	38.30	13.40	0.00	12.00	1.38
MAY	35.60	80.30	-44.70	0.00	12.00	-56.70
JUN	26.70	64.60	-37.90	0.00	12.00	-49.90
JUL	9.60	21.70	-12.10	0.00	12.00	-24.10
AUG	4.10	8.74	-4.64	0.00	8.83	-13.50
SEP	2.90	4.65	-1.75	0.00	6.02	-7.77
OCT	3.90	2.55	1.35	0.00	6.32	-4.97
NOV	4.70	0.76	3.94	0.00	8.83	-4.89
DEC	6.20	0.91	5.29	0.00	10.00	-4.71
ANN	23,400	14,700	13,800	0	7,120	10,100

Well Location Map



Water-Level Trends in Nearby Wells

