

Approved:



MEMO

To: Kristopher Byrd, Well Construction Manager
From: Tommy Laird, Well Construction Program Coordinator
Subject: Review of Water Right Application G-19169
Date: February 23, 2024

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

Applicant's Well #SCCE Well 1 (DESC 58167): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Well # SCCE Well 1 may not satisfy hydraulic connection issues.

Applicant's Well #SCCE Well 2 (DESC 53193): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Well # SCCE Well 2 may not satisfy hydraulic connection issues.

Applicant's Well #SCCE Well 3 (DESC 53194): Based on a review of the Well Report, Applicant's Well #3 seems to protect the groundwater resource.

The construction of Well # SCCE Well 3 may not satisfy hydraulic connection issues.

STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765 & OAR 690-205-0210)

08-12-2007

WELL LABEL # L 91141

START CARD # 1001485

(1) LAND OWNER Owner Well I.D. First Name RON Last Name REMUND Company Address PO BOX 760 City SISTERS State OR Zip 97759

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

(3) DRILL METHOD [X] Rotary Air [] Rotary Mud [] Cable [] Auger [] Cable Mud [] Reverse Rotary [] Other

(4) PROPOSED USE [X] Domestic [] Irrigation [] Community [] Industrial/ Commercial [] Livestock [] Dewatering [] Thermal [] Injection [] Other

(5) BORE HOLE CONSTRUCTION Special Standard [] (Attach copy) Depth of Completed Well 844.00 ft.

Table with columns: Dia, From, To, Material, From, To, Amt, lbs, Sacks. Row 1: 14, 0, 96, Cement, 0, 96, 77, S

How was seal placed: Method [] A [] B [X] C [] D [] E [] Other Backfill placed from ft. to ft. Material Filter pack from ft. to ft. Material Size Explosives used: [] Yes Type Amount

(6) CASING/LINER Casing Liner Dia + From To Gauge Stl Plstc Wld Thrd Shoe [X] Inside [] Outside [] Other Location of shoe(s) Temp casing [] Yes Dia From To

(7) PERFORATIONS/SCREENS Perforations Method Air Perf Screens Type Material

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

(8) WELL TESTS: Minimum testing time is 1 hour [X] Pump [] Bailer [] Air [] Flowing Artesian Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)

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

(9) LOCATION OF WELL (legal description) County Deschutes Twp 14.00 S N/S Range 11.00 E E/W WM Sec 17 SW 1/4 of the SW 1/4 Tax Lot 2017 Tax Map Number Lot Lat Long MT WEIW RD

(10) STATIC WATER LEVEL Date SWL(psi) + SWL(ft) Existing Well / Predeepening Completed Well 08-01-2007 520 Flowing Artesian? Dry Hole?

WATER BEARING ZONES Depth water was first found 616 Table with columns: SWL Date, From, To, Est Flow, SWL(psi), SWL(ft)

(11) WELL LOG Ground Elevation Material From To Sand Pumice Lava Broken 0 5 Cinders 5 20 Lava Gray 20 46 Cinders Red 46 56 Conglomerate Gravels Brown 56 75 Basalt Clay Seams Gray 75 90 Basalt Clay Seams Brown 90 150 Basalt 150 185 Gravels Sand 185 205 Conglomerate 205 255 Basalt 255 260 Lava Crevices 260 275 Lava 275 305 Sandstone Brown 305 345 Cinders Lava Broken Red 345 365 Gravels Sand 365 385 Clay Brown 385 420 Lost Circ 420 430 Clay Red Brown 430 460

Date Started 07-13-2007 Completed 08-01-2007

(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. License Number 758 Date 08-12-2007 Electronically Filed Signed THOMAS R PECK (E-filed)

(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. License Number 1720 Date 08-12-2007 Electronically Filed Signed JACK ABBAS (E-filed) Contact Info (optional)

STATE OF OREGON
Water Supply Well Report

(as required by ORS 537.765)

DESC53193

Received Date:

Well ID Tag # L **42966**

Start Card # **128830**

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

(1) Owner Well Number: _____
 Name: **RON REMUND**
 Street: **PO BOX 760**
 City: **SISTERS** State: **OR** Zip Code: **97759**

(2) Type of Work
 New Alter (Recondition) Alter (Repair)
 Deepening Abandonment

(3) Drill Method
 Rotary Air Rotary Mud Cable Auger
 Other: _____

(4) Proposed Use
 Domestic Community Industrial Irrigation Injection
 Livestock Thermal Other: _____

(5) Bore Hole Construction
 Special Standards: Depth of completed well: **605.00 ft.**
 Explosives Used: Amount: _____ Type: _____

Diameter	Hole		Mtrl	Seal		Sacks/lbs
	From	To		From	To	
12.00	0.00	78.00	CE	0.00	78.00	4512
8.00	78.00	605.00				

 How was seal placed? **C** Other: _____
 Back fill placed from: _____ Material: _____
 Filter pack from: _____ Size: _____

(6) Casing / Liner

Csng/ Liner	Diameter	From	To	Gauge	Mtrl	Weld	Thrd	Shoe at	Shoe used
C	8.00	2.00	78.00	.250	S	X			
L	6.00	-5.00	600.00	.188	S	X			

(7) Perforation / Screens
 Perforations: _____ Csng/ _____

Mtrl	From	To	Width	Height	#Slots	Dia.	t/pSize	Lnr	Method
S	585.00	605.00	0.13	3.00	216	6.00		L	MACHINE

 Screens: _____

Mtrl	From	To	S Size	#Slots	Dia.	t/pSize	Type	Gauge

(8) Well Tests (Minimum testing time is one hour)

Type	Yield	Units	Drawdown	Stem at	Duration
A	10.00	G		600.00	1.00

Temperature of Water: **53 F**
 Was water analysis done? Depth of artesian flow: _____
 by whom? _____
 Did any strata contain water unsuitable for use? Too Little Salty
 Muddy Odor Colored other: _____
 Depth of strata: _____

(9) Location of Hole by legal description
 County: **DESC** Latitude: _____ Longitude: _____
 Township: **14.00 S** Range: **11.00 E**
 Section: **17 SWSW** Lot: _____ Block: _____
 Tax Lot: **2017** Subdivision: _____
 Street Address of Well (or nearest address):
MNT VIEW RD
 MAP, with location identified, must be attached.

(10) Static Water Level
 Feet below land surface: **498.0** Date: **07 / 14 / 2000**
 Artesian Pressure: _____ Date: _____

(11) Water Bearing Zones
 Depth at which water was first found: **590.00 ft.**

From	To	est Flow	swl
590.00	605.00	10.00	498

(12) Well Log Ground Elevation: _____

Material	From	To	swl
LOAM BROKEN LAVA	0.00	3.00	
LAVA BROWN	3.00	10.00	
LAVA GRAY FRAC LAYERS	10.00	42.00	
CINDERS RED	42.00	51.00	
LAVA RED	51.00	70.00	
SANDSTONE	70.00	88.00	
SAND BRN FINE GRAVELS	88.00	104.00	
SANDSTONE	104.00	175.00	
LAVA BROWN	175.00	235.00	
SANDSTONE CONGLOMERATE	235.00	260.00	
LAVA BROWN GRAY LAYERS	260.00	335.00	
LAVA RED/CINDERS	335.00	350.00	
LAVA BROWN	350.00	475.00	
LAVA GRAY	475.00	525.00	
LAVA SOFT	525.00	540.00	
SANDSTONE CINDERS	540.00	588.00	
LAVA/BASALT BROKEN	588.00	605.00	498

 Date Started: **07 / 12 / 2000** Date Completed: **07 / 14 / 2000**

(unbonded) Water Well Constructor Certification:
 I certify that the work I perform on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed by: **THOMAS R PECK** WWC #: **758**

(bonded) Water Well Constructor Certification:
 I accept responsibility for the construction, 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 well construction standards. This report is true to the best of my knowledge and belief.
 Signed by: **JACK ABBAS** WWC #: **1720**
ABBAS WELL DRILLING CO Phone: **541-548-2787**

STATE OF OREGON
Water Supply Well Report
 (as required by ORS 537.765)

Amendment DESC 53194

DESC

Received Date:

Well ID Tag # L 42967

Start Card # 126831

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

(1) Owner

Name: RON REMUND

Well Number:

Street: PO BOX 760
 City: SISTERS State: OR Zip Code: 87758

(2) Type of Work

New Alter (Recondition) Alter (Repair)
 Deepening Abandonment

(3) Drill Method

Rotary Air Rotary Mud Cable Auger
 Other:

(4) Proposed Use

Domestic Community Industrial Irrigation Injection
 Livestock Thermal Other:

(5) Bore Hole Construction

Special Standards: Depth of completed well: 621.00 ft.
 Explosives Used: Amount: Type

Diameter	Hole		Mtrl	Seal		Sacks/lbs
	From	To		From	To	
12	0	138	CE	0	138	\$700
8	138	626				

How was seal placed? C Other:

Back fill placed from:

Material:

Filler pack from:

Size:

(6) Casing / Liner

Casing/ Liner	Diameter	From	To	Gauge	Mtrl	Weld	Thrd	Shoe Used
C	8	2	138	.250	S	X		
L	8	4	626	.188	S	X		

(7) Perforation / Screens

Perforations:

Mtrl	From	To	Width	Height	#Slots	Dia.	VpSize	Casing/ Lnr	Method
S	888	626	0.125	3.00	432	6		L	MACHINE

Screens:

Mtrl	From	To	S Size	#Slots	Dia.	VpSize	Type	Gauge
------	------	----	--------	--------	------	--------	------	-------

(8) Well Tests (Minimum testing time is one hour)

Type	Yield	Units	Drawdown	Stem at	Duration
A	2000	G		620	1.00

Temperature of Water: 63.00 F

Was water analysis done? Depth of artesian by whom?

Did any strata contain water unsuitable for use? Too Little Salty

Muddy Odor Colored other:

Depth of strata:

(9) Location of Hole by legal description

County: DESC Latitude: Longitude
 Township: 14.00 S Range: 11.00 E
 Section: 17 SWSW Lot: Block:

Tax Lot: 2017 Subdivision:

Street Address of Well (or nearest address):
 MINT VIEW RD

MAP, with location identified, must be attached.

(10) Static Water Level

Feet below land surface: 601.00 Date: 07 / 20 / 2000
 Artesian Pressure: Date:

(11) Water Bearing Zones

Depth at which water was first found: \$99.00 ft.
 From To est Flow gpm
 570 625 2061m 501

(12) Well Log

Ground Elevation:

Material	From	To	swl
BROKEN LAVA LOAM	0	3	
LAVA BROWN FRAC LAYERS	43	3	
RED LAVA/CINDERS	43	56	
SANDSTONE	56	96	
LAVA BROWN GRAY LAYERS	96	190	
LAVA BROWN	190	220	
SANDSTONE BROWN	220	228	
LAVA BROWN	228	345	
LAVA RED/CINDERS	346	460	
LAVA HARD	480	490	
LAVA BROWN	490	609	
LAVA/BASALT	508	642	
LAVA RED	542	651	
SANDSTONE	561	686	
LAVA/BASALT BROKEN	586	626	601

Date Started: 07 / 17 / 2000 Date Completed: 07 / 20 / 2000

(unbonded) Water Well Constructor Certification:

I certify that the work I perform on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed by: THOMAS R PECK M/WC # 788

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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 well construction standards. This report is true to the best of my knowledge and belief.
 Signed by: JACK ABBAS M/WC # 1720

ABBAS WELL DRILLING CO Phone: 641-448-2787

RECEIVED
 SEP 5 2000
 WATER RESOURCES
 SALEM, OREGON

STATE OF OREGON
Water Supply Well Report

DESC

(as required by ORS 537.765)

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

(1) Owner

Well Number

Name: RON REMUND

Street: PO BOX 780

City: BISTERS

State OR Zip Code: 87759

(2) Type of Work

- New Alter (Recondition) Alter (Repair)
 Deepening Abandonment

(3) Drill Method

- Rotary Air Rotary Mud Cable Auger
 Other:

(4) Proposed Use

- Domestic Community Industrial Irrigation Injection
 Livestock Thermal Other:

(5) Bore Hole Construction

- Special Standards: Depth of completed well 821.00 ft.
 Explosives Used: Amount: Type:

Diameter	Hole		Mtrl	Seal		Sacks/ft
	From	To		From	To	
12	0	138	CE	0	138	5700
8	138	828				

How was seal placed? C Other:

Back fill placed from:

Material:

Filter pack from:

Size:

(6) Casing / Liner

Casing/ Liner	Diameter	From	To	Gauge	Mtrl	Weld	Thrd	Shoe at used	Shoe
C	8	2	138	.280	S	X			
L	8	8	828	.188	S	X			

(7) Perforation / Screens

Perforations:									
Mtrl	From	To	Width	Height	#Slots	Die	tp/Size	Casing/ Liner	Method
S	888	828	0.125	3.00	432	8		L	MACHINE

Screens:									
Mtrl	From	To	S Size	#Slots	Die	tp/Size	Type	Gauge	

(8) Well Tests (Minimum testing time is one hour)

Type	Yield	Units	Drawdown	Stem at	Duration
A	40.00	G		820	1.00

Temperature of Water: 53.00 F

Was water analysis done? Depth of artesian flow:

by whom?

Did any strata contain water Unsuitable for use? Too Little Salty Muddy Odor Colored other:

Depth of strata:

(9) Location of Hole by legal description

County DESC Latitude: Longitude:
 Township: 14.00 S Range: 11.00 E
 Section: 17 SWSW Lot: Block:
 Tax Lot: 2017 Subdivision:
 Street Address of Well (or nearest address):
 MNT VIEW RD
 MAP, with location identified, must be attached.

(10) Static Water Level

Feet below land surface: 681.00 Date: 07 / 20 / 2000
 Artesian Pressure: Date:

(11) Water Bearing Zones

Depth at which water was first found: 590.00 ft.
 From To net Flow gpm

(12) Well Log

Material	Ground Elevation:		
	From	To	gpm
BROKEN LAVA LOAM	0	3	
LAVA BROWN FRAC LAYERS	43	3	
RED LAVA/CINDERS	43	88	
SANDSTONE	88	98	
LAVA BROWN GRAY LAYERS	98	190	
LAVA BROWN	190	220	
SANDSTONE BROWN	220	228	
LAVA BROWN	228	348	
LAVA RED/CINDERS	348	480	
LAVA HARD	480	490	
LAVA BROWN	490	509	
LAVA/BASALT	509	542	
LAVA RED	542	551	
SANDSTONE	551	585	
LAVA/BASALT BROKEN	635	628	501

Date Started: 07 / 17 / 2000

Date Completed: 07 / 20 / 2000

(unbonded) Water Well Constructor Certification:

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

Signed by: THOMAS R PECK

MWC # 768

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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 well construction standards. This report is true to the best of my knowledge and belief.

Signed by: JACK ABBAS

MWC # 1720

ABBAS WELL DRILLING CO

Phone 541-648-2787

Groundwater Application Review Summary Form

Application # G- 19169

GW Reviewer Joe Kemper Date Review Completed: 10/25/2023

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).

WATER RESOURCES DEPARTMENT

MEMO

10/25/2023

TO: Application G- 19169

FROM: GW: Joe Kemper
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference & General/Local Surface Water Evaluation for Deschutes Ground Water Study Area

The source of appropriation is within or above the Deschutes Scenic Waterway

Use the Scenic Waterway condition (Condition 7J).

PREPONDERANCE OF EVIDENCE FINDING UNDER ORS 390.835:

Department has found that there is a preponderance of evidence that the proposed use of groundwater will measurably reduce the surface water flows necessary to maintain the free-flowing character of the Deschutes Scenic Waterway in quantities necessary for recreation, fish and wildlife.

LOCALIZED IMPACT FINDING

The proposed use of groundwater will have a localized impact to surface water in the [River Name] River/Creek Subbasin.

If the localized impact box above is checked, then the water use under any right issued pursuant to this application is presumed to have a localized impact on surface water within the identified subbasin. Mitigation of the impact, originating from within the Local Zone of Impact identified by the Department, will be required before a permit may be issued for the proposed use.

If the localized impact box above is not checked, then the water use under any right issued pursuant to this application is presumed to have a general (regional) impact on surface water. Mitigation of the impact, originating anywhere within the Deschutes Basin above the Madras gage, will be required before a permit may be issued for the proposed use.

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 10/25/2023
 FROM: Groundwater Section Joe Kemper
Reviewer's Name
 SUBJECT: Application G- 19169 Supersedes review of NA
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: Avion Water Co. County: Deschutes

A1. Applicant(s) seek(s) 0.67* cfs from 3 well(s) in the Deschutes Basin,
Whychus Cr. subbasin

A2. Proposed use Quasi-Muni. Seasonality: Year-Round (98 AF)

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	DESC0058167	SCCE Well 1	Deschutes Fm.	0.67	14S-11E-17-SW SW	1120' N, 650' E fr Sw Corner, S 17
2	DESC0053193	SCCE Well 2	Deschutes Fm.	0.67	14S-11E-17-SW SW	950' N, 695' E fr Sw Corner, S 17
3	DESC0053194	SCCE Well 3	Deschutes Fm.	0.67	14S-11E-17-SW SW	925' N, 630' E fr Sw Corner, S 17

* 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	3110	616	520	8/1/07	844	0-96	+2-98	0-844	780-804	250	4	P
2	3105	605	496	6/4/07	690	0-78	+2-78	-5-600	585-605	10	-	A
3	3103	626	525	5/2/13	750	0-138	+2-138	-5-626	585-625	200	-	A

Use data from application for proposed wells.

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	3106	616	520	8/29/2007	520	8/29/2007
2	3105	590	498	6/4/2007	498	6/4/2007
3	3103	626	525	4/29/2013	525	4/29/2013

A4. **Comments:** *The proposed POAs are also on permit G-18198, which authorizes 0.67 cfs and 62 AF/yr. This application requests 98 AF/yr in addition to the authorized 62 AF/yr for a total of 160 AF/year under both water rights. The application requests that the total rate of appropriation be limited to 0.67 cfs from any and all wells under both water rights.

A5. **Provisions of the** Deschutes (OAR 690-505) 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: The proposed POA is within the Deschutes Groundwater Study Area

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) 7RLA; Large Water-Use Reporting;
 - 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 _____ groundwater 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 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): _____

B3. **Groundwater availability remarks:** The applicant’s proposed POAs would be producing from the Deschutes Fm. aquifer system near Whychus Cr between the town of Sister, OR and the confluence of Whychus Creek and the Deschutes River (T13S/R12E-7). Water levels in this area are several hundred feet below land surface and represent a water table and groundwater flowpaths that are disconnected from surface water locally. Studies have shown that groundwater moves northeast across the region from the recharge zones in the Cascades toward discharge zones near the confluence of Whychus Creek and the Deschutes River as well as along the Crooked River. Groundwater elevations are coincident with surface water elevations in the areas near Sisters and near the discharge zones, implying local hydraulic connection, but are substantially deeper than surface water elevations between these areas, suggesting no local hydraulic connection. Given this lack of local hydraulic connection, groundwater withdrawals in the area of the proposed POAs would have an impact on water levels locally and along the entire flowpath, and also have the potential to reduce long-term discharge to surface water. Impacts to surface water are addressed in the Deschutes Basin Rule (OAR 690-505) which would require mitigation for the proposed use.

Several wells to the east of the proposed POAs (referred to as the “Deep Canyon Area” in Map 1) have shown persistent year-on-year declines totaling ~13 feet from 1994 to 2023 (see Figures 3 and 4). Studies by the USGS and OWRD have attributed these long-term declines to 1) long-term climate change, 2) groundwater pumping (see Figure 2), and 3) canal lining causing reduced recharge. The nearest well (DESC 1957) exhibiting this trend is approximately five miles to the east of the proposed POAs. Wells upgradient in the groundwater system from the city of Sisters (e.g. DESC 3016 and DESC 1804) show 10-20 feet of oscillation that tracks largely with decadal climate cycles. Current groundwater levels in those wells are at or near the same elevation as 1994. Just downgradient (NE) of Sisters, water levels in DESC 2929 rise 12-13 feet in response to the heavy precipitation of the late 1990s but respond very little to increased recharge in the early 2010s.

Current water levels are ~5 feet lower than in 1994. There are no long-term observation wells immediately adjacent to the proposed POAs that show water level trends there. Because the proposed POAs are located nearly equidistant between DESC 2929 and DESC 1957 in the same groundwater system, this review assumes that water levels at the application site show an intermediate of those two trends. Specifically, water levels have likely shown declines since approximately 2000 on the order of 5-10 feet.

The wells in the Deep Canyon area showing long-term water level declines are located generally down-gradient of the proposed POAs and thus farther from recharge zones for the region. Pumping under the proposed right would reduce recharge to the Deep Canyon Area by intercepting the dominate groundwater flowpaths to this area, thus exacerbating the declines there. However, considering the low-moderate magnitude of declines observed in the Deep Canyon area and assumed at the proposed POAs, the preponderance of evidence indicates that the proposed use is within the capacity of the resources. There best available water budget estimates from USGS basin study reports indicate that the resource is not over-appropriated. In light of the lack of data in the area and concern about longer term declines, the permit conditions listed in Section B(d) are strongly recommended.

There are likely multiple exempt groundwater users within a mile of the proposed POAs that could be affected by well-to-well interference from the applicant's wells. Because of the target aquifer's high storage/permeability and overall thickness, however, it is unlikely that any resulting groundwater interference from this permit would be large enough to be considered injury under current rule and statute.

Special Condition:

Prior to use under this permit, each POA shall be equipped with a dedicated etape measurement tube or a properly functioning airline system to allow for annual permit condition water level measurements and the setting of a reference level. This measurement system must remain functional for the duration of the water right.

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

Impacts to surface water are addressed by the Deschutes Basin Rules (OAR 690-505)

REFERENCES USED:

Gannett, M. W. and K. E. Lite. 2004. Simulation of Regional Ground-Water Flow in the Upper Deschutes Basin, Oregon. USGS Water Resources Investigations Report 2003-4195

Gannett, M. W. and K. E. Lite. 2013. Analysis of 1997-2009 Groundwater Level Changes in the Upper Deschutes Basin, Central Oregon. USGS Scientific Investigations Report 2013-5092

Gannett, M. W., Lite, K. E., Risley, J. C., Pischel, E. M., and J. L. LaMarche. 2017. Simulation of Groundwater and Surface-Water Flow in the Upper Deschutes Basin, Oregon. USGS Scientific Investigations Report 2017-5097

Lite, K. E. and M. W. Gannett. 2002. Geologic Framework of the Regional Ground-Water Flow System in the Upper Deschutes Basin, Oregon. USGS Water-Resources Investigations Report 02-4015

OWRD Well Log Database, Accessed 10/25/2023 [https://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx]

OWRD Groundwater Information System Database, Accessed 10/25/2023 [https://apps.wrd.state.or.us/apps/gw/gw_info/gw_info_report/gw_search.aspx]

D. WELL CONSTRUCTION, OAR 690-200

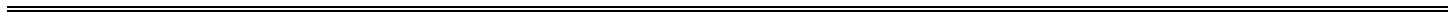
D1. Well #: _____ Logid: _____

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

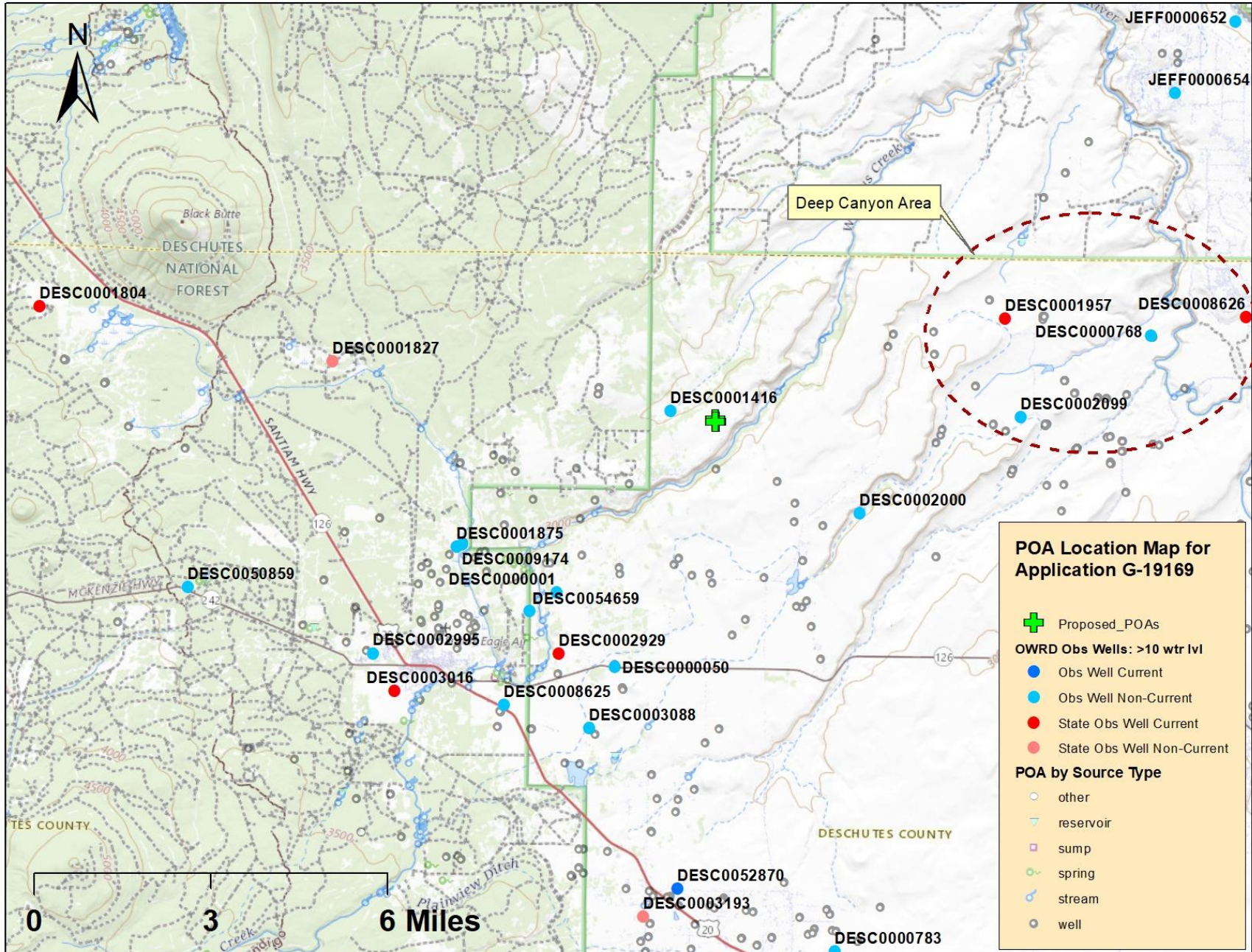
- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

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

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



Well Location Maps



Water-Level Measurements in Nearby Wells

Figure 2. Hydrograph of groundwater elevations from the Sisters area through the Deep Canyon area. DESC 2000 and DESC 1416 are 0.8 and 2.9 miles from the proposed POAs, respectively.

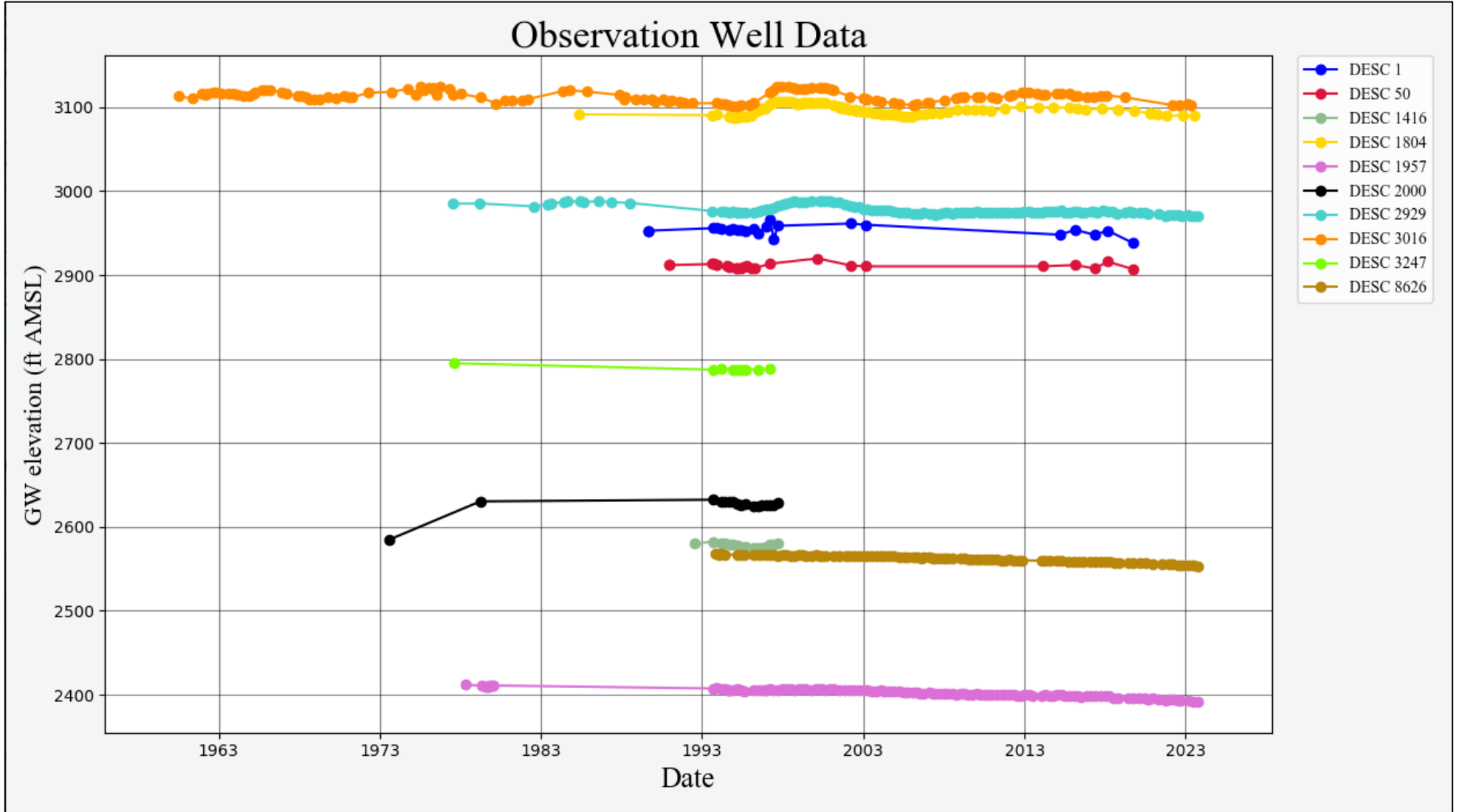


Figure 3. Common-datum hydrograph that shows relative change in groundwater levels in selected observation wells from 1994 to 2023. DESC 3016 is WSW of Sisters and DESC 1804 is SW of Black Butte; oscillations track with decadal climate fluctuations and show no persistent decline at this time scale. DESC 1957 and DESC 8626 show persistent year-on-year declines in the Deep Canyon area. DESC 2929 is just ENE of the city of Sisters.

