

Groundwater Application Review Summary Form

Application # G- 19469

GW Reviewer Travis Brown Date Review Completed: 5/12/2025

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

5/12/2025

TO: Application G- 19469

FROM: GW: Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | | | | | | |

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/12/2025
 FROM: Groundwater Section Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19469 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 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: Oregon Parks and Recreation Department County: Marion

A1. Applicant(s) seek(s) 0.45 cfs from 4 well(s) in the Willamette Basin,
Molalla River-Pudding River subbasin

A2. Proposed use Commercial (State Park) (323 af/yr) Seasonality: Year Round

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

| POA Well | Logid | Applicant's Well ID | 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 | MARI 54465 | "Steel Tank Well 2" | Basalt | 0.45 | 8S/1E-13 NWNE | 720' S, 1820' W fr NE cor S 13 |
| 2 | PROP | "North Well 1" | Basalt | 0.45 | 8S/1E-13 NWNE | 720' S, 1835' W fr NE cor S 13 |
| 3 | PROP | "North Well 2" | Basalt | 0.45 | 8S/1E-13 NESW | 1815' N, 2520' E fr SW cor S 13 |
| 4 | PROP | "North Well 3" | Basalt | 0.45 | 8S/1E-13 SWNE | 2745' N, 1675' W fr NE cor S 13 |

* Alluvium, CRB, Bedrock

| POA Well | Well Depth (ft) | Seal Interval (ft) | Casing Intervals (ft) | Liner Intervals (ft) | Perforations Or Screens (ft) | Well Yield (gpm) | Drawdown (ft) | Test Type |
|----------|-----------------|-------------------------|-----------------------|----------------------|------------------------------|------------------|---------------|------------|
| 1 | 797 | 0-173; 173-233; 233-276 | 0-797 | N/A | 732-792 | 50 | Unkonwn | Air (1 hr) |
| 2 | 950 | 0-173; 173-233; 233-276 | 0-950 | N/A | 732-792, 850-950 | N/A | N/A | N/A |
| 3 | 401 | 0-173; 173-233; 233-276 | 0-401 | N/A | 336-396 | N/A | N/A | N/A |
| 4 | 491 | 0-173; 173-233; 233-276 | 0-491 | N/A | 426-486 | N/A | N/A | N/A |

| 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 | ~1,753 ^a | 85 | 453 | 10/28/1999 | TBD | TBD |
| 2 | ~1,753 ^a | 85 ^b | 453 ^b | 10/28/1999 ^b | TBD | TBD |
| 3 | ~1,459 ^a | TBD | TBD | TBD | TBD | TBD |
| 4 | ~1,543 ^a | TBD | TBD | TBD | TBD | TBD |

Use data from application for proposed wells.

A4. **Comments:** The proposed POA are in Silver Falls State Park, ~9 miles northeast of the City of Stayton.

^a LIDAR

^b Assumed from water well report for MARI 54465 (POA 1)

A5. ☐ **Provisions of the** Willamette 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: N/A
 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) 7RLN (15 ft, 15 ft); 7t (measuring tube); 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 Grande Ronde Basalt groundwater reservoir below approximately 1,200 ft. elevation above mean sea level;
 - 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 proposed POA wells develop the Columbia River Basalt aquifer system at varying depths. The perforated intervals of the POA wells appear to be exclusively within the Grande Ronde Basalt Formation, although the open annular intervals of POA 1, 2, and 4 extend upward into the Wanapum Basalt Formation. In the subject area, the Grande Ronde Basalt includes at least 5 separate flows from ~10-34 meters (~30-110 ft) thick each. The base of the Grande Ronde Basalt has not been observed in outcrop or well logs in the subject area, so the total thickness of the Formation is unknown (Norman, 1980) (see attached Cross Section).

The nearest well with recent water level data is MARI 18916, ~0.5 miles northeast of the proposed POA, which has shown an overall decrease in water level of ~8.5 ft since it was drilled in 1994 (see attached Hydrograph). Wells further to the north with current data show relative stability from the early 2000s through 2025 (see attached Hydrograph). However, between 1999 and 2002, MARI 54080 showed an overall decline of ~42.3 ft from the water level reported on its well completion report in 1999. Similarly, between 1999 and 2002, MARI 54278 showed an overall decline of ~31.0 ft from the water level reported on its well completion report in 1999. This pattern of steep initial decline followed by subsequent stabilization may indicate these wells (MARI 54080 and MARI 54278) commingle multiple aquifers. Despite the substantial early declines observed in many Columbia River Basalt wells to the north, most of the wells are not excessively declined or declining, excluding possibly MARI 13376 (for which current data is not available), although MARI 54080 was Declined Excessively per OAR 690-008-0001(5)(d) as recently as 2022. The deeper construction of the proposed POA relative to other basalt wells with water level data to the north, and the significant distance of the POA wells from these other basalt wells, should insulate the proposed POA wells from many of the likely causes of declines in the more distant wells to the north. **The preponderance of the current water level data indicates the proposed aquifer is not over appropriated.**

No nearby wells appear to produce from the same interflow zones targeted by the proposed POA. It is unlikely that the proposed POA would cause interference with neighboring wells in excess of the permit condition limits or thresholds for injury.

The conditions detailed in B1(d)(i) and B2(c), above, are recommended for any permit issued pursuant to this application in order to protect the groundwater resource and senior users. In addition, the following Special Conditions should be applied:

1. Each basalt well shall be open to a single aquifer of the Columbia River Basalt Group and shall meet the applicable well construction standards (OAR 690-200 and OAR 690-210).

In addition, the open interval in each well shall be no greater than 100 feet. An open interval of greater than 100 feet may be allowed if substantial evidence of a single aquifer completion can be demonstrated to the satisfaction of the Department Hydrogeologists, using information from a video log, downhole flowmeter, water chemistry and temperature, or other downhole geophysical methods. These methods shall characterize the nature of the basalt rock and assess whether water is moving in the borehole. Any discernable movement of water within the well bore when the well is not being pumped shall be assumed as evidence of the presence of multiple aquifers in the open interval.

If during well construction, it becomes apparent that the well can be constructed to eliminate the comingling of aquifers and/or interference with hydraulically connected streams in a manner other than specified in this permit, the permittee can contact the Department Hydrogeologist for this permit or the Groundwater Section Manager to request approval of such construction. The request shall be in writing and shall include a rough well log and a proposed construction design for approval by the Department. The request can be approved only if it is received and reviewed prior to placement of any permanent casing and sealing material. If the request is made after casing and seal are placed, the requested modification will not be approved. If approved, the new well depth and construction specifications will be incorporated into any certificate issued for this permit.

2. When requested, access to the wells shall be provided to Department staff in order to make water level measurements.
3. For any wells constructed under this or subsequent permits, the permittee shall coordinate with the driller to ensure that drill cuttings are collected at 10-foot intervals and at changes in formation in each well. A split of each sampled interval shall be provided to the Department.
4. If any geologic and hydrogeologic reports are completed for the permittee during the development of permitted wells, including geophysical well logs and borehole video logs, then copies of the reports shall be provided to the Department. Except for borehole video logs, two paper copies or a single electronic copy shall be provided of each report. Digital tables of any data shall be provided upon request.

NOTE: Proposed POA 1, 2, and 4 do not currently meet the recommended condition detailed in B2(c) due to their insufficient seal depths. None of the proposed POA currently meet Special Condition 1. POA 1 would require reconstruction and deepening of its seal to meet the recommended conditions and Well Construction Standards (see Section D, below).

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"/> |
| 3 | Basalt | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4 | Basalt | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer confinement evaluation: Columbia River Basalt aquifers (i.e., separate interflow zones) are typically confined by dense flow interiors which restrict vertical movement of groundwater. In addition, the well log for the proposed POA and nearby well logs indicate confined conditions as water levels are rising above the water bearing zones.

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 | North Fork Silver Creek | ~1,300 ^a | ~1,084 ^b | <5,280 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | 1 | North Fork Silver Creek | ~1,300 ^a | ~1,084 ^b | <5,280 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3 | 1 | North Fork Silver Creek | ~1,300 ^a | ~1,207 ^b | <5,280 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3 | 1 | North Fork Silver Creek | ~1,300 ^a | ~1,086 ^b | ~6,550 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3 | 2 | South Fork Silver Creek | ~1,300 ^a | ~988 ^b | ~8,920 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4 | 1 | North Fork Silver Creek | ~1,300 ^a | ~1,005 ^b | <5,280 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Basis for aquifer hydraulic connection evaluation: POA 1 (MARI 54465) is sealed to only 276 ft bls (~1,477 ft amsl); POA 2 proposes similar construction. Although the water well report for MARI 54465 indicates no water-bearing zones between the seal and 736 ft bls (~1,017 ft amsl), the water well report does indicate "Basalt Black with Claystone Stringers" from 579-620 ft bls (~1,174-1,133 ft amsl), suggesting sedimentary interbeds separating individual basalt flows that may host minor water-bearing zones. Furthermore, the water well report for MARI 18916, ~2,500 ft northeast of the POA 1 and 2, does indicate water-bearing zones at ~1,393-1,390 ft amsl, ~1,354-1,350 ft amsl, ~1,326-1,324 ft amsl, and ~1,249-1,231 ft amsl, all within the open annular interval of POA 1 and proposed POA 2 (see attached Cross Section). Norman (1980) identified multiple basalt flows in the Grande Ronde and Wanapum Basalts within the open annular interval of POA 1 and 2. Because SW 1 within 1 mile of POA 1 and 2 has incised below the seal bottom elevations of these wells and the likely shallower water-bearing zones between ~1,393-1,231 ft amsl, and because the estimated groundwater elevation is above the elevation of SW 1 within 1 mile of POA 1 and 2, POA 1 and 2 appear to be hydraulically connected to SW 1 within 1 mile.

Although POA 3 has a similar proposed seal depth of 276 ft, due to its lower elevation the proposed seal would extend to ~1,183 ft amsl, which is below the elevation to which SW 1 has incised within 1 mile of POA 3. Therefore, POA 3 does not appear to be hydraulically connected to SW3 within 1 mile. However, it does appear to be hydraulically connected to SW 1 below Middle North Falls, ~1.25 miles from POA 3, and to SW 2, ~1.7 miles from POA 3.

SW 1 has incised below the proposed total depth of POA 4 (491 ft bls [~1,052 ft amsl]) within 1 mile of POA 4. POA 4 is hydraulically connected to SW 1.

^a Water well report for MARI 54465.

^b LIDAR elevation at indicated SW distance.

Water Availability Basin the well(s) are located within: SILVER CR > PUDDING 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 (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, 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 type="checkbox"/> | <input type="checkbox"/> | N/A | N/A | <input type="checkbox"/> | 8.47 | <input checked="" type="checkbox"/> | * | <input checked="" type="checkbox"/> |
| 2 | 1 | <input type="checkbox"/> | <input type="checkbox"/> | N/A | N/A | <input type="checkbox"/> | 8.47 | <input checked="" type="checkbox"/> | * | <input checked="" type="checkbox"/> |
| 4 | 1 | <input type="checkbox"/> | <input type="checkbox"/> | N/A | N/A | <input type="checkbox"/> | 8.47 | <input checked="" type="checkbox"/> | * | <input checked="" type="checkbox"/> |

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

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

Comments: The requested rate (0.45 cfs) is greater than 1 percent (0.0847 cfs) of the stream discharge which is equaled or exceeded 80 percent of time (8.47 cfs) for SW 1. Per OAR 690-009-0040(c) (effective at the time of application submittal on 9/10/2024), the Potential for Substantial Interference (PSI) is assumed.

*The interference with SW 1 could not be quantitatively estimated due to the lack of an appropriate analytical model for the hydrogeologic setting.

- 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 | | | | | | | | | | | | | |
| (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: The potential interference with SW 1 and 2 from the proposed use of POA 3 could not be quantitatively estimated due to the lack of an appropriate analytical model for the hydrogeologic setting.

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 groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. SW / GW Remarks and Conditions: **If proposed POA 1 and 2 were continuously cased and sealed to at least 674 ft bls (~1,079 ft amsl) hydraulic connection with SW 1 within 1 mile would be avoided and PSI would not be assumed.**

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 ("Steel Tank Well 2"), 2 ("North Well 1"), 4 ("North Well 3") Logid: MARI 54465, PROP 641, PROP 643

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

- ☒ review of the well log;
- ☐ field inspection by _____;
- ☐ report of CWRE _____;
- ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** The well seal does not appear to meet the Well Construction Standards for Sealing of Water Supply Wells in Consolidated Formations (OAR 690-210-0150). Per the Well Construction Standards, the permanent well casing should be sealed into at least five feet of solid, unfractured, consolidated rock overlying the water-bearing rock formation. The proposed POA 1 ("Steel Tank Well 2"/MARI 54465 is sealed to 276 ft bls. The target water-bearing zone was reported from 736-767 ft bls, with a reported static water level of 453 ft bls. "Basalt Black with Claystone Stringers" was reported from 579-620 ft bls. These "clay stringers" likely represent sedimentary interbeds separating individual basalt flows; some amount of fracturing would be expected around the flow tops and bottoms in contact with these sedimentary interbeds (Norman, 1980; Reidel et al., 2002). To comply with the Well Construction Standards requirement to seal into at least five feet of solid, unfractured, consolidated rock overlying the water-bearing rock formation, the well casing and seal should extend to at least 625 ft bls, into the "Basalt Black Medium Hard" reported from 620-736 ft bls. Proposed "North Well 1" should be similarly cased and sealed.

Furthermore, the Special Conditions for Columbia River Basalt wells (see B3) limit the well to an open interval of no more than 100 ft unless the applicant can provide additional evidence of a single aquifer completion to the approval of the Department Hydrogeologist.

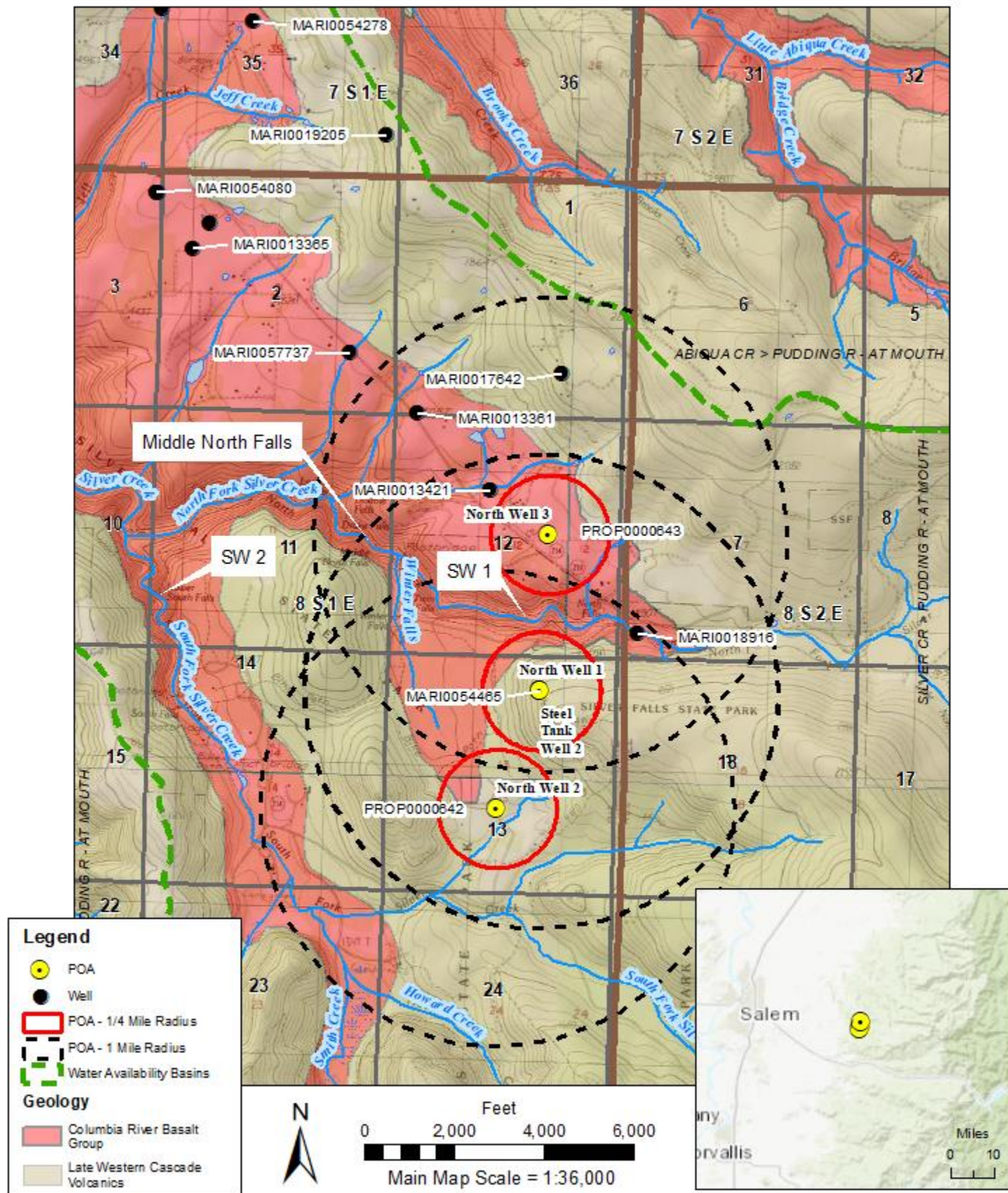
D4. ☒ Route to the Well Construction and Compliance Section for a review of existing well construction.

References Used: Application File: G-19469

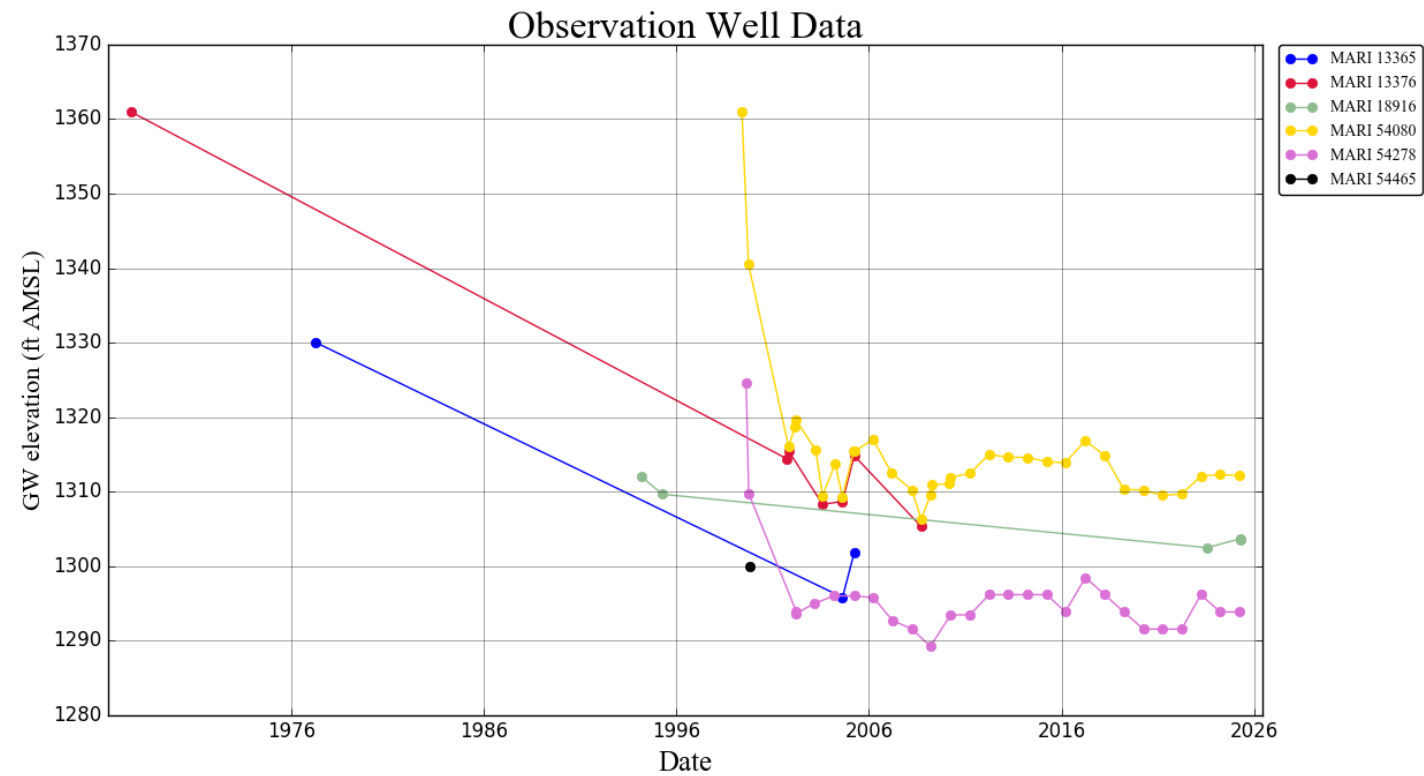
Norman, E. S., 1980, Geology of the Columbia River Basalt in Silver Falls State Park, Oregon: University Honors Thesis, Portland State University, Portland, OR, 43 p.

Reidel, S.P., Johnson, V.G., and Spane, F.A., 2002, Natural gas storage in basalt aquifers of the Columbia Basin, Pacific Northwest USA—A guide to site characterization: Richland, Wash., Pacific Northwest National Laboratory, 277 p.

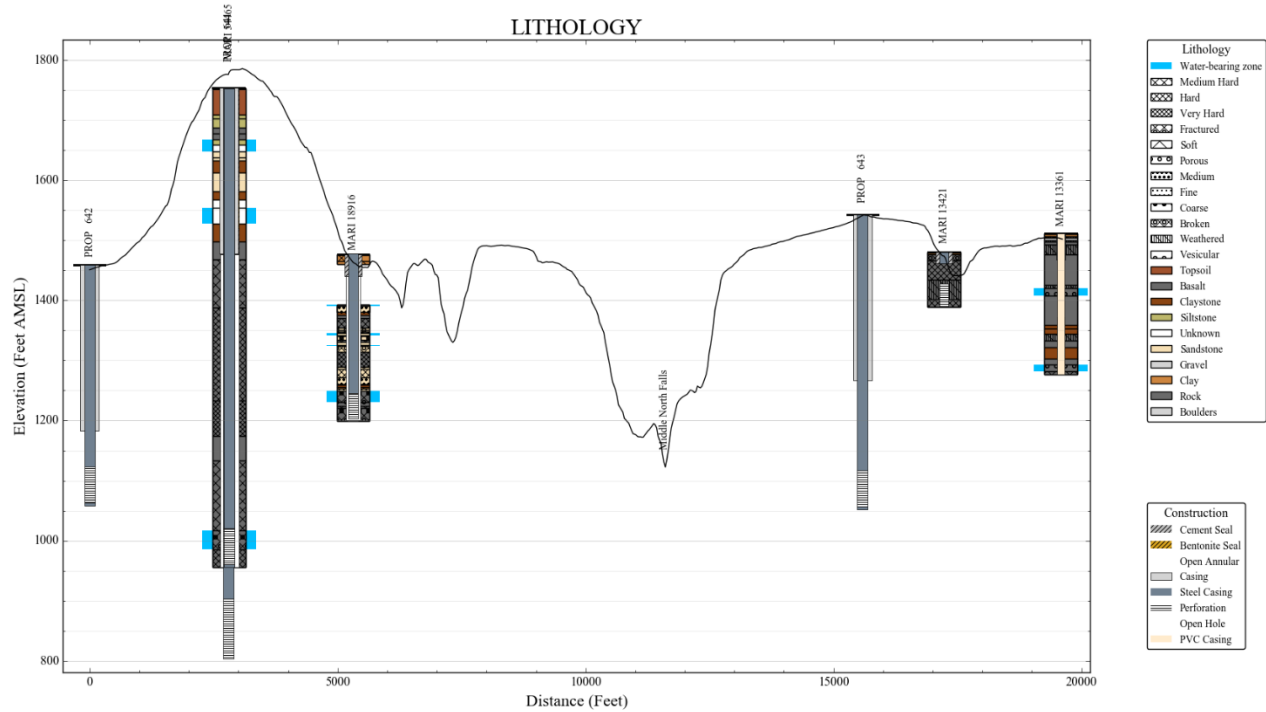
Well Location Map

G-19469

Hydrograph



Cross-Section



Water Availability Tables

Water Availability Analysis
Detailed Reports

SILVER CR > PUDDING R - AT MOUTH
WILLAMETTE BASIN

Watershed ID #: 169 [\(Map\)](#)

Water Availability as of 5/9/2025

Exceedance Level: 80% ▼

Date: 5/9/2025

Time: 2:56 PM

- Water Availability Calculation
- Consumptive Uses and Storages
- Instream Flow Requirements
- Reservations
- Water Rights
- Watershed Characteristics

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 | 179.00 | 7.43 | 172.00 | 0.00 | 60.00 | 112.00 |
| FEB | 173.00 | 7.28 | 166.00 | 0.00 | 60.00 | 106.00 |
| MAR | 173.00 | 1.16 | 172.00 | 0.00 | 60.00 | 112.00 |
| APR | 135.00 | 1.30 | 134.00 | 0.00 | 60.00 | 73.70 |
| MAY | 75.90 | 2.43 | 73.50 | 0.00 | 60.00 | 13.50 |
| JUN | 36.70 | 5.28 | 31.40 | 0.00 | 50.00 | -18.60 |
| JUL | 16.60 | 7.27 | 9.33 | 0.00 | 23.00 | -13.70 |
| AUG | 8.47 | 6.31 | 2.16 | 0.00 | 23.00 | -20.80 |
| SEP | 10.80 | 4.42 | 6.38 | 0.00 | 23.00 | -16.60 |
| OCT | 13.60 | 1.24 | 12.40 | 0.00 | 60.00 | -47.60 |
| NOV | 71.10 | 4.79 | 66.30 | 0.00 | 60.00 | 6.31 |
| DEC | 176.00 | 8.10 | 168.00 | 0.00 | 60.00 | 108.00 |
| ANN | 120,000.00 | 3,430.00 | 117,000.00 | 0.00 | 36,100.00 | 83,900.00 |