Groundwater Transfer Review Summary Form

Transfer/PA # T- _14560 (RA)_

GW Reviewer: _Travis Brown_ Date Review Completed: _12/13/2024_

Summary of Same Source Review:

☐ The proposed change in point of appropriation is not within the same aquifer as per OAR 690-380-2110(2).

Summary of Water Level Decline Condition Review:

☐ Water levels at the original point(s) of appropriation have exceeded the allowed decline threshold defined by conditions in the originating water right.

Summary of Injury Review:

☐ The proposed transfer will result in another, existing water right not receiving previously available water to which it is legally entitled or result in significant interference with a surface water source as per 690-380-0100(3).

Summary of GW-SW Transfer Similarity Review:

☐ The proposed SW-GW transfer doesn't meet the definition of "similarly" as per OAR 690-380-2130.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations.

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Ground Water Review Form:

- ☐ **Water Right Transfer**
- ☒ **Permit Amendment**
- ☐ **GR Modification**
- ☐ **Other**

Application: T-14560 Applicant Name: Shortland Golf Club

Proposed Changes: ☒ POA ☐ APOA ☐ SW→GW ☒ RA
☐ USE ☐ POU ☐ OTHER

Reviewer(s): Travis Brown Date of Review: 12/13/2024

Date Returned to WRSD: 12/13/2024

The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.

☐ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.

☐ Other _____

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1. Basic description of the changes proposed in this transfer: Applicant proposes to transfer the entire 30.9 acres of Permit G-18861 to be irrigated by Well 1 (CLAC 9317) and Proposed Pond Well (not constructed) instead of Well 1 (CLAC 9317) and Well 2 (CLAC 9316). Therefore, this is effectively a transfer of the subject acreage from Well 2 ("From-POA") to Proposed Pond Well ("To-POA"). Permit G-18861 authorizes irrigation of 30.9 acres total at a maximum rate of 0.4 cfs from any combination of Well 1 (CLAC 9317) and Well 2 (CLAC 9316) up to a total annual volume of 77.25 af/year. **NOTE: Previous transfer, T-14377, proposed transferring 0.073 cfs of Certificate 50575 to the proposed Pond Well. Under this transfer, the proposed Pond Well will, therefore, be evaluated for injury at a combined rate of 0.473 cfs.**

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
   ☒ Yes ☐ No Comments: Currently authorized POA Well 1 and From-POA Well 2 are completed to depths of 621 and 1005 ft bls, respectively, and develop the Columbia River Basalt (CRB) aquifer system, which is first reported in the well logs at depths of 362 and 540 ft bls.

   The To-POA is proposed to be completed to a total depth between 290 and 1000 ft bls, with casing and seal extending "0 to 5 feet into basalt." **NOTE: Current well construction regulations for sealing into consolidated formations (OAR 690-210-0150) require casing and seal extend to *at least five feet* into solid, unfractured, consolidated rock overlying the water-bearing rock formation.** The applicant's agent has provided analysis

indicating that, at the location of the proposed To-POA, the solid, unfractured Columbia River Basalt likely exists at greater than ~370-380 ft bls (~ -140 to -150 ft msl) based on the well reports for CLAC 9317 (authorized POA) and CLAC 9296 (neighboring well) (see attached Annotated Agent Cross Section). This largely agrees with the well report for CLAC 18564, which appears to be the closest well to the proposed To-POA and indicates weathered basalt from 357 to 363 ft bls (~ -113 to -119 ft msl) and more competent basalt from 363-370 ft bls (~ -119 to -126 ft msl). Based on the well report for CLAC 18564 and the land surface elevation at the proposed To-POA, the proposed To-POA would need to be cased and sealed to at least ~350 ft bls to meet well construction standards and only produce from the basalt aquifer. If constructed and sealed into the solid, unfractured basalt, the proposed To-POA will develop the same source as the authorized POA.

3. a) Is the existing authorized POA subject to a water level decline condition?

☒ Yes ☐ No Comments: Permit G-18861 is the result of a previous transfer, T-14244, which split former Permit G-16291 into two subsequent Permits (G-18861 and G-18862). The original decline conditions of Permit G-16291 were not altered as result of transfer T-14244. By the terms of Permit G-18861, Well 1 (CLAC 6317) and Well 2 (CLAC 9316) shall be controlled or shut off if either well displays (a) an average water level decline of three or more feet per year for five consecutive years, or (b) a total water level decline of fifteen or more feet.

b) If yes, for each POA identify the reference level, most recent spring-high water level, and whether an applicable permit decline condition has been exceeded: The reference level for Well 1 (CLAC 9317) is 93.03 ft bls and for Well 2 (CLAC 9316) is 99.65 ft bls. Although both wells briefly exceeded their permit decline conditions in 2002, they have since recovered substantially and appear more stable in recent years (see attached Hydrograph). The exceedance of the decline conditions in 2002 and subsequent recovery were likely the result of the City of Wilsonville ceasing use of their basalt supply wells around this time. The reference level for the proposed Pond Well (To-POA) will be determined based on the hydraulic gradient between the proposed Pond Well and Well 2 (CLAC 9316) after the Pond Well is completed and the first annual water level measurement is submitted as required by the permit conditions.

4. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?

☐ Yes ☒ No Comments: The currently authorized POA only develop the CRB aquifer system.

b) If yes, estimate the portion of the right supplied by each of the sources and describe any limitations that will need to be placed on the proposed change (rate, duty, etc.): N/A

5. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another ground water right**?

☒ Yes ☐ No Comments: The currently authorized POA are located ~1,800 ft (Well 1) and ~2,660 ft (Well 2) from neighboring domestic basalt well CLAC 18564. The proposed To-POA would be only ~600 ft from CLAC 18564. The reduced intervening distance between CLAC 18564 and the To-POA would likely increase interference with CLAC 18564.

b) If yes, would this proposed change, at its maximum allowed rate of use, likely result in another groundwater right not receiving the water to which it is legally entitled?

☐ Yes ☒ No If yes, explain: The potential interference between the proposed To-POA and CLAC 18564 was evaluated at the maximum combined rate of 0.473 cfs using the Theis (1935) solution for drawdown in a confined aquifer (see attached Well Interference Analysis). Based on the results of the analysis, the proposed change is unlikely to result in injury to CLAC 18564 or similarly located basalt wells.

6. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another surface water source**?

☐ Yes ☒ No Comments: The current interference with surface water sources is anticipated to be very minimal, since the authorized POA do not have an effective hydraulic connection to nearby surface water due to their deeper seals and the presence of dense basalt flow interiors between the top of their developed water-bearing zones and the Willamette riverbed. If the proposed To-POA is sealed into solid, unfractured basalt per the well construction rules (OAR 690-210-0150), interference with nearby surface water is not anticipated to increase due to the proposed change.

b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any **surface water sources** resulting from the proposed change?

Stream: _____ ☐ Minimal ☐ Significant

Provide context for minimal/significant impact: N/A

7. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?

☐ Yes ☐ No Comments: N/A

8. What conditions or other changes in the application are necessary to address any potential issues identified above: None

9. Any additional comments: None

References

Application File: T-14377, T-14560, and Permit G-18861

Water well reports and pump tests: CLAC 187, CLAC 278, CLAC 279, CLAC 285, CLAC 278, CLAC 9296, CLAC 9316, CLAC 9317, CLAC 52192

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington, Professional Paper 1424-A, 32 p: U. S. Geological Survey, Reston, VA.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

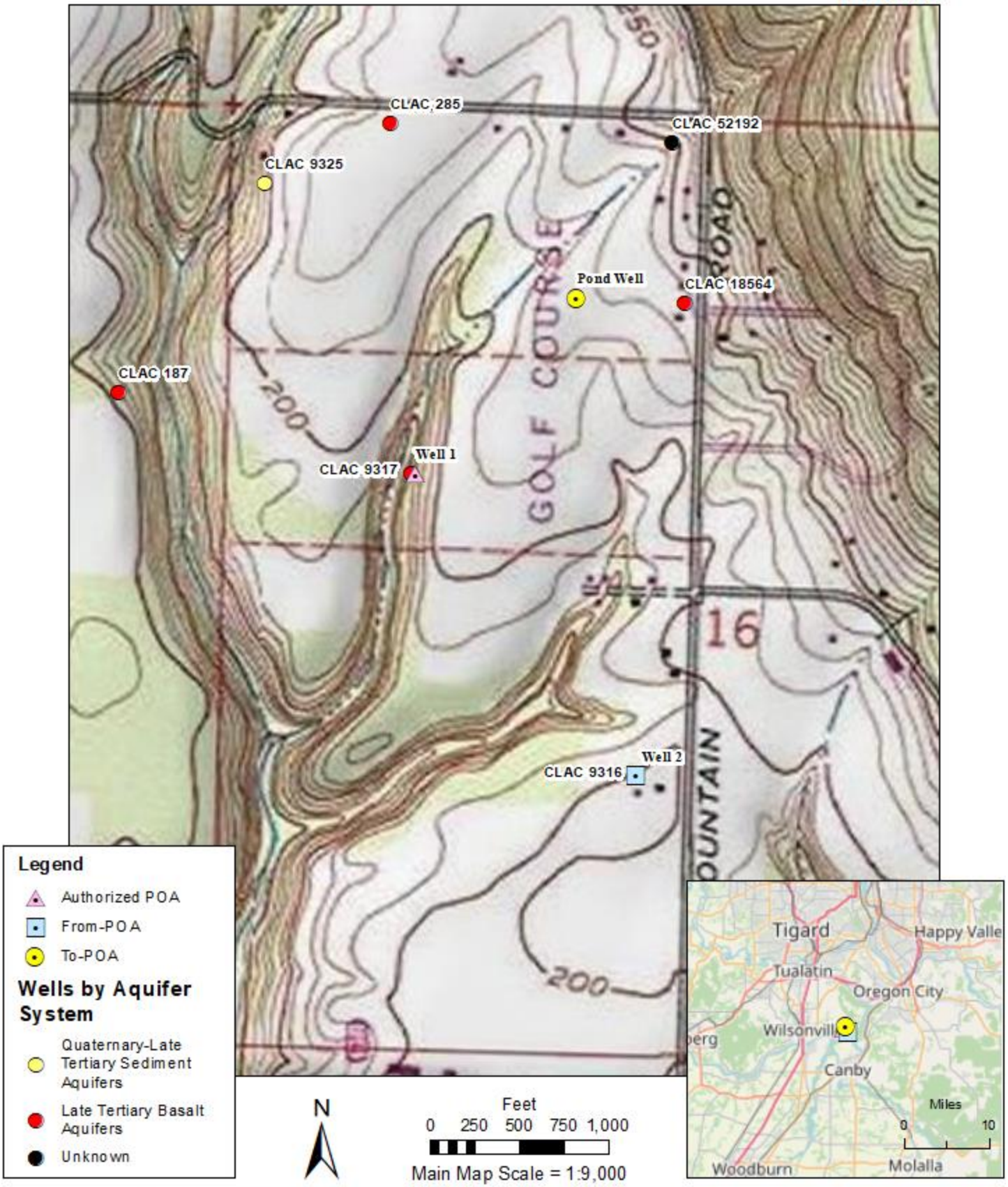
Oregon Lidar Consortium (OLC), 2016, OLC metro 2014 lidar project, Oregon Department of Geology & Mineral Industries, Portland, OR, November 30.

Swanson, R. D., McFarland, W. D., Gonthier, J. B., and Wilkinson, J. M., 1993, A description of hydrogeologic units in the Portland Basin, Oregon and Washington, Water-Resources Investigations Report 90-4196, 56 p.: U. S. Geological Survey, Reston, VA.

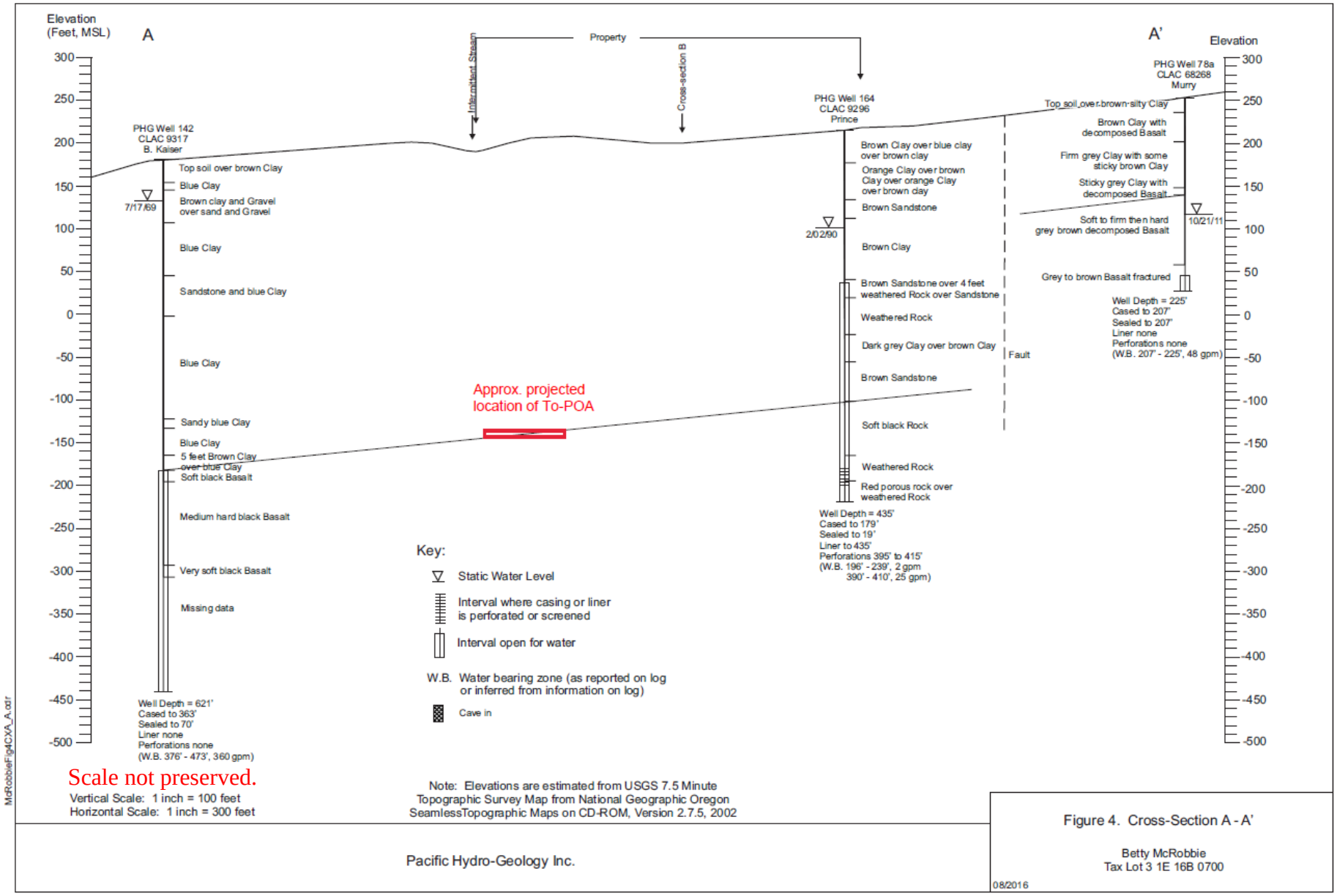
United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

Well Location Map

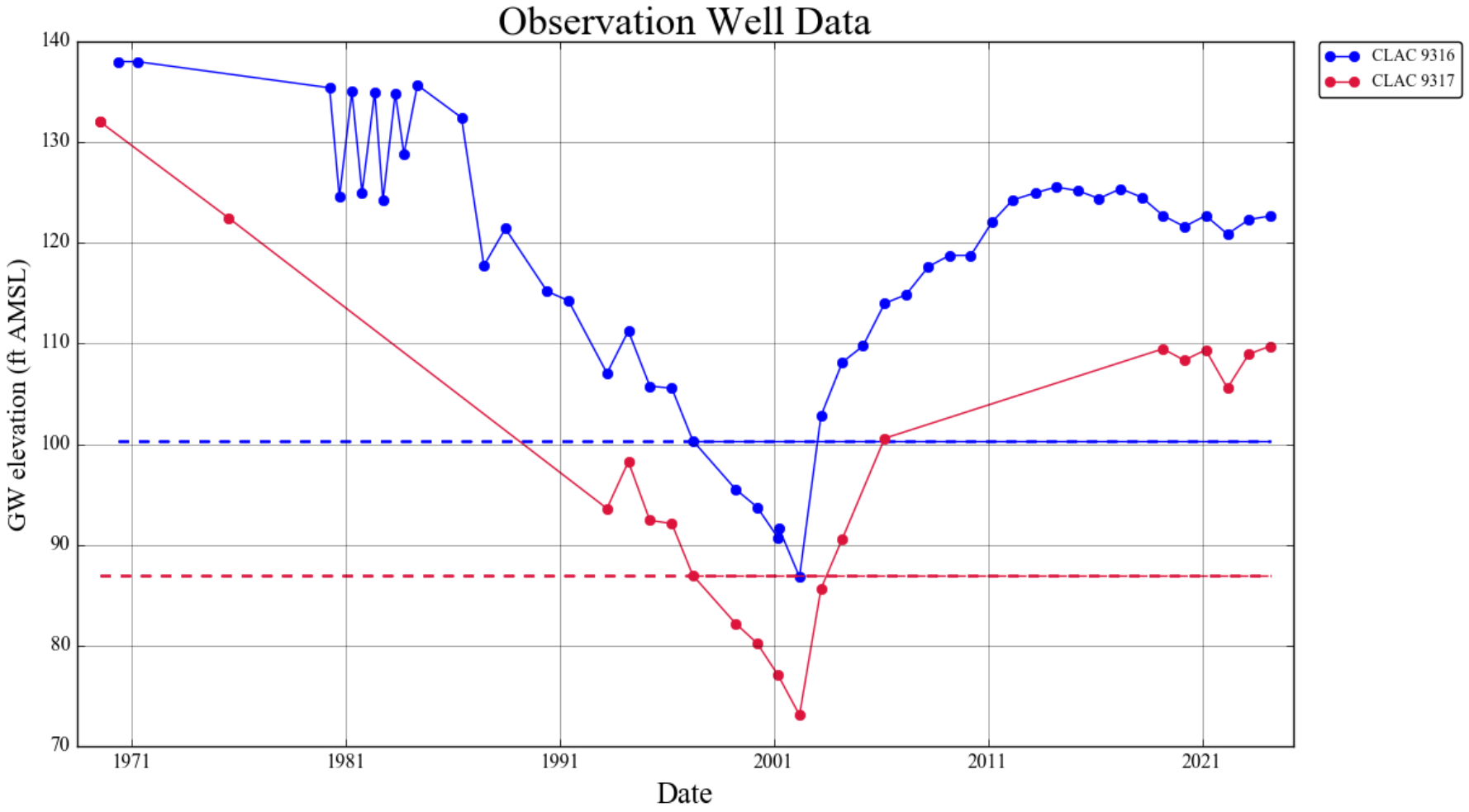
T-14560



Annotated Agent Cross Section- Annotations in red were made by the reviewing hydrogeologist, not the applicant's agent.

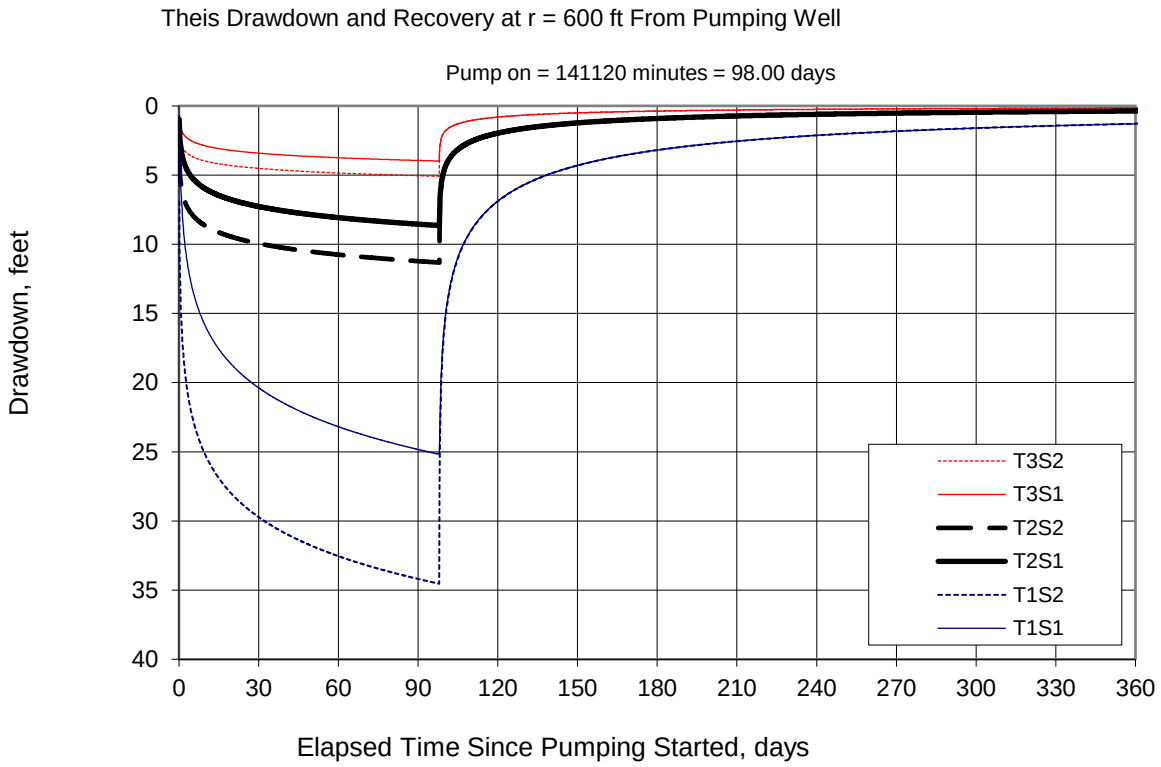


Hydrograph



Permit condition reference levels indicated by dashed lines.

Well Interference Analysis – Proposed Pond Well (To-POA) to CLAC 18564
Theis (1935) solution for drawdown in a confined aquifer



Radial distance, r = 600 ft [approximate distance from To-POA to CLAC 18564]

Pumping time, t_{pump} = 98 days [approx. time to exhaust duty under Permit G-18861 at 0.4 cfs]

Pumping rate, Q = 0.473 cfs [maximum combined rate under T-14377 and T-14560]

Transmissivity, T1 = 800 ft^2/d | T2 = 2,800 ft^2/d | T3 = 6,800 ft^2/d [Pumping Test Reports]

Storativity, S1 = 0.001 | S2 = 0.0001 [Conlon et al., 2005]