

Groundwater Application Review Summary Form

Application # G- 18393

GW Reviewer Phil Marcy Date Review Completed: 4/10/2017

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.

See A6; B2,3

Summary of Potential for Substantial Interference Review:

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

Summary of Well Construction Assessment:

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

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

[illegible]

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 09/19/2017

FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name

SUBJECT: Application G- 18393 Supersedes review of 04/10/2017
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: Lisa Atherton County: Clackamas

A1. Applicant(s) seek(s) 0.025 cfs from 1 well(s) in the Willamette Basin,
subbasin

A2. Proposed use Nursery (4.5 acres) Seasonality: Year-round (365 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	CLAC 880	1	Alluvium	0.025	2S/4E-2 SW-NW	2039'S, 574'E fr NW cor S 2
2						
3						
4						
5						

* 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	781	78	210	04/25/1980	300	0-19	0-300	NA	260-300	15	NA	Air

Use data from application for proposed wells.

A4. **Comments:** The proposed POA well is located within the Sandy-Boring Groundwater Limited Area, and produces from sand lenses within the Troutdale Formation.

A5. ☒ **Provisions of the** Willamette (690-502-0260) 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: If a permit is issued, special conditions shall be applied as set forth in OAR 690-502-0260.

A6. ☒ **Well(s) #** 1, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction. Name of administrative area: Sandy-Boring Groundwater Limited Area

Comments: The applicant's well (CLAC 880) lies within the portion of the Sandy-Boring Groundwater Limited Area where new appropriations are limited to exempt uses in only the upper (shallow) portion of the Troutdale Aquifer. CLAC 880, though completed into the lower (deep) portions of the Troutdale Aquifer, is only sealed to 19 feet below land surface. Since there is not sufficient evidence to conclude that the POA well produces groundwater exclusively from the lower Troutdale system, the applicant will need to either deepen the seal on the existing well, or construct a new POA well that specifically

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) 7H; 7N;
 - 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 Deep Troutdale Aquifer groundwater reservoir between approximately 200 ft. and 300 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): Without sufficient seal in place behind the cased section of the proposed POA well, groundwater at considerably higher head elevation in the shallow Troutdale Aquifer is likely to enter the well. Production of groundwater from the shallow Troutdale is limited to exempt uses in this portion of the Sandy-Boring Groundwater Limited Area (OAR 690-502-0170).

- B3. **Groundwater availability remarks:** Based upon water level data and stratigraphic information from nearby wells within the Sandy-Boring GWLA, the proposed POA well (CLAC 880) produces either partially or completely from the Upper Troutdale Aquifer. Nearby well CLAC 5365 (see attached hydrograph), under permit G-13402 has very similar water levels to the proposed POA well, and was recognized at the time as a possible commingling well between upper and lower Troutdale Aquifer systems (Miller, 1997). Continued measurements within this well display declines, though over the past ten years these declines total less than ten feet. The proposed rate of use is very small (0.025 cfs) and is unlikely to significantly impact nearby users.

If a permit is issued, it shall be conditioned to prevent excessive depletion and interference with other users. These conditions shall include, but are not limited to, requirement of a static water level measurement before any use of groundwater under permit begins, and additional measurements between the dates of March 1st and March 31st each following year. Use of water may be controlled or shut off if specified limits of depletion or interference under the permit are exceeded.

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	Sand lenses within the Troutdale Formation/Sandy River Mudstone	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Based on the descriptions provided in local well logs, the productive water-bearing zone appears to tap lenses of vitric sandstone, correlated to lower portions of the Troutdale Formation (Swanson, et al., 1993), with some fraction of water likely coming from gravels in the upper portion of the hole. These sand lenses conceptually interfinger with finer-grained Sandy River Mudstone deposits, lithologies also reported on the log for CLAC 880 in significant thicknesses above the water-bearing sands. Reported static water level within the POA well are significantly higher than the top of the productive water-bearing zone.

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	Deep Creek	571	522	17000	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: No perennial streams are present within one mile of the proposed POA location. The nearest perennial reach of Deep Creek is greater than 3 miles to the west, and may possibly incise the Troutdale to the depth of the water-bearing sands within the POA well near that location. However, any hydraulic connection between this and groundwater within the well is very likely diffuse and inefficient.

Water Availability Basin the well(s) are located within: North Fork Deep Creek > Deep Creek – At Mouth (ID# 137)

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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

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		%	%	%	%	%	%	%	%	%	%	%	%

(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: Impacts of pumping at the proposed POA well location at the perennial reach of Deep Creek were not able to be calculated, due to the lack of adequate data to support assumptions required in an analytical model.

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: _____

Based upon the seal depth of the proposed POA well (19 feet BLS), there is concern over likely production of groundwater from the shallow portions of the Troutdale Formation. For a permit to be issued, it is required that the current well be sealed to a depth of at least 200' below land surface, or alternatively that a new POA well be constructed to produce from the deeper portions of the Troutdale Aquifer system, including continuous casing and seal depth of at least 200 feet below land surface.

References Used: Application file G-18393, Application review G-14572, local well logs, USGS topo sheets.

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: U.S. Geological Survey Water-Resources Investigations Report 90-4196, 56 p., 10 sheets, scale 1:100,000.

Leonard, A.R. and Collins, C.A., 1983, Ground Water in the Northern Part of Clackamas County Oregon, Oregon Water Resources Department – USGS Open File Report 80-1049, 85 p

Woodward, Dennis J., Gannett, Marshall W., and Vaccaro, John J., 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-B, 82p, 1 plate.

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.**Water Availability Tables****DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION**

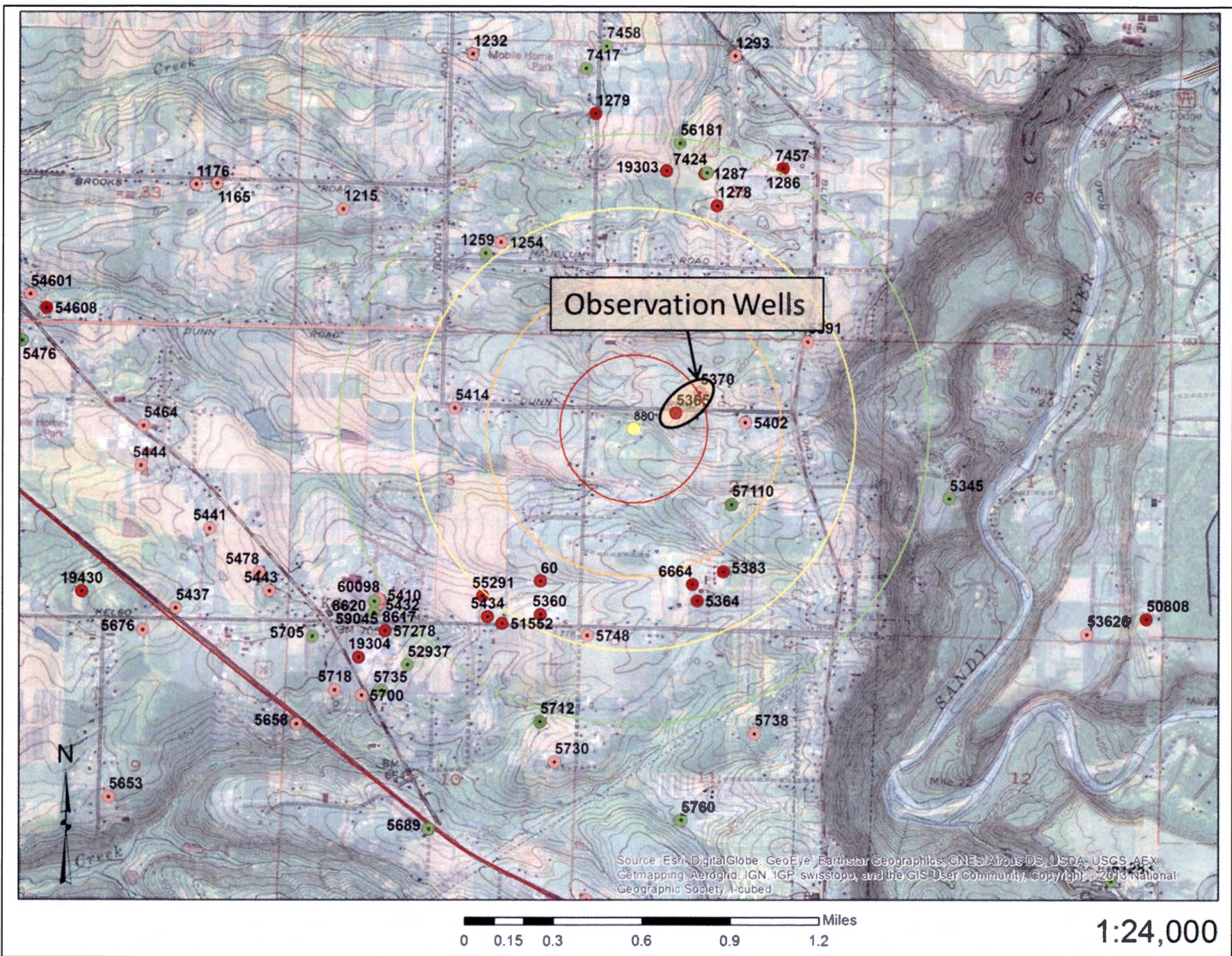
Watershed ID #: 137 N FK DEEP CR > DEEP CR - AT MOUTH
 Time: 11:35 AM Basin: WILLAMETTE Exceedance Level: 80
 Date: 04/07/2017

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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Monthly values are in cfs.
 Storage is the annual amount at 50% exceedance in ac-ft.

JAN	27.60	0.94	26.70	0.00	20.00	6.66
FEB	28.60	0.82	27.80	0.00	20.00	7.78
MAR	28.00	0.36	27.60	0.00	20.00	7.64
APR	25.20	0.39	24.80	0.00	20.00	4.81
MAY	18.60	0.79	17.80	0.00	20.00	-2.19
JUN	8.89	1.09	7.80	0.00	3.00	4.80
JUL	3.67	1.77	1.90	0.00	3.00	-1.10
AUG	1.32	1.47	-0.15	0.00	1.00	-1.15
SEP	0.88	0.70	0.18	0.00	1.00	-0.82
OCT	1.12	0.35	0.77	0.00	1.00	-0.23
NOV	4.39	0.46	3.93	0.00	20.00	-16.10
DEC	21.80	1.01	20.80	0.00	20.00	0.79
ANN	22,100	615	21,500	0	8,970	12,600

Well Location Map



Water-Level Trends in Nearby Wells

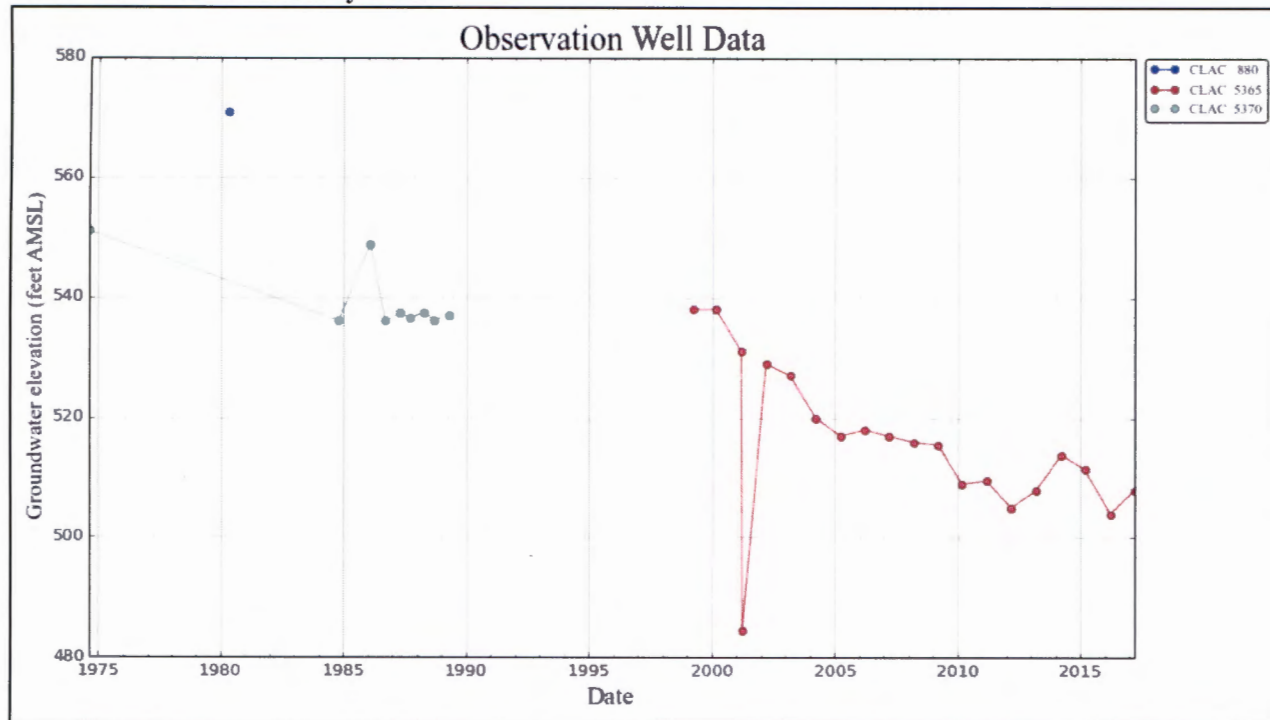


Figure 1: Two nearby wells producing from sand lenses within the Troutdale Formation are compared to the static measurement reported in 1980 in the POA well. Based on similar lithologic descriptions provided on well log reports, and commensurate water levels of the POA well (CLAC 880) and nearby CLAC 5365 and CLAC 5370, these three wells appear to produce from the same aquifer system.

