Groundwater Application Review Summary Form

Application # LL- _1973_

GW Reviewer _Stacey Garrison_ Date Review Completed: _6/7/2024_

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 **_June 7 2024_**

TO: **Application** LL-**_1973_**

FROM: **GW: _Stacey Garrison_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO** The source of appropriation is hydraulically connected to a State Scenic 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 6/7/2024
FROM: Groundwater Section Stacey Garrison
Reviewer's Name
SUBJECT: Application LL- **1973** 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: **City of Independence** County: **Polk**

A1. Applicant(s) seek(s) 2.5 cfs from 2 well(s) in the Willamette Basin, Mainstem Willamette River subbasin

A2. Proposed use municipal 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 #	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	POLK 52307	3	Alluvial	1.2	8S/4W-21 NWSE	2000' N, 2080' W fr SE cor S 21
2	POLK 54296	4	Alluvial	1.3	8S/4W-21 SENE	1500' S, 480' W fr NE cor S 21

* 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	52	0 to 20	+2.67 to 52		22 to 42	810	9.83	Pump
2	64	0 to 25	+3 to 63.5		32 to 52	600	11	Pump

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	155[c]				13.6[b]	3/13/2018
2	152[c]				10.6[b]	3/13/2018

Use data from application for proposed wells.

A4. **Comments:** The POAs are ~ 1 mile north of Independence, Oregon. **This application is a replacement for LL-1779 FO issued July 14, 2019. If a FO is issued for the subject application, it should include the same period of license issuance of 5 years, or upon approval of permit extension and subsequent permit amendment authorizing appropriation from Well 3/POA 1 (POLK 52307) and Well 4/POA 2 (POLK 54296) under Permit G-12134. In addition, if a FO is issued for the subject application prior to the expiration of LL-1779 FO on July 15, 2024, then LL-1779 FO should be cancelled with the issuance of the new FO.**

[a] There is a discrepancy between the mapped location of the POAs as indicated on the applicant's map and the metes-and-bounds description using the Department's PLSS projection. The mapped location is coincident with the Department's existing location for POA 1 (POLK 52307), the metes-and-bounds location is 110 ft southwest; the mapped location is used. The metes-and-bounds location for POA 2 (POLK 54296) is 63 ft east of the mapped location; the mapped location is used.
[b] Reference level extrapolated from nearby well POLK 53003.
[c] Well head elevation estimated based on LIDAR measurements at proposed well location (Watershed Sciences, 2009).

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: The proposed aquifer is unconfined and the POAs are within ¼ mile of a surface water source. Per OAR 690-502-0240, the relevant basin rules apply.

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**;
   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 **alluvial** 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 proposed POAs are located on Holocene floodplain deposits of the Willamette River, characterized by discontinuous sand and loose gravel (O'Connor et al., 2001; Piper, 1942). These deposits are part of the Upper Sedimentary Unit with high porosity and well yields (Conlon et al., 2005). This hydrogeologic unit is the top of the Willamette Aquifer in this area and up to 50 ft thick (O'Connor et al., 2001). Underlying and interfingering with the Holocene flood deposits are Quaternary surficial deposits known as the Willamette Silt; the Willamette Silt is primarily associated with rhythmically layered clay, silt, sand and gravel from the Missoula Floods (Price, 1967; Gannett and Caldwell, 1998; O'Connor et al., 2001; Wells et al., 2020). The Willamette Silt is reported in drillers logs as sand or silty clay, in tones of blue and yellow (Hampton, 1972; Swanson et al., 1993; Gannett and Caldwell, 1998; Conlon et al., 2005). The Willamette silt is approximately 60 ft thick in this area (Gannet and Caldwell, 1998). Given that the Willamette River has re-worked some portions of the Holocene floodplain deposits since the deposition of the Willamette Silt, any confining layers are likely to be discontinuous due to lateral and vertical accretion action by the river (O'Connor et al., 2001). The Holocene floodplain deposits have a strong hydraulic connection to the Willamette River (Conlon et al., 2005; Gannet and Caldwell, 1998).
A review of statistics for nearby well records was completed and compared with the proposed rates of 1.2 cfs (538.6 gpm) and 1.3 cfs (583.5 gpm) for this application (see Well Statistics). The proposed rates of use of 1.2 cfs (538.6 gpm) for POA 1 (**POLK 52307**) and 1.3 cfs (583.5 gpm) for POA 2 (**POLK 54296**) are likely within the capacity of the groundwater resource; median reported well yield is 50 gpm, and the maximum reported yield is 1,500 gpm. The proposed rates on POA 1 (**POLK 52307**) and POA 2 (**POLK 54296**) for this application are 1,077% and 1,167% of the median and 36% and 39% of the maximum reported yield, respectively. Not all of these wells are likely completed in the Holocene floodplain deposits, but the loose, gravel-dominated Holocene floodplain deposits such as those utilized by the POAs are anticipated to have the

higher reported yields for the Willamette aquifer (Woodward et al., 1998). POA 1 (**POLK 52307**) and POA 2 (**POLK 54296**) report yields of 810 gpm and 600 gpm, respectively.

Water level trends for nearby (within 2 miles of POAs) wells that utilize alluvial aquifers appear to be stable (see Water Levels Measurements in Nearby Wells). All the selected wells are located on Holocene floodplain deposits, with nearly all water levels within 10 feet of the elevation of the Willamette River levels (Gannett and Caldwell, 1998; Woodward et al., 1998). Wells completed in the Holocene floodplain deposits are closely tied to the stream stage of the Willamette River (Conlon et al., 2005). As a result, groundwater levels in the Holocene floodplains deposits are anticipated to be stable in the long-term, but seasonal fluctuations may be pronounced, particularly in late summer (see Gage Height for USGS 14191000). It appears that the proposed use is within the capacity of the resource.

The nearest groundwater user to POA 1 (**POLK 52307**) is **POLK 219**, an exempt use well, located 279 ft southwest of the POA at an elevation of ~154 ft msl. **POLK 219** is completed to a depth of 48 ft bls (106 ft amsl). It is likely the proposed use would cause some degree of well-to-well interference with **POLK 219.** To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with **POLK 219** that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

The nearest groundwater user to POA 2 (**POLK 54296**) is **POLK 2944**, authorized under **Claim GR-422**, located 1,405 ft southwest of the POA at an elevation of ~150 ft amsl. **POLK 2944** is completed to a depth of 42 ft bls (108 ft amsl). It is likely the proposed use would cause some degree of well-to-well interference with **POLK 2944**. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with **POLK 2944** that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use will likely be available in the amounts requested and within capacity of the resource. The conditions specified in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

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	**Alluvial**	☐	☒
2	**Alluvial**	☐	☒

Basis for aquifer confinement evaluation: The wells are located within the unconfined alluvial flood deposits of the Willamette River (Conlon et al., 2005).

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Willamette River**	**136 to 141**	**135 to 150**	**330**	☒	☐	☐	☒	☐
2	**1**	**Willamette River**	**136 to 141**	**135 to 150**	**260**	☒	☐	☐	☒	☐

Basis for aquifer hydraulic connection evaluation: The groundwater elevations in the POAs are coincident with the elevation of the Willamette River and the aquifer is unconfined alluvium. The Holocene floodplain gravel deposits have a strong hydraulic connection to the Willamette River (Conlon et al., 2005; Gannet and Caldwell, 1998). **The POAs produce water from an unconfined aquifer and are within ¼ mile of the surface water source, so hydraulic connection is assumed per OAR 690-009-0040(2) and the Potential for Substantial Interference (PSI) is assumed per OAR 690-009-0040(4)(a).**

Water Availability Basin the well(s) are located within: WILLAMETTE R>COLUMBIA R-AB MILL CR AT GAGE 1419000

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**	☒	☐	**MF183A**	**1,300**	☐	**3,620**	☐	**>>25%**	☒
2	**1**	☒	☐	**MF183A**	**1,300**	☐	**3,620**	☐	**>>25%**	☒

Comments: **Potential for Substantial Interference with SW 1 (Willamette River) is assumed for POA 1 (POLK 52307) and POA 2 (POLK 54296) per OAR 690-009-0040(4)(a) as both POAs are within a quarter mile of SW 1 (Willamette River) and produce water from the unconfined aquifer.** Potential depletion (interference with) SW 1 (Willamette River) by proposed pumping at proposed POAs 1 (**POLK 52307**) and 2 (**POLK 52496**) was estimated using Hunt 1999 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; Conlon et al., 2003, 2005) or are within a typical range of values for the parameter within the hydrogeologic regime (Heath, 1983; Morris and Johnson, 1967). See attached "Stream Depletion Analysis" for the specific parameters used in the analysis. The Hunt 1999 analytical model results indicate that **depletion of (interference with) SW 1 due to pumping at proposed POAs 1 (POLK 52307) and 2 (POLK 52496) is anticipated to be greater than 25 percent of the well discharge at 30 days of continuous pumping, resulting in a finding of PSI with SW 1 (Willamette River) per OAR 690-009-0040(4)(d).**

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: Q is distributed among wells, but the distributed rates used in Table C3A above are lower than the combined rate and resulted in finding of PSI for both POAs, therefore, this section has not been completed.

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													
(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: N/A-surface water source within 1 mile evaluated above.

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:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** **Both POAs 1 (POLK 52307) and 2 (POLK 52496) exhibit PSI with SW 1 (Willamette River) under two provisions, OAR 690-009-0040(4)(a) and OAR 690-009-0040(4)(d).**

References Used:

Application file: LL-1973, LL-1779

Pumping Test Files: MARI 13308, POLK 2877, POLK 2881, POLK 3039, POLK 3741

Well Reports: POLK 52307, POLK 54296, POLK 219, POLK 2944, POLK 53003, POLK 2945, POLK 51438

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

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

Heath, R.C. 1983. Basic ground-water hydrology. United States Geological Survey Water Supply Paper 2220, 86 p.

Hunt, B. 1999. Unsteady stream depletion from ground water pumping. Groundwater. 37(1): 98-102.

Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D, 42p

O'Connor, J.E., Sarna-Wojcick, A., Woznikak, K.C., Polette, D.J., Fleck, R.J., 2001, Origin, Extent, and Thickness of Quaternary Geologic Units in the Willamette Valley, Oregon; U.S. Geological Survey, Professional Paper 1620, 51 p.

Piper, A.M. 1942. Ground-water resources of the Willamette Valley, Oregon. USGS Water Supply Paper 890.

United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data], 1/9th arc-second, updated 2013.

United States Geological Survey, 2014, Monmouth, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, Virginia.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon, Portland, OR, December 21.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

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

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000
WILLAMETTE BASIN
Water Availability as of 6/6/2024

Watershed ID #: 183 (Map)
Date: 6/6/2024

Exceedance Level: 80%
Time: 9:59 AM

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	18,400.00	2,250.00	16,200.00	0.00	1,300.00	14,900.00
FEB	20,100.00	7,430.00	12,700.00	0.00	1,300.00	11,400.00
MAR	19,600.00	7,220.00	12,400.00	0.00	1,300.00	11,100.00
APR	18,000.00	6,870.00	11,100.00	0.00	1,300.00	9,830.00
MAY	15,500.00	4,180.00	11,300.00	0.00	1,300.00	10,000.00
JUN	8,310.00	1,690.00	6,620.00	0.00	1,300.00	5,320.00
JUL	4,710.00	1,450.00	3,260.00	0.00	1,300.00	1,960.00
AUG	3,620.00	1,330.00	2,290.00	0.00	1,300.00	990.00
SEP	3,680.00	1,150.00	2,530.00	0.00	1,300.00	1,230.00
OCT	4,650.00	748.00	3,900.00	0.00	1,300.00	2,600.00
NOV	9,400.00	856.00	8,540.00	0.00	1,300.00	7,240.00
DEC	16,700.00	918.00	15,800.00	0.00	1,300.00	14,500.00
ANN	13,500,000.00	2,160,000.00	11,300,000.00	0.00	942,000.00	10,400,000.00

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000
WILLAMETTE BASIN
Water Availability as of 6/6/2024

Watershed ID #: 183 (Map)
Date: 6/6/2024

Exceedance Level: 80%
Time: 9:59 AM

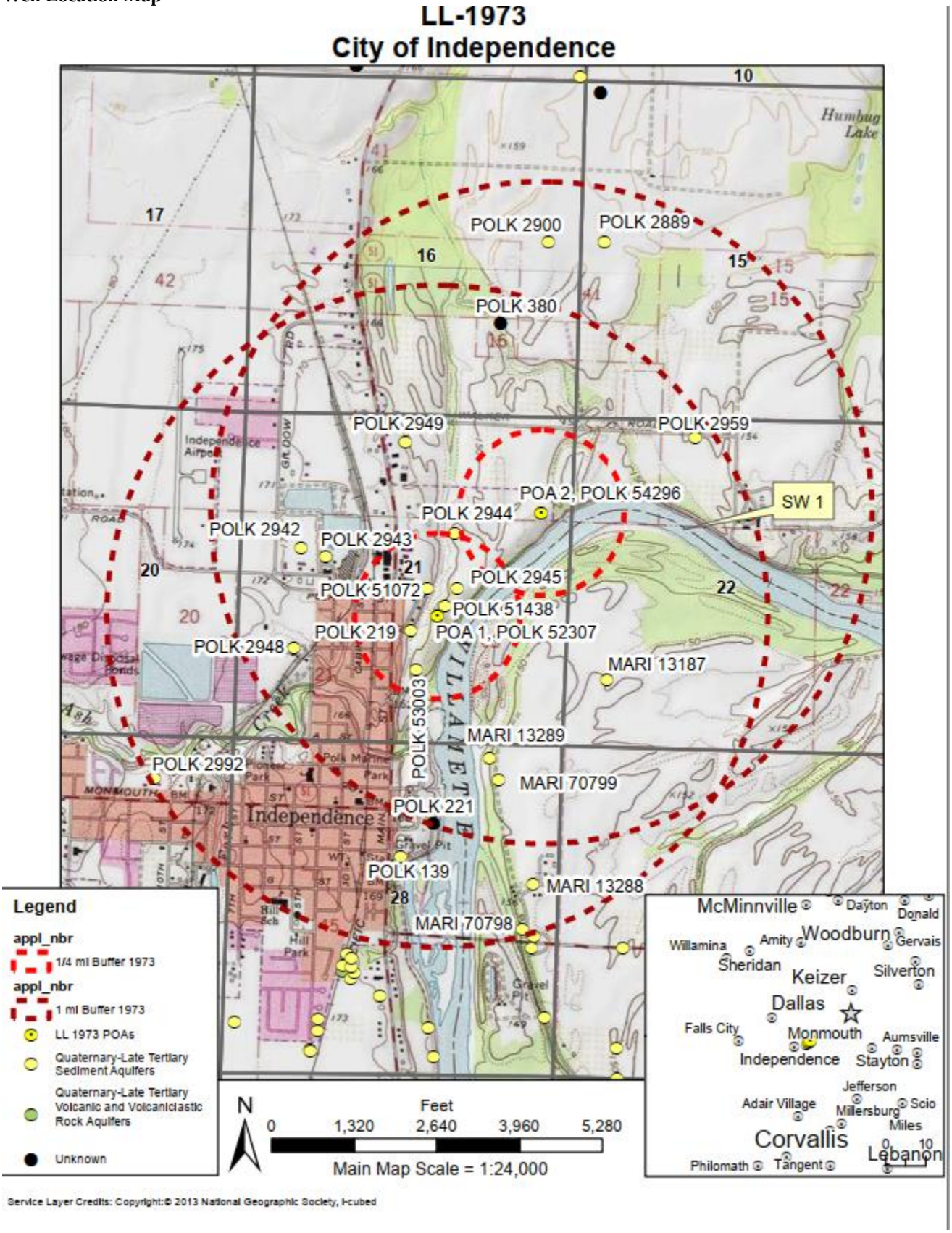
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

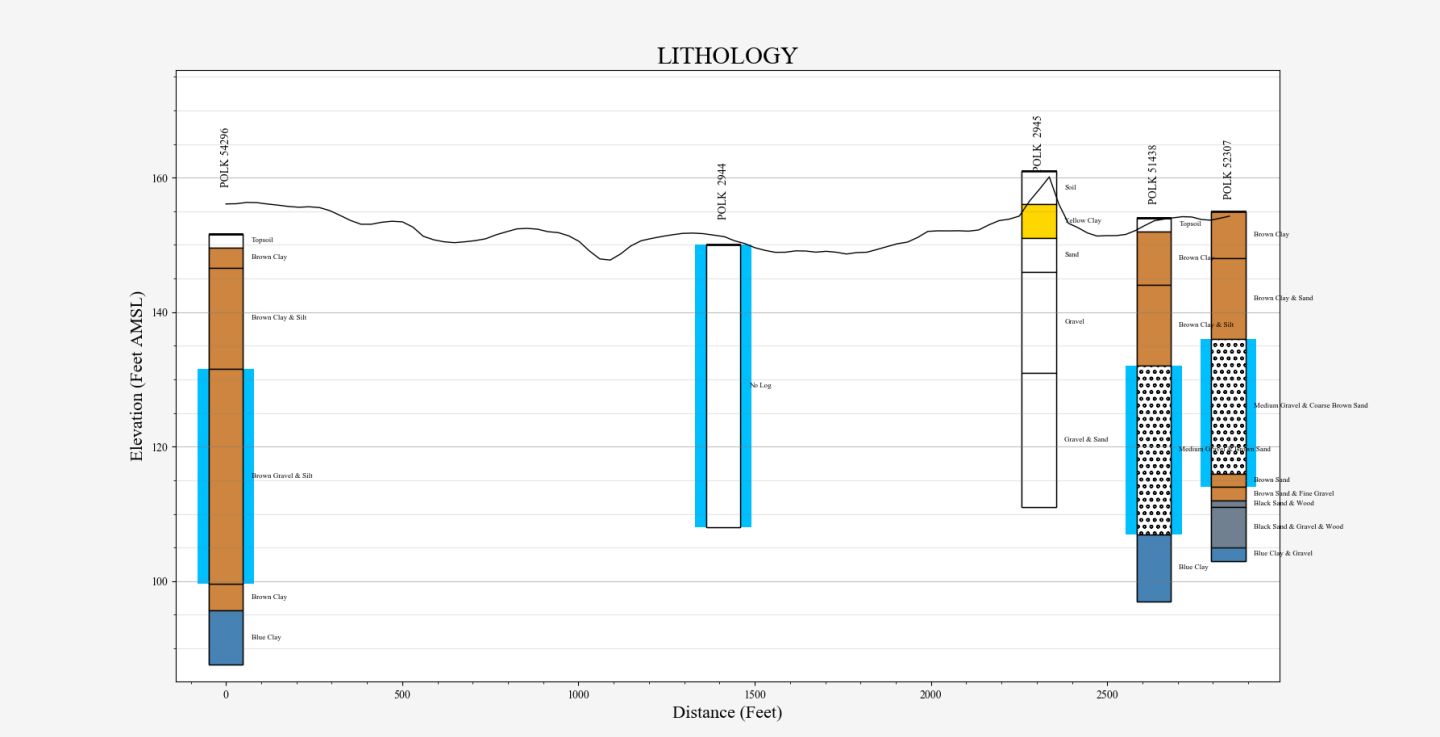
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF183A	APPLICATION	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00
Maximum		1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00	1,300.00

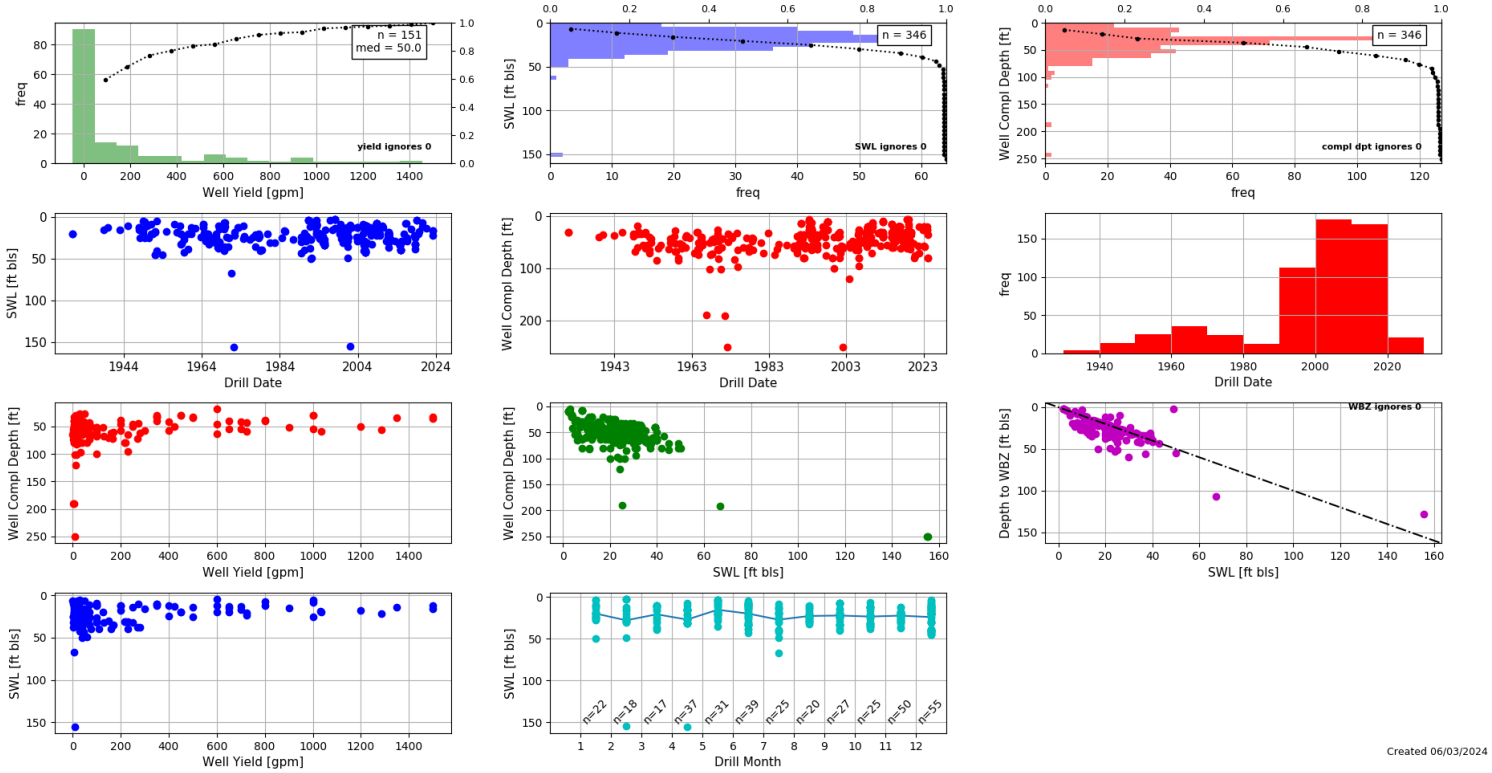
Well Location Map



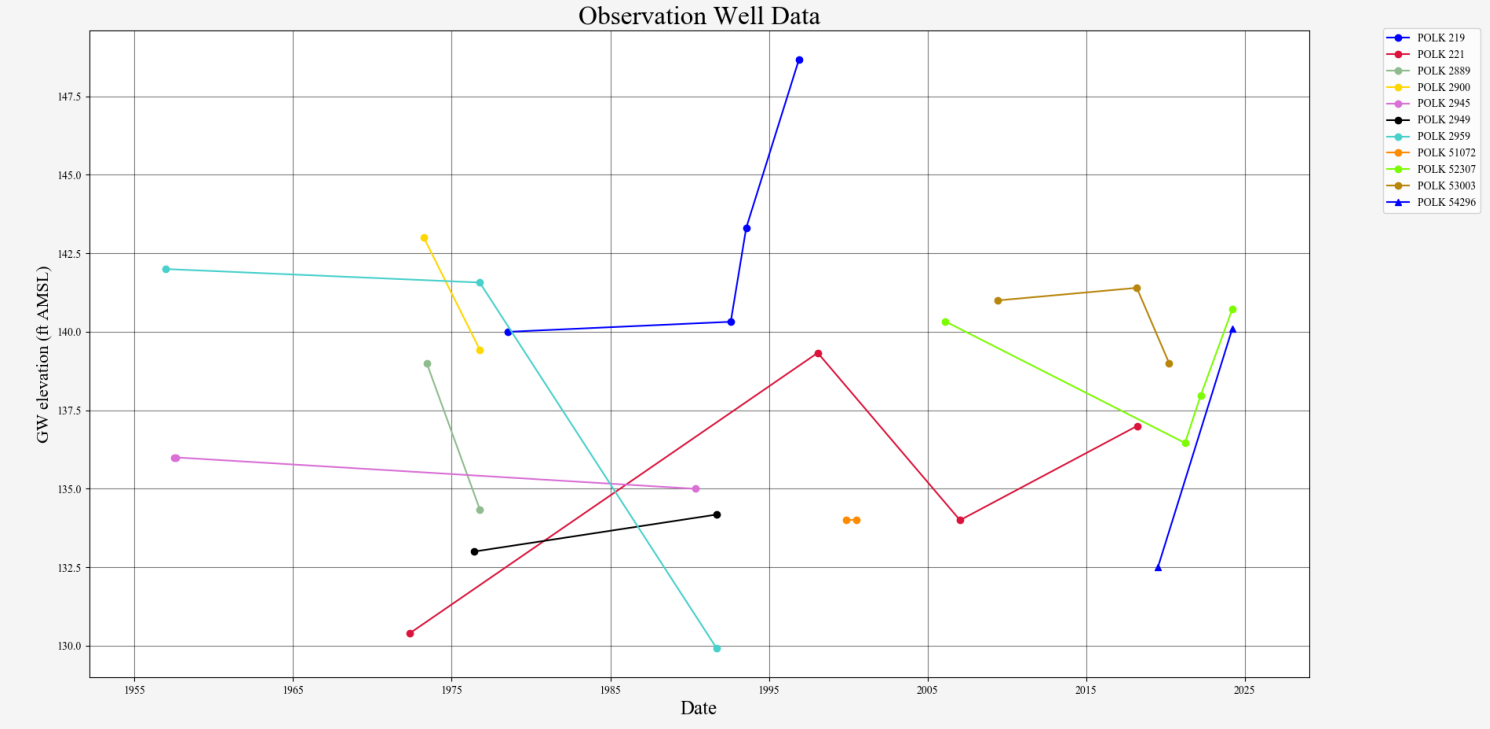
Cross-Section



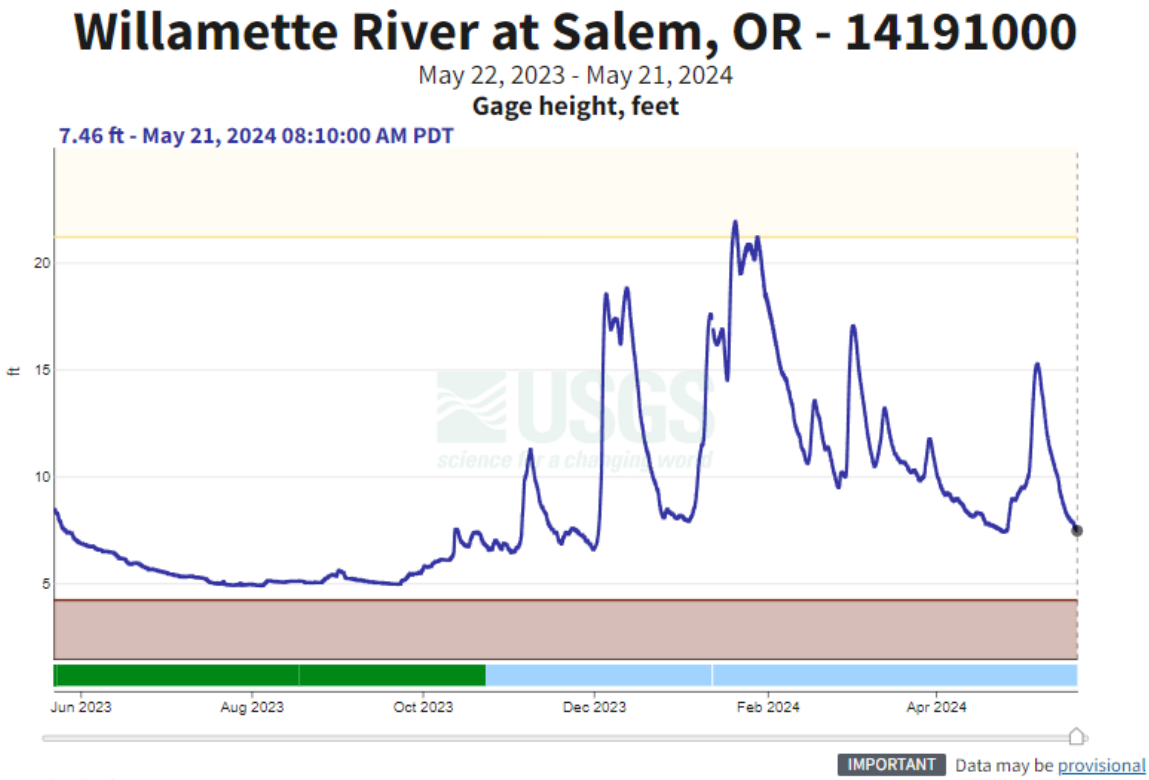
Well Statistics



Water-Level Measurements in Nearby Wells



Gage Height for USGS 14191000



IMPORTANT Data may be provisional

Gage height, feet
Recorded

Data approval period
Approved
Provisional

Flood stages in ft

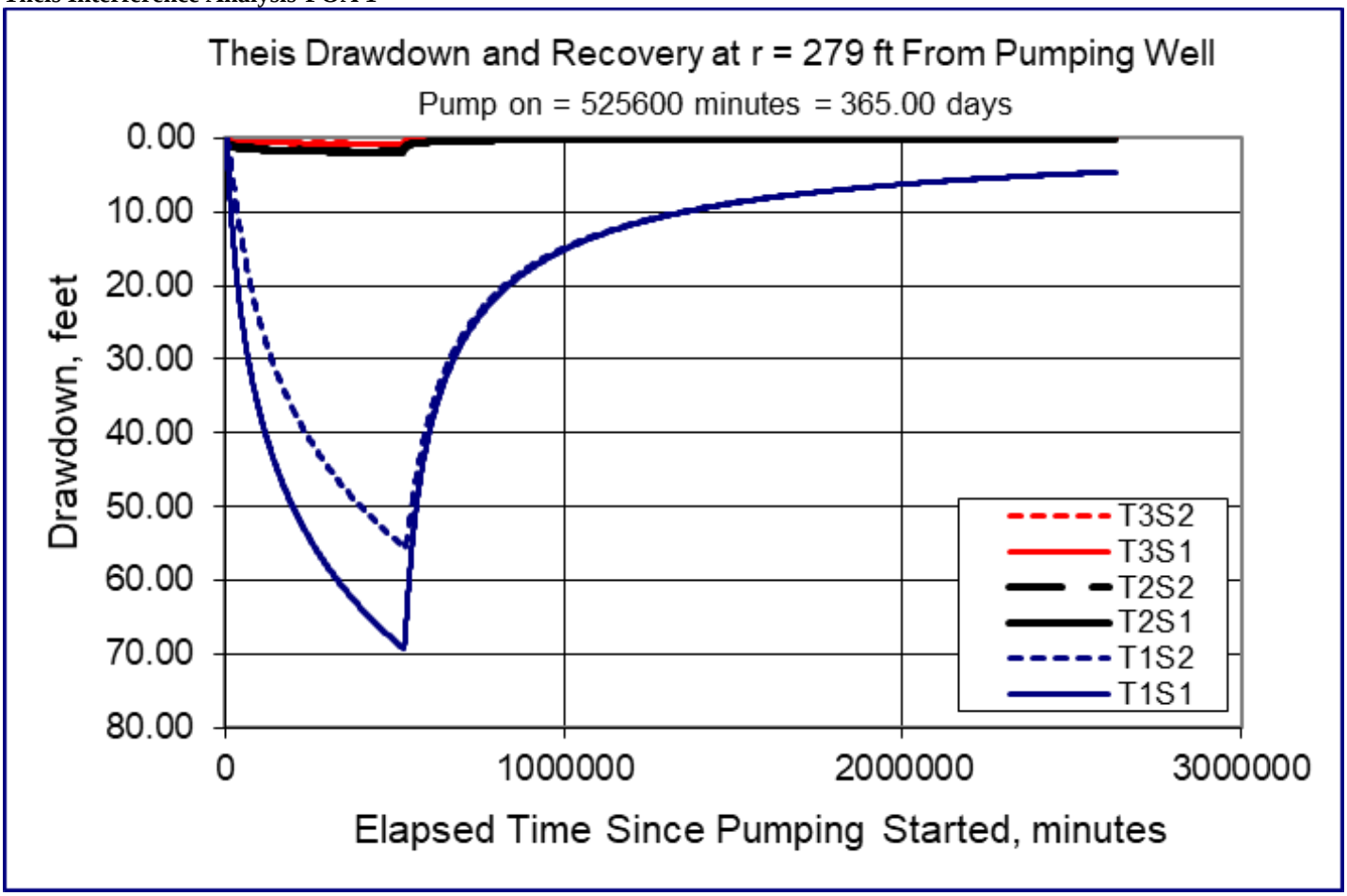
21.2 Action stage	28 Minor flood stage	32 Major flood stage

Learn about flood stages

Operational limits in ft

4.22 Operational limit (minimum) Orifice elevation	49.7 Operational limit (maximum) Instrument shelf elevation

Theis Interference Analysis-POA 1



Radial distance from pumping well (r)=279 ft [estimated radial distance to nearest user, POLK 219]

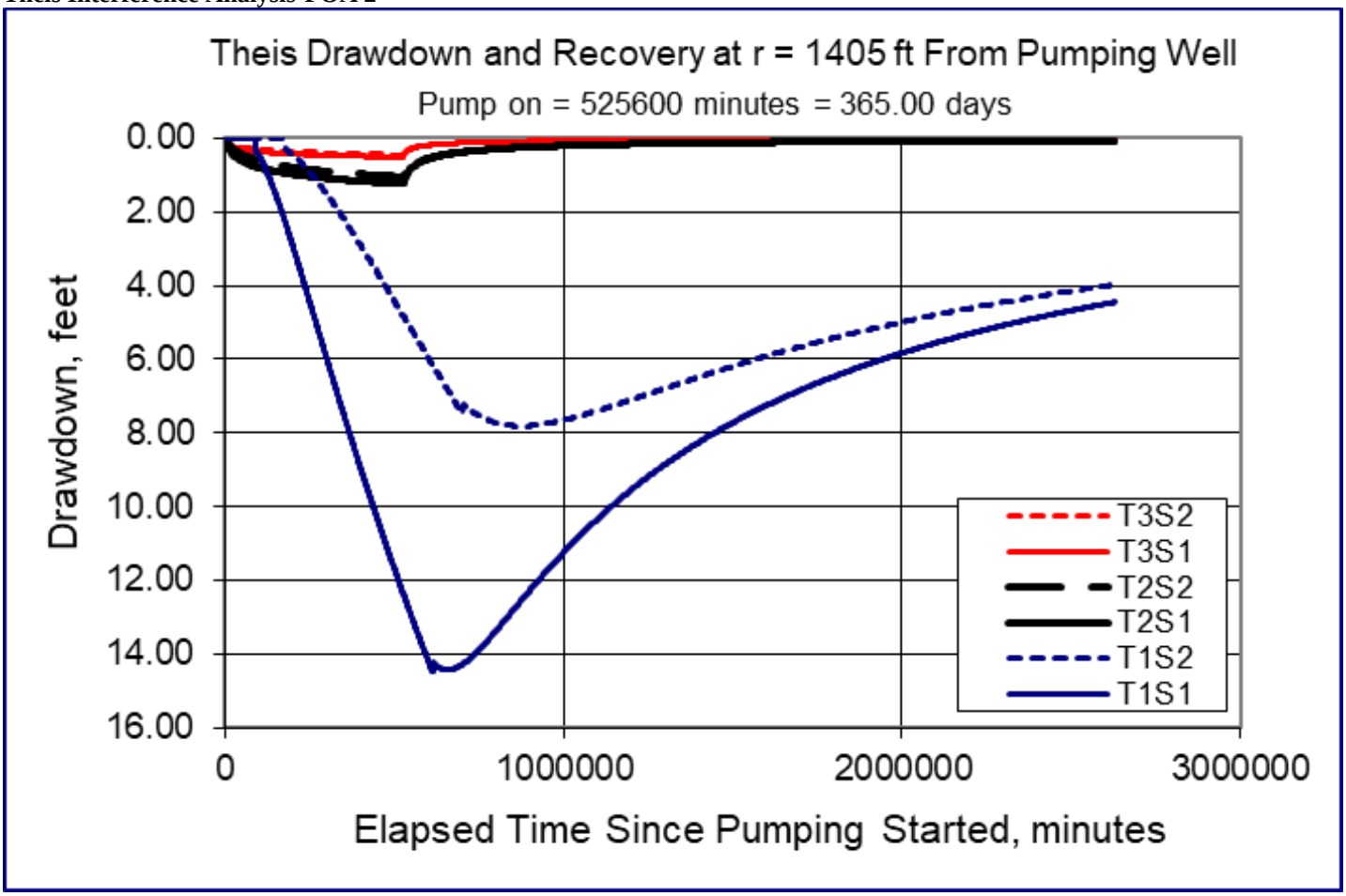
Pumping Rate (Q)= 1.2 cfs (538.6 gpm)

Aquifer Transmissivity (T1)= 2,992 gpd/ft (400 ft^2/day), (T2)= 243,549 gpd/ft (32,560 ft^2/day), (T3)= 725,560 gpd/ft (97,000 ft^2/day)

Storativity (s1) = 0.15, (s2) = 0.30 [Heath 1983 and Morris & Johnson 1967, values for specific yield in gravel and sand]

Total pumping time = 365 days

Theis Interference Analysis-POA 2



Radial distance from pumping well (r)=1,405 ft [estimated radial distance to nearest user, POLK 2944]
Pumping Rate (Q)= 1.3 cfs (583.5 gpm)
Aquifer Transmissivity (T1)= 2,992 gpd/ft (400 ft^2/day), (T2)= 243,549 gpd/ft (32,560 ft^2/day), (T3)= 725,560 gpd/ft (97,000 ft^2/day)
Storativity (s1) = 0.15, (s2) = 0.30 [Heath 1983 and Morris & Johnson 1967, values for specific yield in gravel and sand]
Total pumping time = 365 days

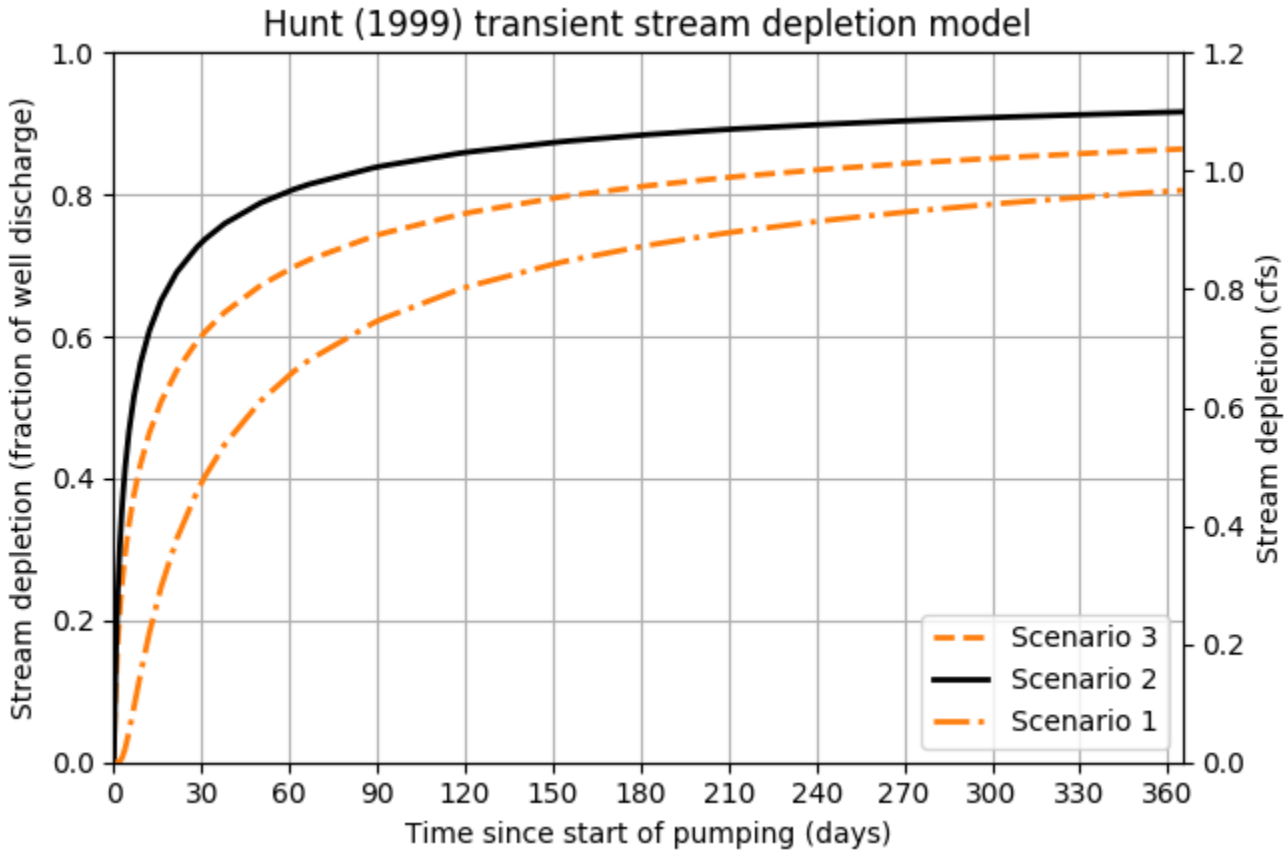
Stream Depletion (Hunt) Model Analysis-POA 1

Application type:	LL
Application number:	1973
Well number:	1
Stream Number:	1
Pumping rate (cfs):	1.2
Pumping duration (days):	365.0
Pumping start month number (3=March)	1.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	330	330	330	ft
Aquifer transmissivity	T	400.0	32560.0	97000.0	ft2/day
Aquifer storativity	S	0.15	0.2	0.3	-
Aquitard vertical hydraulic conductivity	Kva	0.5	0.5	0.5	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	500.0	500.0	500.0	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	18	74	81	84	86	87	88	89	90	90	91	91	92
Depletion (cfs)	0.22	0.89	0.97	1.01	1.03	1.05	1.06	1.07	1.08	1.09	1.09	1.10	1.10



Stream Depletion (Hunt) Model Analysis-POA 2

Application type:	LL
Application number:	1973
Well number:	2
Stream Number:	1
Pumping rate (cfs):	1.3
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	260	260	260	ft
Aquifer transmissivity	T	400	32560	97000	ft2/day
Aquifer storativity	S	0.15	0.2	0.3	-
Aquitard vertical hydraulic conductivity	Kva	0.5	0.5	0.5	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	3	3	3	ft
Not used		0.2	0.2	0.2	
Stream width	ws	500	500	500	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	22	75	82	85	87	88	89	90	91	91	91	92	92
Depletion (cfs)	0.29	0.98	1.07	1.11	1.13	1.15	1.16	1.17	1.18	1.18	1.19	1.19	1.20