

Groundwater Application Review Summary Form

Application # G- 18599

GW Reviewer Ben Scardella, Dennis Orlovski Date Review Completed: 8/20/2018

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:

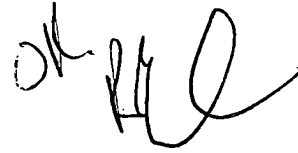
There is the potential for substantial interference per Section C of the attached review form.

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.
SI & CC 1/2

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).

MEMO

A handwritten signature in black ink, appearing to be 'OK' followed by a stylized name or initials.

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18599
Date: August 22, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Ben Scandella and Dennis Orłowski reviewed the application. Please see Ben's and Dennis's groundwater review and the Well Log.

Applicant's Well #1(POLK 3884): Based on a review of the Well Report Applicant's Well #1 appears to protect the groundwater resource.

The construction of Applicant's Well #1 may not satisfy hydraulic connection issues.

RECEIVED

MAR 6 1985

Polk
3881

State Well No. 95/FW-15ub

WATER WELL REPORT

STATE OF OREGON

WATER RESOURCES DEPT
SALEM, OREGON

State Permit No.

(1) OWNER:

Name Paul Murphy
Address 9295 Hiltman Rd.
City Independence State OR

(2) TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air Driven Domestic Industrial Municipal
Rotary Mud Dug Irrigation Test Well Other
Bored Thermal: Withdrawal Reinjection

(4) PROPOSED USE (check):

(5) CASING INSTALLED: Steel Plastic
Threaded Welded
6" Diam. from 1 1/2 ft. to 42 ft. Gauge 2.50
" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? Yes No
Type of perforator used Tough
Size of perforations 1/4 in. by 5 in.
34 perforations from 32 ft. to 40 ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? Yes No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom?
gal./min. with ft. drawdown after hrs.
Air test gal./min. with drill stem at ft. hrs.
Bailer test 50 gal./min. with 8 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water 51° Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes No
Well seal—Material used CEMENT
Well sealed from land surface to 27 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 14 sacks
How was cement grout placed? Method C
Was pump installed? Type HP Depth ft.
Was a drive shoe used? Yes No Plugs Size: location ft.
Did any strata contain unusable water? Yes No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? Yes No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Polk Driller's well number
110 1/4 NE 1/4 Section 15 T. 9S R. 4W W.M.
Tax Lot # Lot Blk Subdivision

Address at well location: 9875 Buena Vista Hwy.

(11) WATER LEVEL: Completed well.

Depth at which water was first found 27 ft.
Static level 16 ft. below land surface. Date 2/23/85
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing
Depth drilled 42 ft. Depth of completed well 42 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
BROWN SANDY SOIL	0	27	
BROWN SAND & GRAVEL	27	42	

Work started 2/22/85 19 Completed 2/23/85 19
Date well drilling machine moved off of well 2/23/85 19

(unbonded) Water Well Constructor Certification (if applicable):

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Date 19...

Bonded Water Well Constructor Certification:

Bond 615 Issued by: Surety Company Name
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name Riddlers Well Drilling
Address P.O. Box 256, A. G. Bony
[Signed] Pat Riddler Water Well Constructor
Date 2/23/85, 19...

NOTICE TO WATER WELL CONSTRUCTOR
The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion.

SP-45292-690

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 8/20/2018
 FROM: Groundwater Section Benjamin Scandella, Dennis Orlovski
 Reviewer's Name
 SUBJECT: Application G-18599 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: MARGO LUCAS County: POLK

- A1. Applicant(s) seek(s) 0.170 CUBIC FOOT PER SECOND from 1 well(s) in the Willamette Basin, Middle Willamette subbasin
- A2. Proposed use NURSERY USES Seasonality: JANUARY 1 THROUGH DECEMBER 31
- 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	POLK 3884	1	Alluvial	0.170	9S/4W-15 SW-NE	1390' S, 1785' W fr NE cor S 15
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	180	27	16	2/23/1985	42	0-27	-0.5-42	N/A	32-40	50	8	1-hr bailer

Use data from application for proposed wells.

- A4. **Comments:** The applicant's well is located in the Willamette River floodplain, about 4 miles south-southeast of Independence. The applicant requests 0.170 cfs and 34.2 AF per year, which are consistent with nursery use (1/40 cfs/acre and 5 AF/acre) on 6.84 acres.
- 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 applicant's well is located farther than 1/4 mile from the Willamette River and produces from a confined aquifer. Therefore, the pertinent rules (OAR 690-502-0240) do not apply.
- A6. Well(s) # _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: Not Applicable

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) 7n (annual meas.), medium water-used 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 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 applicant’s proposed well is located on the western margin of the Willamette River floodplain. The proposed well is located within the floodplain/within old meander loops of the Willamette River where the Willamette Silt has been removed, but relatively fine-grained sedimentary material is found from land surface to a depth of approximately 10-30 feet. Approximately 20-40 feet of alluvial sands and gravels underlie the fine-grained material and constitute the aquifer from which Well #1 produces water. Water levels in the aquifer in this area vary from 3-20 feet below land surface and are closely tied to stream stage in the Willamette River (Conlon et al., 2005). The aquifer is bounded by clays found beneath the sands and gravels and by low-permeability Tertiary marine sediments to the west and south (Bela, 1981, Gannett and Caldwell, 1998).

The nearest monitoring wells are POLK 3812, POLK 50392 and POLK 53369, all within 1.5 miles. The correspondence between POLK 3812 and MARI 13280, 3.7 miles to the north and on the other side of the Willamette River, shows how closely water levels in this system are tied to the Willamette River stage. For this reason, the long term stability of the aquifer is not likely to be a problem, but if a permit is granted, the recommended permit conditions should be included to monitor and protect the resource.

Water levels fluctuate seasonally by approximately 10 feet, according to levels in POLK 53369, and some nearby wells producing from the aquifer system have relatively shallow perforated intervals that make them susceptible to injury (for example, POLK 3888). Therefore, if a permit is granted the recommended permit conditions should be included to protect existing groundwater users.

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	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Groundwater in the Holocene alluvial deposits in the Willamette River floodplain generally occurs under unconfined conditions (Woodward and others, 1998), and the well log for Well #1 shows a water-bearing sand and gravel layer (the aquifer) overlain by sandy soil. However, nearly all other well logs within 1 mile report 10-20 feet of clay and silt above the water-bearing zone, and more than 75% of well logs in sections 11, 12, 14, and 15 report static water levels above the top of the first water-bearing zone (including in Well #1). These latter observations indicate that the aquifer is confined in the vicinity of Well #1.

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	Willamette River	160-170	155	7,100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: The alluvial aquifer is largely composed of coarse-grained Willamette River floodplain sediments which abut the coarse-grained streambed of the river. This indicates an efficient hydraulic connection between the river and the alluvial aquifer (Gonthier, 1983). Furthermore, the groundwater elevation level and published water-table maps indicate that groundwater in the alluvial aquifer flows toward, and discharges to, the Willamette River (Woodward et al., 1998). Other nearby streams are marked as intermittent on USGS topographic maps.

Water Availability Basin the well(s) are located within: WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000

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?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input 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: Not applicable.

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: Potential depletion of SW1 by Well 1 was not estimated because the total rate (0.17 cfs) is much smaller than 1% of the 80% exceedance natural flow in the WAB (36.2 cfs).

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:** _____

References Used:

Application file G-18599

Bela, J.L., 1981, Geology of the Rickreall, Salem West, Monmouth, and Sidney 7.5' quadrangles: Oregon Department of Geology and Mineral Industries, Geological Map Series 18, scale 1:24,000.

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A.

Gonthier, J.B., 1983, Ground-water resources of the Dallas-Monmouth area, Polk, Benton, and Marion Counties, Oregon: Oregon Water Resources Department Ground Water Report 28, 50 p.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

OWRD well log database and water level data.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

Woodward, Dennis B.G., 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.

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

WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000
Basin: WILLAMETTE

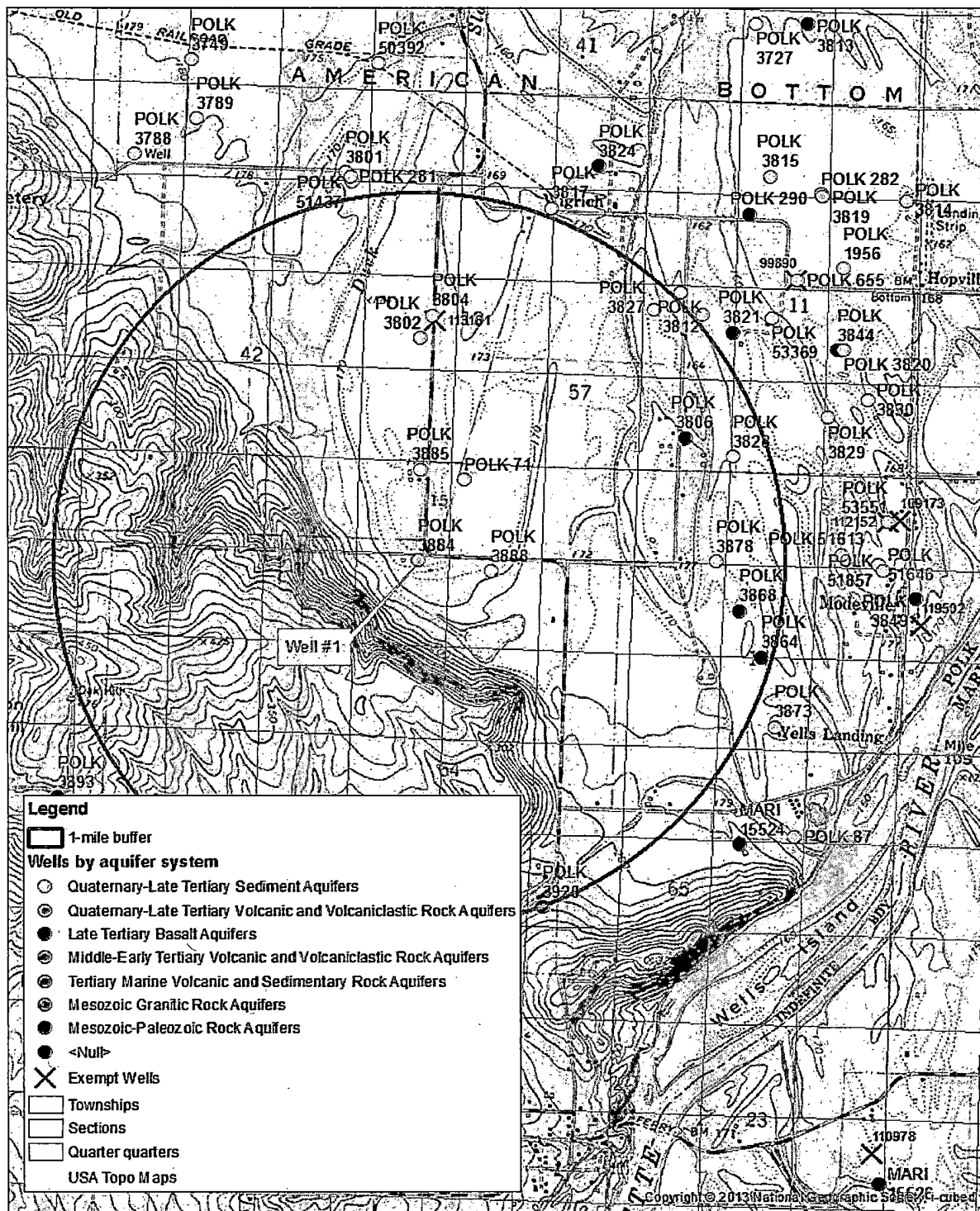
watershed ID #: 0183
Time: 1:29 PM

Exceedance Level: 80
Date: 05/18/2018

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	18,400.00	2,240.00	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	4,160.00	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	1,440.00	3,270.00	0.00	1,300.00	1,970.00
AUG	3,620.00	1,330.00	2,290.00	0.00	1,300.00	991.00
SEP	3,680.00	1,150.00	2,530.00	0.00	1,300.00	1,230.00
OCT	4,650.00	745.00	3,910.00	0.00	1,300.00	2,610.00
NOV	9,400.00	854.00	8,550.00	0.00	1,300.00	7,250.00
DEC	16,700.00	915.00	15,800.00	0.00	1,300.00	14,500.00
ANN	13,500,000	2,150,000	11,300,000	0	942,000	10,400,000

Well Location Map

G-18599: Lucas. T9S/R4W-15



Water-Level Trends in Nearby Wells

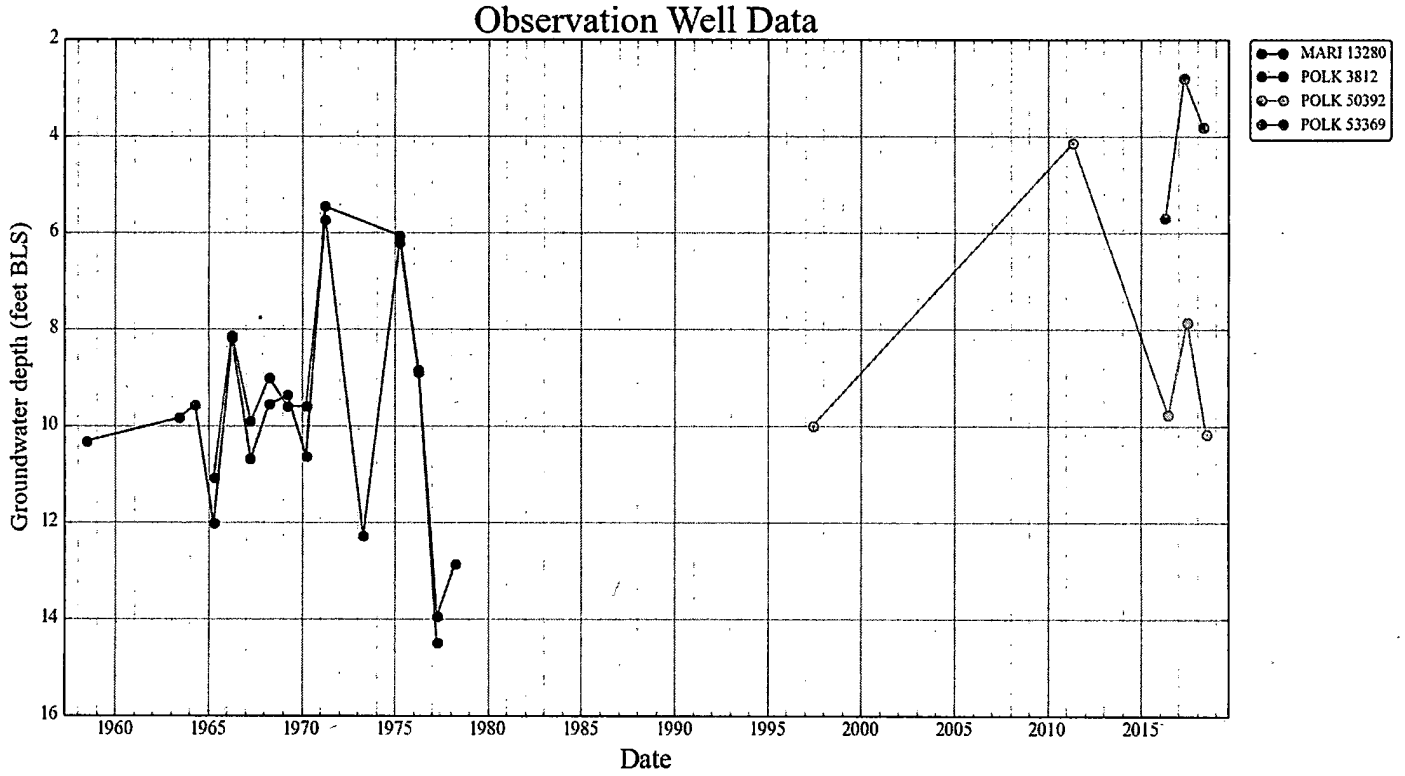


Figure 1: Water levels in nearby wells measured between April and June to show long-term trends.

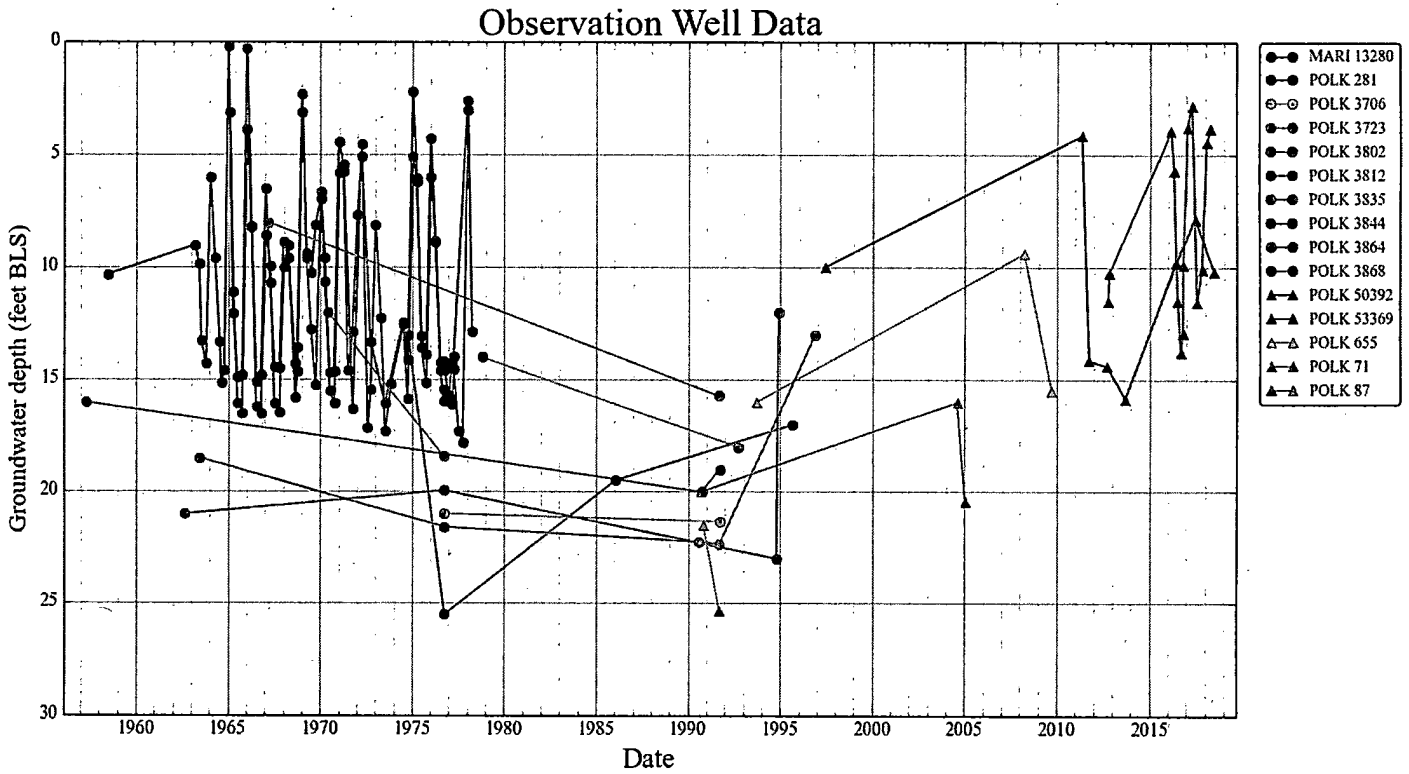


Figure 2: Water levels in nearby wells, showing seasonal variability.