Annual Report Regarding OWRD Groundwater Monitoring for U.S. Bureau of Reclamation Project Area in the Upper Klamath Basin

Calendar Year 2025

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Executive Summary

Under contract with the U.S. Bureau of Reclamation, the Oregon Water Resources Department collected water use or water level data at over 300 wells in the Oregon portion of the Klamath Project Area in 2025. Metered water use totaled 13,923 acre-feet from 169 wells with flowmeters in 2025, a 44% decrease from 2024 and the second lowest pumpage values since data collection began in 2010. This reported water use data underestimates actual use because flowmeters are only installed and accessible on a subset of wells. Water levels rose in 80 of 81 wells measured between 2024 and 2025, relating to relatively low pumping volumes and improved precipitation and surface water deliveries compared to previous years. However, when comparing water levels in wells over a longer period of spring 2010 to spring 2025, 73% of wells showed a decline.

A longer-term data review shows that groundwater has been increasingly relied upon for Project Area irrigation as recurring droughts limit surface water supplies. Growing reliance on supplemental groundwater pumping since 2001 has driven long-term groundwater level decreases, even under recent improvements in hydrologic conditions. Groundwater level declines can reduce groundwater discharge to surface waterbodies, increase water users' pumping costs, cause land subsidence, and impair domestic wells. Continued monitoring of groundwater use and groundwater levels is necessary to inform water managers and the public on the complex nature of sustainable groundwater use within the Project Area.

Introduction

The Oregon Water Resources Department (OWRD) has been contracted to provide technical assistance to the U.S. Bureau of Reclamation (USBR) during Federal Fiscal Years (FFY) 2021-2026 under agreement R22AP00039. Technical assistance includes collection and assessment of groundwater use and groundwater level data from wells in Oregon associated with, and proximal to, the USBR's Klamath Project Area ("Project Area") in the Upper Klamath River Basin. This report summarizes water-use data and groundwater level data for Calendar Year 2025.

Background

Prior to 2015, the Klamath Water and Power Agency (KWAPA) managed water bank operations through the Water Use Mitigation Program (WUMP), under the guidance of the USBR. This program was used to augment diversion of surface water for the purpose of irrigation with groundwater pumping. The primary motivation was to enhance in-stream flows for fisheries during spring and summer. Groundwater users with valid rights, including emergency drought permits, were offered financial incentives to pump groundwater in lieu of surface water or to idle agricultural lands to conserve water. Pumped groundwater would then be applied to nearby fields or delivered directly to USBR-operated canals for use elsewhere in the Project Area. OWRD had provided technical assistance and field presence for the groundwater use and water level monitoring component of the WUMP since 2010. KWAPA was dissolved in 2016 and the water bank program is no longer in effect, but OWRD continues to collect water use data under USBR contracts.

A Governor's drought declaration in 2010 allowed OWRD to issue emergency drought permits for Oregon irrigators. During the 2010 irrigation season the USBR, KWAPA, and area irrigators relied extensively on supplemental groundwater to augment limited surface water supplies, pumping approximately 141,000 acre-feet (AF) of groundwater in Oregon and California. Drought declarations and emergency drought water use permits were also issued in 2012 through 2015, 2018, 2020, and 2021. In 2022, OWRD issued 1 emergency drought permit in the Project Area with limited duty and denied drought permits in areas that had seen groundwater level declines (over 20 feet since the early 2000s). This is in contrast with the 47 drought permits approved in 2021, which was the highest number since 2010 (Table 1). There was no drought declaration in Klamath County in 2023, 2024, or 2025 and no drought permits were issued in those years by OWRD in the Project Area.

Table 1: Number of drought permits issued each year in the Project Area (1992 - 2025)

Drought Year[a]	Number of Drought Permits	Total Acres	Water Applied for (acre-feet)	Metered Use on Drought Permits (acre-feet)
1992	20	3,546	10,639	-
1994	3	535	1,604	-
2001	90	19,630	58,435	6,682
2004	5	12,941	38,823	22,262
2005	6	28,934	67,708	34,643
2010	61	36,097	99,381	47,538
2012	2	145	363	828
2013	15	5,712	16,627	6,069
2014	41	18,760	36,944	19,157
2015	40	21,746	32,508	22,566
2018	37	9,812	10,339	11,467
2020	41	17,487	17,629	22,436
2021	47	24,918	61,863	31,310
2022	1	543	543	Not available[b]

[a]Years not listed in table had 0 drought permits issued.
[b]An erroneous volume was reported for the 1 drought permit issued in 2022.

Purpose of This Report

This report presents 2025 groundwater use data from metered production wells within and adjacent to the Oregon portion of the Project Area and groundwater level data from representative wells in Oregon. That data is then compared to annual surface water deliveries and precipitation to identify possible relationships to groundwater pumping. Annotated hydrographs are included following the discussion to further illustrate the effects of groundwater pumping throughout the Project Area. The information collected was used to assess the impact of pumping on groundwater resources and to inform water management decisions. For example, low groundwater levels can increase pumping costs, and more than 300 domestic well users in the Project Area have reported their wells going dry or experiencing low production (OWRD, 2026a). Therefore, the collected groundwater data have been particularly important in recent years due to the dry conditions experienced during the last decade.

2025 Field Data Collection and Analysis

During the 2025 Synoptic Survey, OWRD staff collected flowmeter data between October and December at 287 wells in and adjacent to the Project Area in Oregon. Of these 287 wells, use was calculated from 169 that were measured the prior year. The locations and estimated use are presented below (Figure 1and Appendix A). Overall, 13,923 AF of water was pumped from visited metered wells in the Project Area in the 2025 irrigation season (Table 2). OWRD or USGS staff also collected static groundwater level measurements from 81 wells (Appendix B). The visited wells represent a subset of all permitted water-supply wells in the Project Area and either have current or historic permit conditions require water metering (i.e., flowmeter installation), were voluntarily metered, or were previously used as water level observation wells.

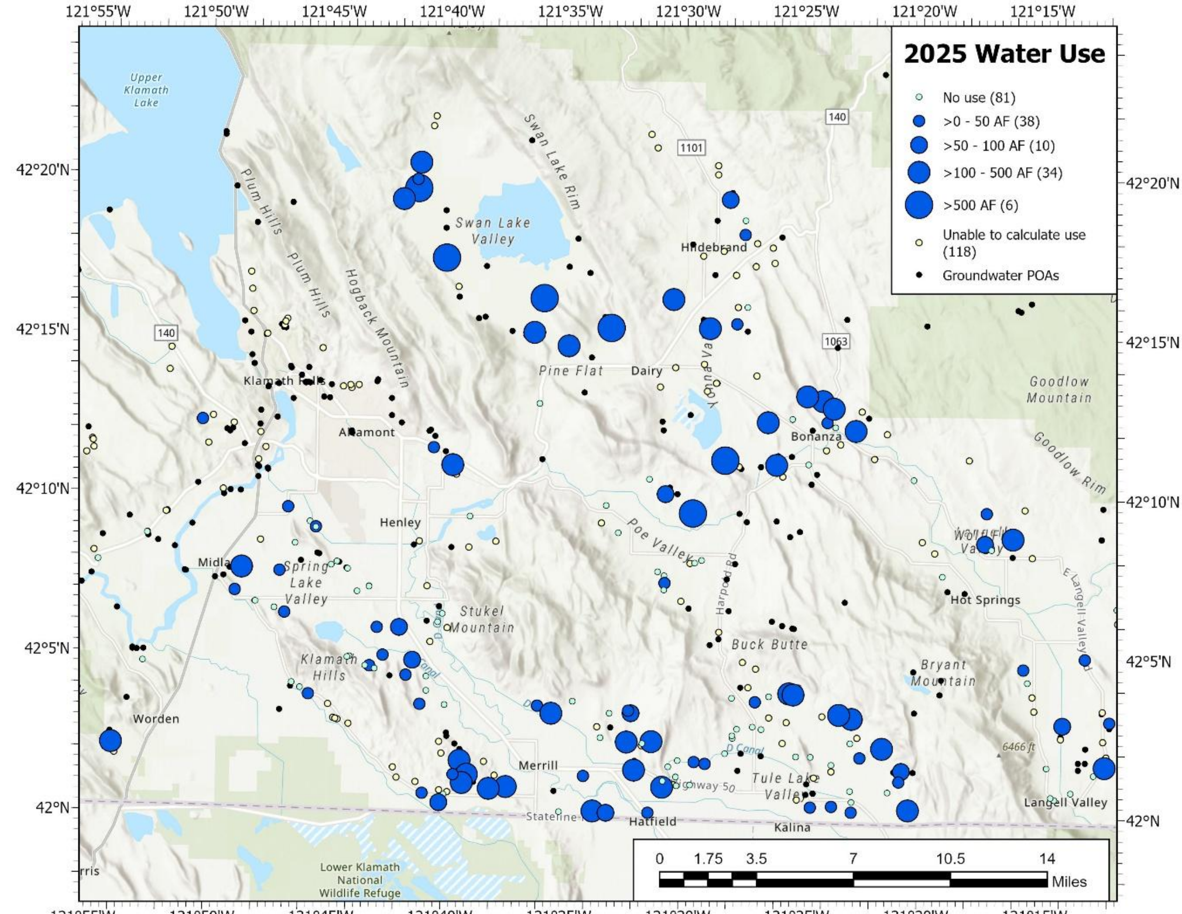

Figure 1: Existing permit wells and wells where water-use was calculated as part of the 2025 Synoptic Survey within the Project Area and vicinity in Oregon. This figure only represents a portion of groundwater extracted in the Project Area as many older groundwater rights (black dots) do not require metering or reporting of water use.

Metered Groundwater Use

To calculate metered groundwater use in the study area for the 2025 irrigation season, flowmeter readings collected during the 2025 Synoptic Survey were compared to prior years' readings. Of 287 wells visited for water use recording during this synoptic, approximately 67% (192 wells) had working flowmeters. Successive years of flowmeter data allowed OWRD to directly calculate water use for a given well (Table 2). Indirect methods of estimating groundwater use based on power consumption are sometimes available but were not included in this analysis.

Table 2: Summary of 2025 metered groundwater use and flowmeter status in the Project Area.

		# Records	% Wells Visited	Groundwater Use (AF)
Wells visited by OWRD in the Project Area during 2025 Synoptic Survey		287		
Visited wells with operable flowmeters		192	66.9%	
Visited wells where use was calculated		169	58.9%	13,923
2025 Flowmeter Status [a]	No Flowmeter	65	22.6%	
	Flowmeter Broken	17	5.9 %	
	No Access	13	4.5 %	
	Shared Flowmeter	2	0.7 %	

[a] Refer to Appendix A for flowmeter status definitions.

Metered or calculated irrigation water use in the Project Area totaled 13,923 AF in 2024, a 44% decrease from 2024 (Table 3). Of the over 800 authorized groundwater points of appropriation (POAs) in the area, nearly half do not require flowmeters. Therefore, groundwater use volumes in Table 2 and Table 3 represent only a portion of groundwater extracted in the area. However, as the number of metered wells in the area has been similar over time, relative changes in volumes can be estimated by comparing annual data. Additionally, primary groundwater rights, where groundwater is the sole source of irrigation, should have relatively consistent use and acreage from year to year, so changes in annual use may reflect climate conditions (e.g., wetter spring, cooler summer). Of the 169 wells that have both 2024 and 2025 water use data, 65% of wells reported annual use changes of 50 AF or less. The distribution of water use changes from 2024 to 2025 is shown in Figure 2. Annual groundwater use since 2010 is shown in Table 3 for metered wells measured by OWRD during synoptic surveys.

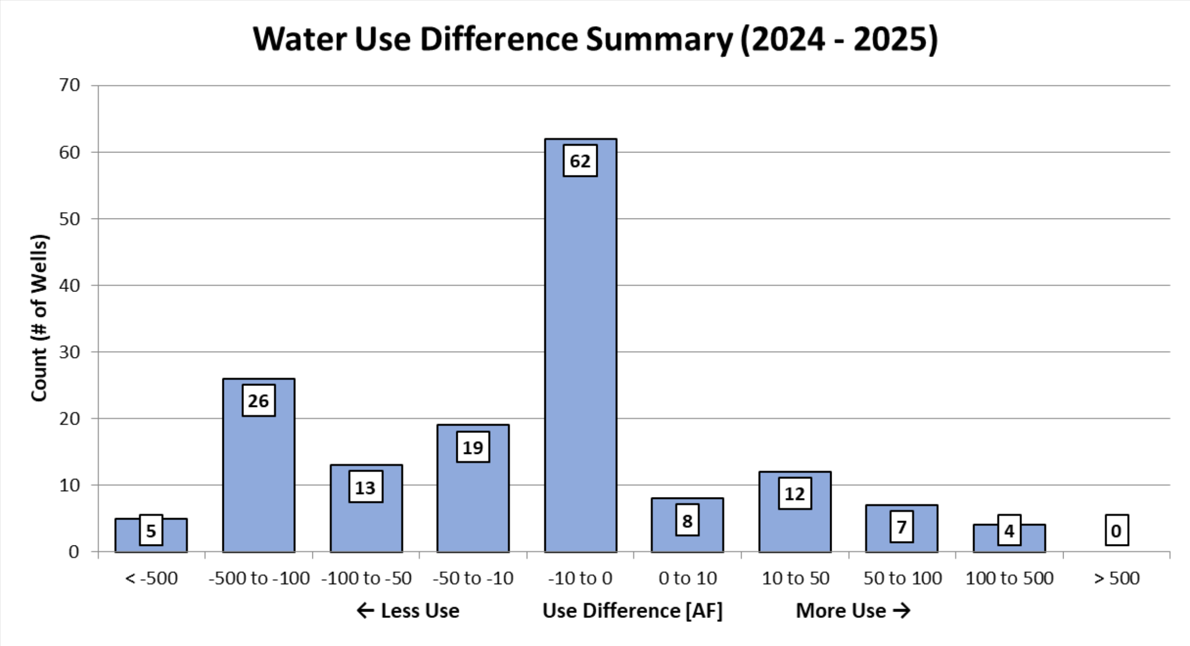

Figure 2: Distribution of reported change in water use from 2024 to 2025 irrigation seasons for wells.

Table 3: Metered groundwater use in the Klamath Project Area, Oregon from 2010 to 2025.

Year	Number of visited wells where use was calculated	Metered Groundwater Withdrawal in Oregon (acre-feet)
2010	204	78,920
2011	209	18,377
2012	223	35,864
2013	233	58,048
2014	249	72,574
2015	238	61,645
2016	173	19,409
2017	190	17,358
2018	194	28,448
2019	166	13,734
2020	153	52,635
2021	156	70,446
2022	148	57,519
2023	159	23,485
2024	141	24,936
2025	**169**	**13,923**

Water Level Data

OWRD and USGS staff also collected water level data from 87 wells in the Project Area during 2025 (Figure 3). Eighty-one wells had fall water level measurements for both 2024 and 2025, allowing water level changes to be calculated.

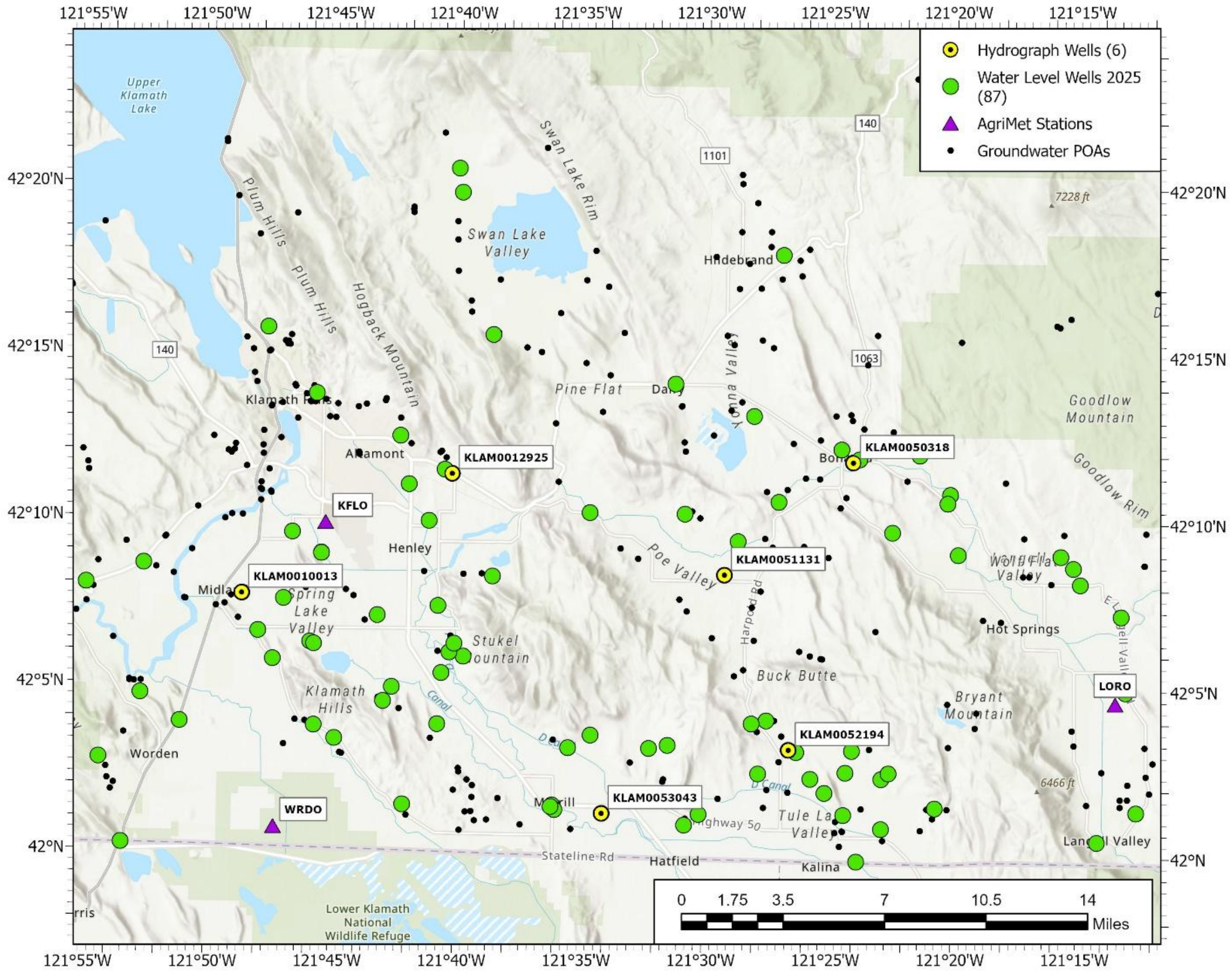

Figure 3: Map of Klamath Project Area wells with measured water levels in 2025, permitted groundwater POAs, select wells with hydrographs, and select AgriMet site locations.

Of those 81 wells, approximately 98% showed a rise in water levels while 1 well showed a decline (Figure 4) When reviewing wells with groundwater level data over a longer period of time, 78 wells have groundwater level data available in both spring 2010 and spring 2025. Of those 78 wells, 73% show a decline in groundwater levels with some of the largest declines occurring in the volcanic portion of the aquifer within the Tule Lake Valley near the cities of Merrill and Malin. Other portions of the Project Area such as Yonna, Wolf Flat and Langell Valleys of the Eastern Lost River Subbasin show slight increases in water levels over that same period (Figure 5). It should be noted that 2010 was chosen as the starting year for the longer period comparison due to the wider availability of groundwater level data throughout the Project area at that time. Additional declines are observed in wells where groundwater level data is available in the year 2000 or earlier, such as in KLAM 52194 and KLAM 51131 which are presented in the Specific Hydrographs section of this report. These and other groundwater level data are housed in the OWRD Groundwater Information System (GWIS) database (OWRD, 2026b). A subset of this groundwater data can be accessed through a USGS web interface (USGS, 2026).

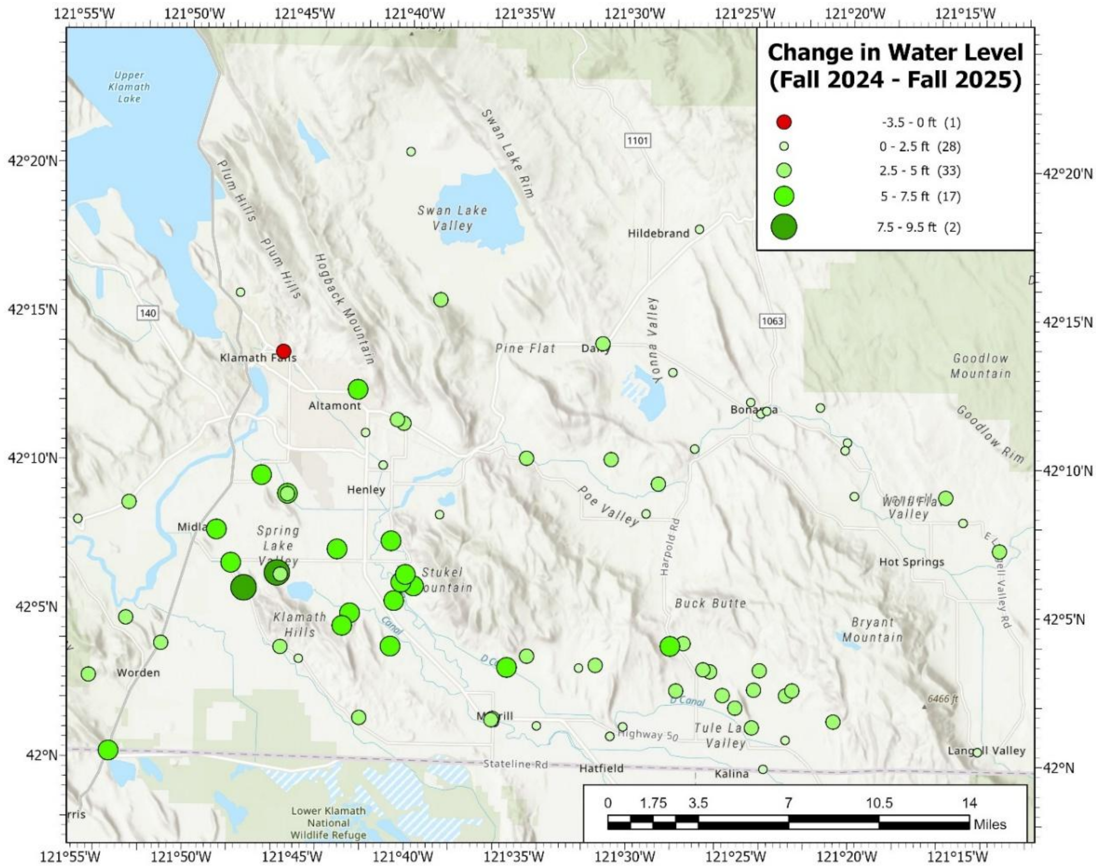

Figure 4: Map showing magnitude of change in water level in measured wells between fall 2024 and fall 2025.

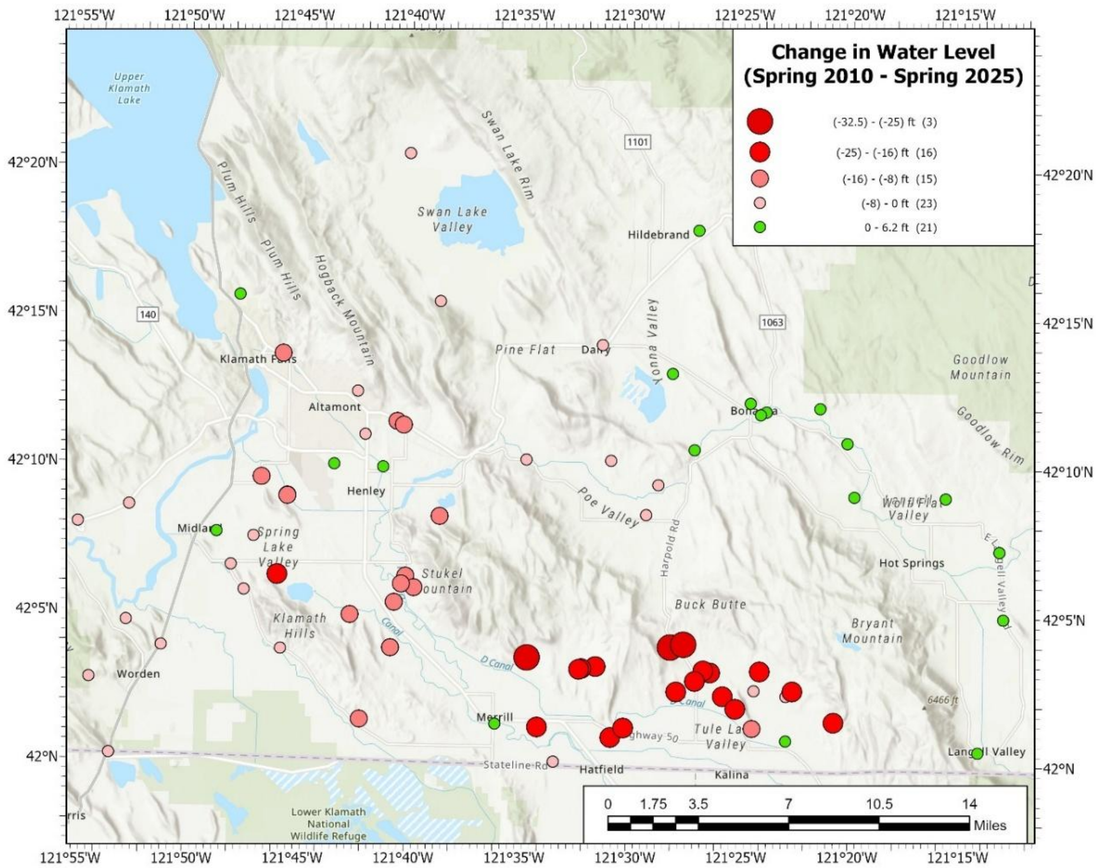

Figure 5: Map showing magnitude of change in water level in measured wells between spring 2010 and spring 2025.

Aquifer Response to Groundwater Pumping

This section presents groundwater level records and analyzes trends from representative wells within the Klamath Project Area in Oregon (Figure 3). Groundwater pumping is currently the largest factor controlling groundwater levels in the Project Area with secondary factors including canal leakage, climate influences and antecedent conditions (Gannett and Breen, 2015). In years of lower groundwater pumping, groundwater levels show much smaller summer declines and relatively flat year-over-year trends, with minimal water level recovery in some areas such as the Tule Lake Valley. To a lesser degree, recharge from canal leakage can influence water levels in adjacent wells (Pischel and Gannett, 2015). It has also been speculated that groundwater levels in the western project area, where declines have been smaller and recovery greater, may be buffered by recharge from the Klamath River.

Pumping data are summarized in Table 4, including KWAPA Water Bank records for Oregon and California wells from 2002 - 2015 (the program's duration) and metered groundwater pumping recorded by OWRD from 2010 - 2025. Calendar-year USBR surface water deliveries to irrigators are also included (USBR, 2026a). Annual precipitation from three Oregon AgriMet stations is shown as well, with station locations provided in Figure 3 (USBR, 2026b).

Table 4: Water Bank and metered pumping estimates, USBR surface water deliveries and water-year precipitation since 2002.

Year	Total Water Bank Pumping, OR and CA[1] (acre-feet)	Total OWRD Metered Pumping (acre-feet)	USBR Surface Water Deliveries (acre-feet)	Total Water-Year Precipitation – AgriMet Stations[2] (inches)		
				Klamath Falls, OR KFLO	Worden, OR WRDO	Lorella, OR LORO
2002	18,569	–	389,133	10.63	8.24	8.42
2003	55,667	–	292,662	11.97	10.12	10.64
2004	73,870	–	342,152	11.54	8.42	7.68
2005	65,710	–	286,671	10.92	10.95	12.85
2006	32,740	–	301,057	15.58	13.47	17.62
2007	47,621	–	360,118	11.25	8.21	10.51
2008	–	–	364,530	10.7	8.17	8.98
2009	–	–	359,672	10.78	7.41	7.95
2010	128,740	78,920	186,808	8.1	9.32	9.49
2011	–	18,377	339,704	13	12.64	13.56
2012	30,363	35,864	361,275	9.21	8.05	8.58
2013	64,688	58,048	305,674	9.55	10.89	12.06
2014	83,456	72,574	266,146	10.16	8.13	9.45
2015	37,742	61,645	264,853	12.71	15.56	12.29
2016	N/A	19,409	338,765	13.66	13.01	12.21
2017	N/A	17,358	334,017	14.93	12.22	18.26
2018	N/A	28,448	251,727	9.46	7.88	10.74
2019	N/A	13,734	289,012	15.48	12.05	14.85

2020	N/A	52,635	161,537	10.71	5.99	6.05
2021	N/A	70,446	39,680	8.37	5.15	5.66
2022	N/A	57,519	95,313	9.11	7	9.01
2023	N/A	23,485	260,001	12.5	9.85	11.07
2024	N/A	24,936	273,039	13.34	10.86	12.01
2025	**N/A**	**13,923**	**304,493**	**17.47**	**16.59**	**14.88**

[1]Pumping data for 2001 through 2007 collected by USBR; data for 2010 through 2015 collected by KWAPA. Water Bank program not operational during 2008 and 2009 while transitioning from USBR to KWAPA administration.

[2]Refer to Figure 3 for AgriMet station locations.

In general, the volume of groundwater pumped increases in drier years when USBR surface water deliveries to Project irrigators are lower (Figure 6). The year 2021 marked the highest estimated use of groundwater in the Project Area since 2014 due to extreme drought conditions and closure of the A-Canal due to historically low water supply (USBR, 2021). The year 2025 saw recorded groundwater pumping volumes less than 14,000 acre-feet likely due to above-average water-year precipitation and surface water deliveries that were the largest reported since 2017.

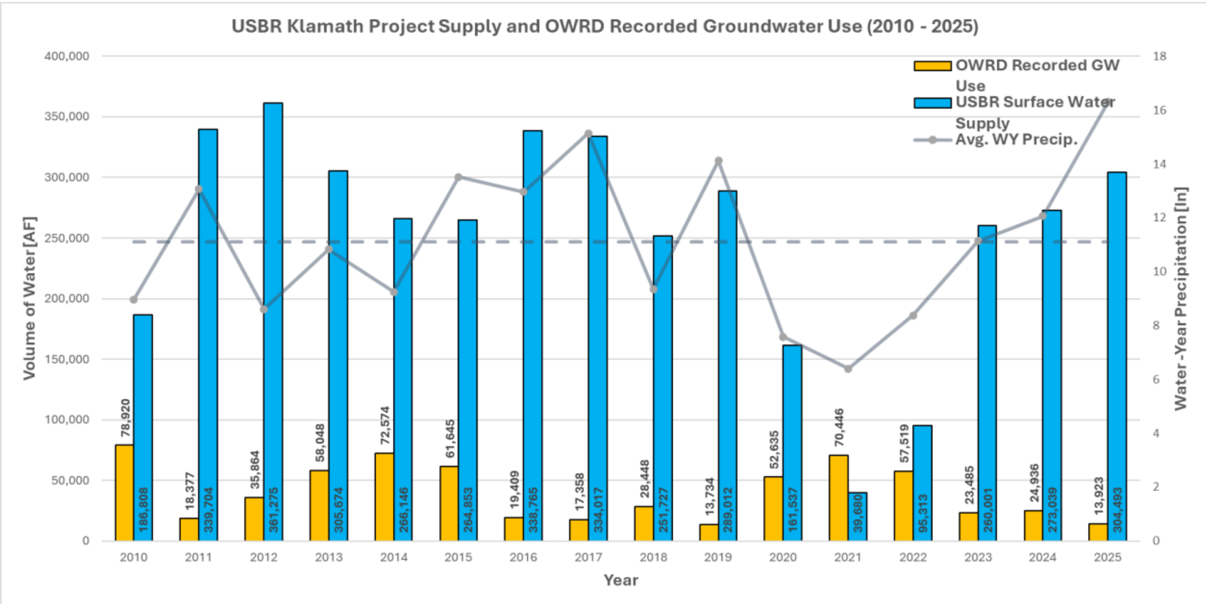

Figure 6: BOR Klamath Project Supply and OWRD Recorded Groundwater Use (2010 - 2025).

Observed groundwater level trends correlate strongly and predictably to historic water use and trends are similar across much of the Project Area. The main observed groundwater level trends are as follows:

- Increased supplemental irrigation pumping beginning in 2001 correlates with a trend of generally declining groundwater levels. Wells that are strongly influenced by surface waters, such as leaky canals or the Klamath River, experienced some recovery after the 2001 groundwater irrigation season, while wells utilizing deep regional aquifers experienced persistent water level declines after 2001. Unfortunately, there was limited water level data collected prior to 2010.
- The Water Bank program did not operate during 2008 and 2009 while administration of the program transferred from USBR to KWAPA. The reduction in supplemental pumping appears to have resulted in relatively constant water levels or even minor water level

recovery in some wells, most strongly in those with water levels influenced by canal leakage.

- A sharp increase in supplemental pumping during 2010, 2013, 2014, and 2015 resulted in punctuated seasonal declines in groundwater levels, with incomplete recovery between irrigation seasons.
- The 2016 water year marked the first year without the Water Bank program and, along with 2017, a return to average precipitation. Hydrographs reflect reduced pumping stress with relatively stable or slightly rising fall water levels between 2016 and 2017 and far less seasonal drawdown than observed in previous years.
- The 2018 water year saw significantly less precipitation across the Project Area. While pumping significantly increased compared to 2016 and 2017, it was still lower than in previous years with similar precipitation (Figure 6). By June, stored surface water was being delivered to the Project Area at nearly the accustomed rate, and many users reduced or ceased groundwater pumping. Subsequently, water levels declined the most between spring and summer, but water levels were beginning to recover by fall.
- The 2019 water year saw slightly above-average precipitation and higher surface water deliveries (Figure 6). Consequently, groundwater pumping was substantially less than previous years, and water levels seemed to continue an upward trend that began in fall 2018.
- The 2020 through 2022 water years saw the lowest precipitation since 2001. The low precipitation and surface water supply in combination with the issuance of drought permits in 2020 and 2021 and increased pumping is reflected in the sharply declining water levels throughout the Project Area.
- During the 2023, 2024 and 2025 water years, precipitation was above-average and surface water deliveries were higher than the prior three years. No drought permits were issued in 2023, 2024 and 2025 and groundwater pumping in the Project Area decreased substantially. As a result, groundwater levels in most wells have shown an upward trend since fall 2022.

Specific Hydrographs in the Project Area

KLAM 52194

KLAM 52194 is an observation well installed by OWRD about 3.8 miles north of the state line near Malin, OR in the Shasta View Irrigation District (Figure 3). The well develops water from the volcanic aquifer and shows timely seasonal responses to groundwater pumping in the area as seen in the hydrograph below (Figure 7). Seasonal fluctuations were substantially less in 2008 and 2009, and again in 2016 and 2017, as a result of the absence of substantial groundwater pumping by irrigation wells in the area. Pumping during 2010, 2013, 2014, and 2015 produced 10-20 feet of decline in each year and incomplete recovery between years. Pumping in 2018 produced slightly over 5 feet of decline early in the irrigation season but the water level recovered through the 2019 irrigation season. Pumping during the 2020, 2021, and 2022 irrigation seasons resulted in 23-35 feet of seasonal decline in each year and incomplete recovery between years resulting in approximately 23 feet of decline when comparing spring static water levels between 2020 and 2023. Groundwater levels recovered 13.7 feet between March 2023 and January 2026. As of January 2026, the static groundwater level of KLAM 52194 remains 31.54 feet lower than the static groundwater level measured in March 2001.

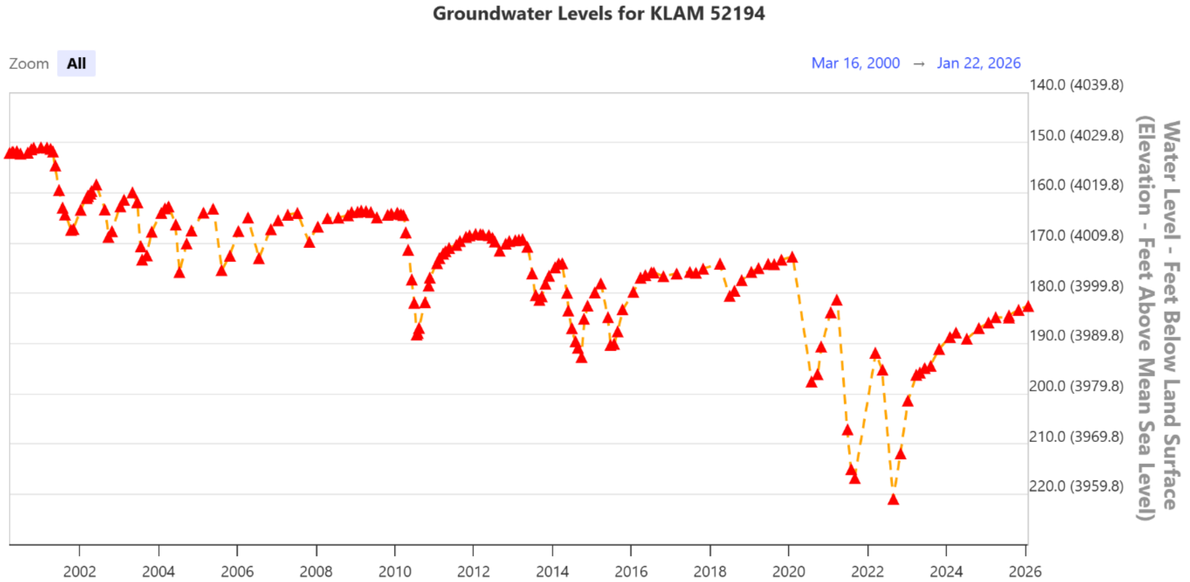

Figure 7: Hydrograph for well KLAM 52194 near Malin, OR.

KLAM 53043

KLAM 53043 is an irrigation well drilled in 2001 about 1.5 miles east of Merrill, OR and just over one mile north of the Oregon-California state line (Figure 3). This well develops water from the volcanic aquifer and is subject to drawdown interference from the Tulelake Irrigation District wellfield located in California along the state line. The hydrograph for this well (Figure 8) shows groundwater declines of almost 33 feet from spring 2003 to spring 2023. The largest seasonal fluctuations occurred in years with increased groundwater pumping (2010, 2020-2022). The 2010 irrigation season resulted in a 20 feet seasonal decline with only 15 feet of recovery. Groundwater levels showed slight recovery from spring 2016 through 2019. Pumping during the 2020, 2021, and 2022 irrigation seasons resulted in 21-28 feet of seasonal decline in each year and incomplete recovery between years. Groundwater levels declined approximately 22 feet from spring 2020 to spring 2023. Reductions in groundwater pumping during the 2023, 2024, and 2025 irrigation seasons has seen the January 2026 static water level recover approximately 13.47 feet since March 2023. As of January 2026, the water level in KLAM 53043 remains 19.41 feet below the spring 2003 water level.

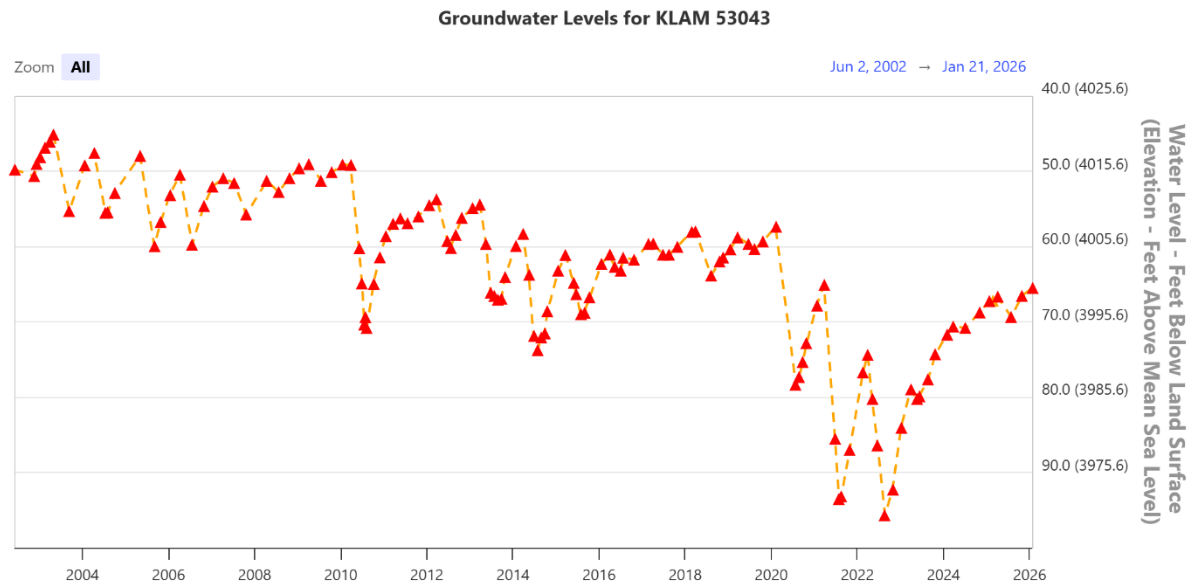

Figure 8: Hydrograph for well KLAM 53043 east of Merrill, OR.

KLAM 10013

KLAM 10013 is a domestic well located just east of the town of Midland in the western portion of the Project Area (Figure 3). Historically, this area has been the source of multiple concerns from local well owners about declining groundwater levels and well-to-well interference. KLAM 10013 is a shallow well that develops water from the volcanic aquifer which is the primary-production aquifer for the area. Water levels at this well (Figure 9) are likely affected by recharge from the Klamath River or canal leakage which accounts for a generally stable long-term trend through 2019. However, this well still shows sharper seasonal declines due to groundwater pumping for irrigation; the sharpest declines were concurrent with years of increased groundwater pumping (2010, 2013-2015, and 2020-2022). Between 2016 and 2019, this well showed seasonal fluctuations that were considerably muted compared to previous years, with only 2 feet drop during the 2019 irrigation season. Pumping during the 2020, 2021, and 2022 irrigation seasons resulted in approximately 18 feet of seasonal decline in each year and incomplete recovery between years. Static groundwater levels in this well dropped approximately 14 feet from spring 2020 to spring 2023 but have recovered 13.51 feet as of January 2026 as a result of decreased pumping in 2023 – 2025 irrigation seasons. As of January 2026, the observed groundwater level in KLAM 10013 remains 3.26 feet lower than the September 1999 level.

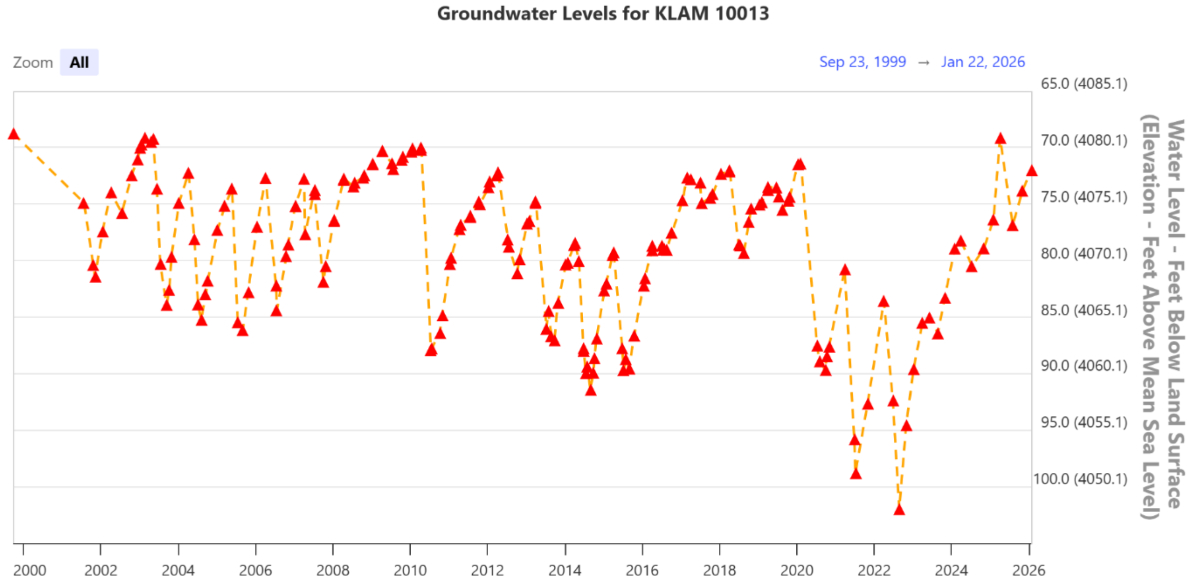

Figure 9: Hydrograph for well KLAM 10013 near Midland, OR.

KLAM 12925

KLAM 12925 is a domestic and stock well located in the Pine Grove area southeast of Klamath Falls, OR (Figure 3) where groundwater levels in the volcanic aquifer and the overlying sediments are strongly influenced by supplemental groundwater pumping in the surrounding area. The hydrograph for this well (Figure 10) displays a trend similar to that observed in wells located along the state line and in the Klamath Valley (e.g., KLAM 52195). Water levels declined approximately 10 feet at this well between 2010 and 2015, with no significant decline or recovery between 2015 and 2019. Spring high water levels declined almost 15 feet between 2020 and 2023. The water level has recovered 8.29 feet from spring 2023 as of January 2026 but remains 17.72 feet below the January 2004 static water level.

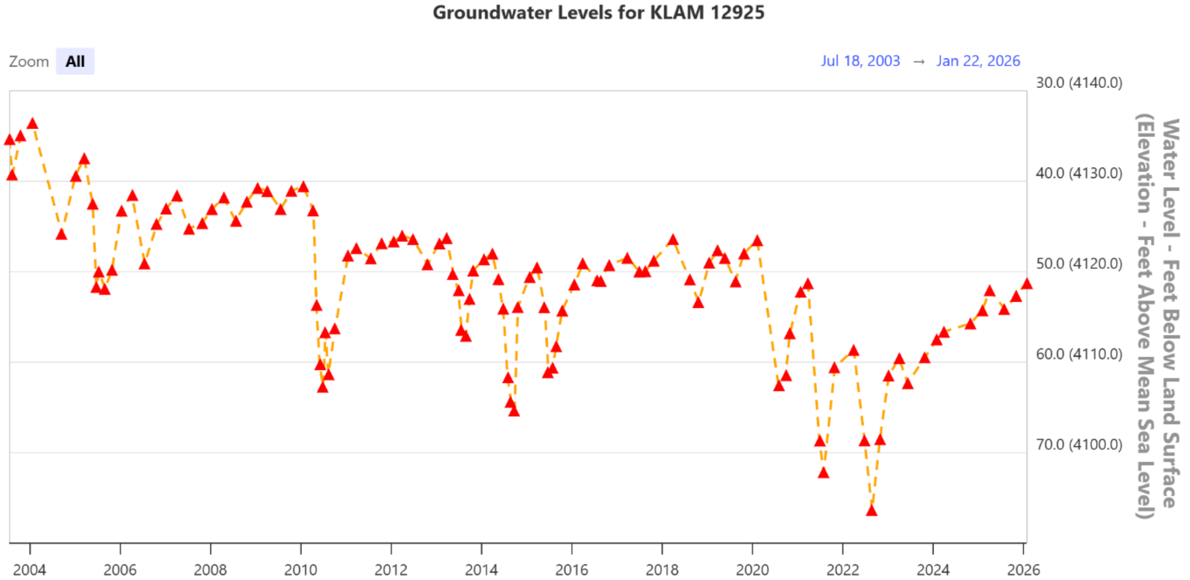

Figure 10: Hydrograph for well KLAM 12925 in the Pine Grove area.

KLAM 51131

KLAM 51131 is an unused irrigation well located in South Poe Valley approximately 2,000 feet from the main channel of the Lost River (Figure 3). The well develops water from both the sedimentary and volcanic aquifers and receives recharge from numerous surrounding surface water features including irrigation canals, lakes, and the Lost River. The hydrograph (Figure 11) displays a more stable, but still declining, water level trend following the extensive groundwater pumping in 2010. Regulation of unauthorized groundwater pumping in the area and the availability of surface water from the Lost River resulted in a significant reduction in groundwater use in mid-season 2010, which likely supported this trend. However, water levels still declined 7 feet between 2010 and 2016, with large seasonal declines in 2014, 2015, and 2018. After a relatively stable period between 2016 and 2019, water levels displayed a year-over-year decline with seasonal highs not recovering to their previous levels beginning in 2020. Annual high-water levels declined 8.59 feet between 2020 and 2022 but have recovered to 2014 levels as of January 2026 while remaining approximately 16 feet lower than the May 2000 annual high.

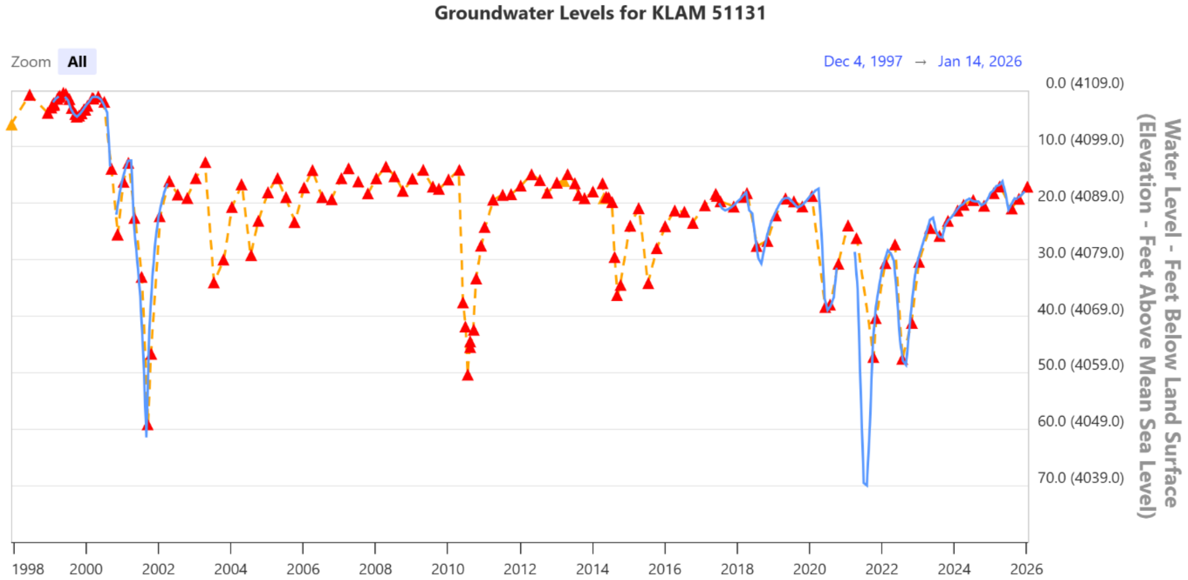

Figure 11: Hydrograph for well KLAM 51131 in South Poe Valley.

KLAM 50318

KLAM 50318 is a shallow unused well located in a groundwater discharge area adjacent to the Lost River and near Bonanza, OR and Bonanza Big Springs (Figure 3). The hydrograph (Figure 12) shows a seasonal response to pumping with year-to-year spring high water levels that are relatively stable and appear to reflect climate fluctuations. The seasonal drawdown of groundwater levels was larger during the 2010, 2014, 2015, 2021, and 2022 irrigation seasons as a result of increased groundwater pumping in the area.

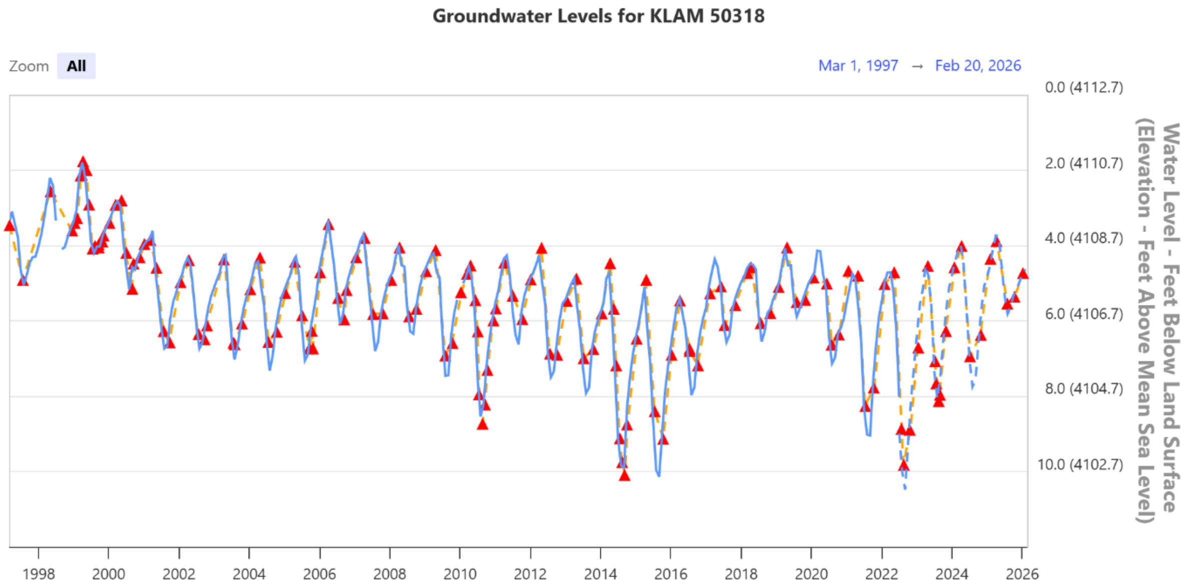

Figure 12: Hydrograph for well KLAM 50318 near Bonanza, OR.

The water level in KLAM 50318 is representative of the head in the part of the aquifer that drives flow to Bonanza Big Springs and thus represents a local discharge zone, which partly explains the low seasonal variability and stable long-term trends observed in the hydrograph. Lower groundwater levels at this well are coincident with lower discharge at the spring outflow adjacent to the river. Groundwater levels generally observe a smooth annual cycle (rising through the fall, lowering through the summer) while river stage often shows discrete changes (rapid increase or decrease in stage). Stage elevation at this location is partly controlled by a diversion structure (Harpold Dam) on the Lost River downstream of the gaging station and groundwater elevation is above river stage elevation for most of the year (Figure 13). When the river stage elevation exceeds the groundwater level elevation, primarily in summer months when there is increased stage behind the dam, the hydraulic gradient is reversed, at which point surface water can flow into the aquifer via Bonanza Big Springs and potentially contaminate nearby water wells. Consequently, when groundwater levels are within 0.5-foot above river stage, a subset of nearby irrigation wells are curtailed and stage behind Harpold Dam may be reduced to limit groundwater contamination. Groundwater levels in KLAM 50318 were above Lost River stage for most of 2025 but dropped below river stage during a high flow event in late February (Figure 13).

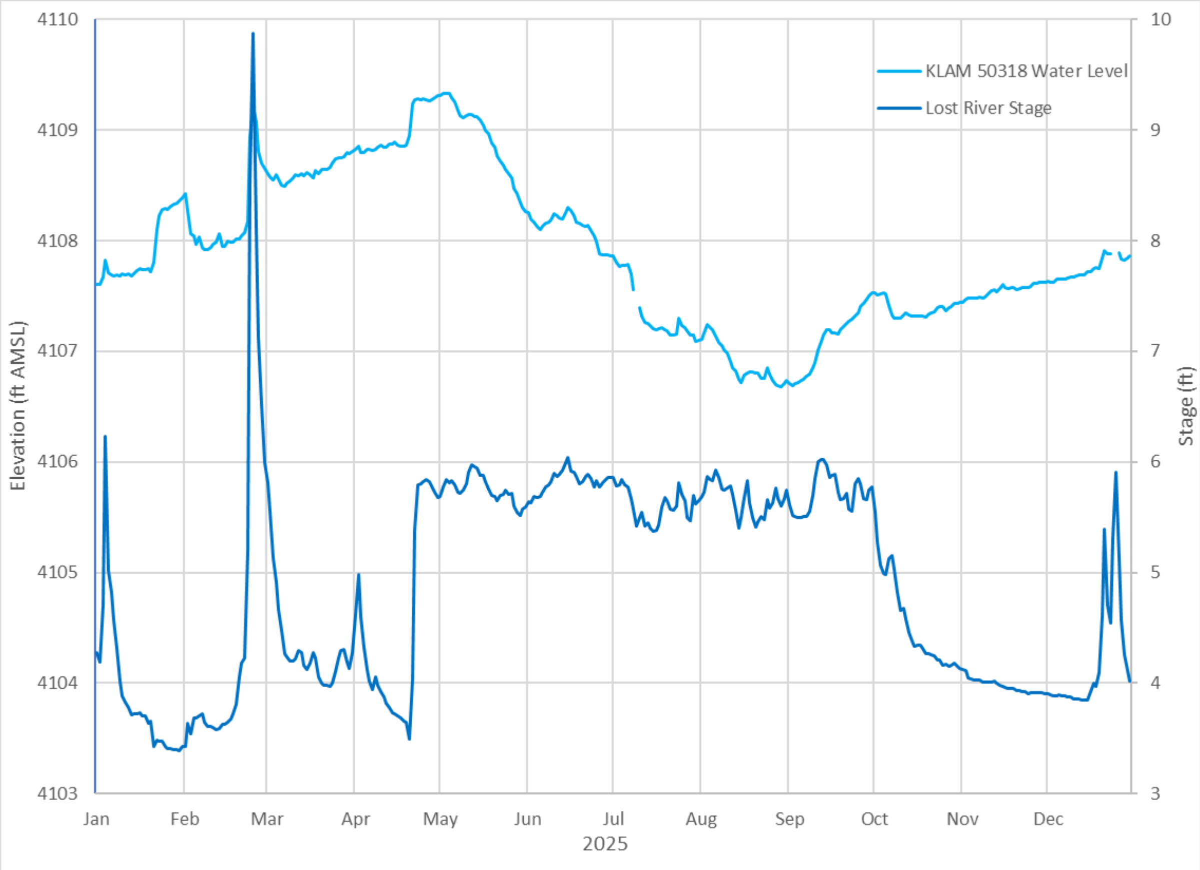

Figure 13: Hydrograph for well KLAM 50318 and the Lost River during 2025.

Summary and Conclusion

Significant reliance on supplemental groundwater pumping since 2001 has resulted in long-term groundwater level decreases marked by punctuated, seasonal declines and incomplete annual recovery in and near the Klamath Project Area in Oregon. The 2025 irrigation season saw above-average precipitation and increased surface water deliveries, similar to 2023 and 2024, which led to decreased groundwater pumping in the Project Area. There was 13,923 AF of metered groundwater pumped in the 2025 irrigation season. For all years, the reported water use data presented in this report underestimates actual use because flowmeters are only installed and accessible on a subset of wells. Overall, for wells with data available for 2024 and 2025, 65% showed water use changes within 50 AF and 98% showed higher fall water levels. However, when reviewing wells with available water level data between spring 2010 and spring 2025, 73% of those wells show a decline.

The data presented in this report indicate that supplemental groundwater withdrawals have resulted in seasonal declines in some areas and persistent groundwater level declines across much of the Project Area. Drought conditions, reduced surface water deliveries, and increased groundwater pumping between 2020 and 2022 led to significant groundwater declines and lack of recovery between irrigation seasons. Increased precipitation and decreased groundwater pumping in 2023, 2024 and 2025 have resulted in increasing groundwater levels since fall 2022, but groundwater levels in portions of the project area have still not recovered to annual highs measured in 2020. These groundwater level declines can reduce groundwater discharge to – and in some cases induce recharge from – streams, springs, and drains, exacerbating already stressed surface water supplies. Additionally, persistent seasonal drawdown can reduce storage potential in aquifers and lead to land subsidence. Seasonal and long-term water level declines result in increased pumping costs incurred by groundwater users, and voluntary reports indicate that at over 300 domestic wells have had water levels drop below their operating levels within the Project Area.

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Appendix A

List of Wells visited as part of the 2025 Flowmeter Synoptic Survey

Well ID	*Latitude*	*Longitude*	*Flowmeter Status*	*Flowmeter Analyzed*
KLAM0002259	*42.3591552*	*-121.6780716*	*NOFM*	*No*
KLAM0002262	*42.3643863*	*-121.6762779*	*NOFM*	*No*
KLAM0002289	*42.32646*	*-121.688077*	*NULL*	*Yes*
KLAM0002340	*42.3115481*	*-121.45773*	*BRKQ*	*Yes*
KLAM0002368	*42.3561843*	*-121.5247211*	*NEWQ*	*No*
KLAM0002373	*42.3355442*	*-121.4772746*	*BRK*	*No*
KLAM0010013	*42.1283878*	*-121.8105832*	*NOFM*	*No*
KLAM0010080	*42.3492255*	*-121.5202237*	*NEWQ*	*No*
KLAM0010082	*42.3401318*	*-121.6866392*	*NULL*	*Yes*
KLAM0010146	*42.2729123*	*-121.8043737*	*NULL*	*No*
KLAM0010181	*42.3402291*	*-121.4774423*	*NULL*	*No*
KLAM0010242	*42.2064217*	*-121.3986827*	*NULL*	*Yes*
KLAM0010292	*42.158449*	*-121.4924928*	*NULL*	*Yes*
KLAM0010331	*42.156357*	*-121.861962*	*NOFM*	*No*
KLAM0010336	*42.2904384*	*-121.6679675*	*NULL*	*Yes*
KLAM0010352	*42.2198018*	*-121.4018859*	*NOFM*	*No*
KLAM0010353	*42.01059*	*-121.6806*	*NULL*	*Yes*
KLAM0010355	*42.281851*	*-121.80536*	*NEWQ*	*No*
KLAM0010357	*42.2176185*	*-121.4019108*	*NULL*	*Yes*
KLAM0010364	*42.136637*	*-121.2537484*	*NOFM*	*No*
KLAM0010368	*42.2534023*	*-121.4870156*	*NULL*	*Yes*
KLAM0010378	*42.191886*	*-121.39916*	*NULL*	*No*
KLAM0010395	*42.2021832*	*-121.3784323*	*NULL*	*Yes*
KLAM0010416	*42.2038913*	*-121.3929659*	*NULL*	*Yes*
KLAM0010421	*42.2199433*	*-121.4127916*	*NULL*	*Yes*
KLAM0010431	*42.1844906*	*-121.4114684*	*NULL*	*Yes*
KLAM0010432	*42.1840301*	*-121.4342463*	*NULL*	*Yes*
KLAM0010440	*42.2037616*	*-121.380584*	*NOFM*	*No*
KLAM0010441	*42.009989*	*-121.665366*	*NULL*	*Yes*
KLAM0010445	*42.00294*	*-121.37959*	*NULL*	*Yes*
KLAM0010449	*42.0571001*	*-121.682849*	*NULL*	*Yes*
KLAM0010454	*42.0600514*	*-121.4474619*	*NULL*	*Yes*
KLAM0010458	*42.102569*	*-121.1935806*	*NOFM*	*No*
KLAM0010460	*42.2080546*	*-121.4232886*	*NULL*	*Yes*
KLAM0010461	*42.213691*	*-121.39398*	*NULL*	*Yes*
KLAM0010462	*42.0387262*	*-121.4280086*	*BRK*	*No*
KLAM0010467	*42.1436058*	*-121.2871712*	*NULL*	*Yes*
KLAM0010473	*42.05645*	*-121.2035837*	*NOFM*	*No*
KLAM0010475	*42.2063377*	*-121.4403109*	*NULL*	*Yes*
KLAM0010478	*42.0470285*	*-121.4490286*	*NULL*	*Yes*
KLAM0010491	*42.23051*	*-121.44865*	*NOAC*	*No*
KLAM0010495	*42.0563643*	*-121.251607*	*NOFM*	*No*

Well ID	Latitude	Longitude	Flowmeter Status	Flowmeter Analyzed
KLAM0010498	42.1830659	-121.4603938	NOFM	No
KLAM0010506	42.0366609	-121.5268045	NOFM	No
KLAM0010518	42.0640827	-121.6784444	NULL	Yes
KLAM0010526	42.1596025	-121.2859606	NULL	Yes
KLAM0010539	42.0133447	-121.3541626	NULL	Yes
KLAM0010575	42.0103618	-121.2372354	NULL	Yes
KLAM0010608	42.1405554	-121.2824593	NULL	Yes
KLAM0010634	42.1405661	-121.2864653	NOFM	No
KLAM0010641	42.0638669	-121.2531962	NOAC	No
KLAM0010642	42.0137074	-121.2257768	NULL	Yes
KLAM0010699	42.1263947	-121.3169183	NULL	Yes
KLAM0010712	42.2663347	-121.4555863	BRKQ	Yes
KLAM0010748	42.0267263	-121.2427169	BRKQ	Yes
KLAM0010764	42.0421593	-121.2328169	NOFM	No
KLAM0010822	42.204611	-121.8379499	NULL	Yes
KLAM0010870	42.322347	-121.4686257	NULL	Yes
KLAM0010896	42.014392	-121.621707	NULL	Yes
KLAM0010961	42.1836978	-121.7983716	NOFM	No
KLAM0010988	42.1124565	-121.5004009	NOFM	No
KLAM0011008	42.0517797	-121.3796268	NULL	Yes
KLAM0011254	42.0208437	-121.405944	NOFM	No
KLAM0011544	42.2418359	-121.8607191	NULL	No
KLAM0011643	42.2755	-121.659179	NOFM	No
KLAM0011660	42.261279	-121.80343	NEWQ	No
KLAM0011825	42.2575388	-121.7794688	NOFM	No
KLAM0011826	42.254161	-121.781339	NOFM	No
KLAM0011828	42.256055	-121.780611	NOFM	No
KLAM0012203	42.2698544	-121.5989033	NULL	Yes
KLAM0012224	42.2425961	-121.5856196	NOFM	No
KLAM0012230	42.21486	-121.60123	NULL	Yes
KLAM0012261	42.2974775	-121.4382103	NOFM	No
KLAM0012269	42.2996323	-121.4493262	NOFM	No
KLAM0012283	42.2877108	-121.4500297	NOAC	No
KLAM0012390	42.2929833	-121.4872084	NOFM	No
KLAM0012391	42.2955431	-121.4727073	NOFM	No
KLAM0012404	42.2700603	-121.5077031	NULL	Yes
KLAM0012415	42.2549673	-121.481837	NULL	Yes
KLAM0012421	42.2451628	-121.581289	NULL	Yes
KLAM0012454	42.2242334	-121.5163724	NOFM	No
KLAM0012457	42.2362675	-121.4856163	NOFM	No
KLAM0012563	42.1902654	-121.7932675	NULL	No
KLAM0013326	42.2122274	-121.3744409	NOFM	No
KLAM0013400	42.2007364	-121.3565348	NOFM	No
KLAM0013403	42.1877116	-121.3652345	BRK	No

Well ID	*Latitude*	*Longitude*	*Flowmeter Status*	*Flowmeter Analyzed*
KLAM0013427	*42.1779062*	*-121.4296637*	*BRK*	*No*
KLAM0013458	*42.2221894*	*-121.4835064*	*NOFM*	*No*
KLAM0013472	*42.1862271*	*-121.4702166*	*NULL*	*Yes*
KLAM0013556	*42.1615222*	*-121.2590689*	*NOAC*	*No*
KLAM0013578	*42.1444508*	*-121.3312518*	*NOFM*	*No*
KLAM0013583	*42.1386546*	*-121.3223503*	*NOFM*	*No*
KLAM0013608	*42.1874349*	*-121.2986829*	*NOAC*	*No*
KLAM0014060	*42.2065398*	*-121.8306419*	*NOFM*	*No*
KLAM0014124	*42.1934796*	*-121.9153055*	*NULL*	*No*
KLAM0014126	*42.1927863*	*-121.9147345*	*NEW*	*No*
KLAM0014129	*42.1890628*	*-121.9142879*	*BRK*	*No*
KLAM0014254	*42.1920881*	*-121.8337393*	*NOFM*	*No*
KLAM0014301	*42.1682675*	*-121.8227985*	*NOAC*	*No*
KLAM0014559	*42.0566123*	*-121.7472318*	*NOFM*	*No*
KLAM0014580	*42.0492764*	*-121.743612*	*NOFM*	*No*
KLAM0014581	*42.0486931*	*-121.740537*	*NOFM*	*No*
KLAM0014584	*42.0463294*	*-121.7327118*	*NOFM*	*No*
KLAM0014690	*42.0376529*	*-121.6690964*	*NOAC*	*No*
KLAM0014736	*42.096474*	*-121.473494*	*NOFM*	*No*
KLAM0014754	*42.0619595*	*-121.4638555*	*NULL*	*Yes*
KLAM0014763	*42.0533589*	*-121.5497374*	*NULL*	*Yes*
KLAM0014777	*42.0531631*	*-121.5363329*	*NOFM*	*No*
KLAM0014812	*42.080819*	*-121.4567075*	*NOAC*	*No*
KLAM0014819	*42.0648949*	*-121.4255122*	*NULL*	*Yes*
KLAM0014820	*42.064665*	*-121.423947*	*NULL*	*Yes*
KLAM0014821	*42.0678965*	*-121.4170603*	*NULL*	*Yes*
KLAM0014822	*42.0774024*	*-121.4472969*	*NOAC*	*No*
KLAM0014838	*42.06411*	*-121.42084*	*NULL*	*Yes*
KLAM0014844	*42.0528901*	*-121.4004032*	*NOFM*	*No*
KLAM0014873	*42.0780608*	*-121.2592939*	*NULL*	*Yes*
KLAM0014884	*42.1057198*	*-121.1787472*	*NOFM*	*No*
KLAM0014891	*42.0837893*	*-121.2163862*	*NULL*	*Yes*
KLAM0014896	*42.050634*	*-121.198828*	*NULL*	*Yes*
KLAM0014914	*42.0239221*	*-121.7011273*	*NOFM*	*No*
KLAM0014931	*42.0278097*	*-121.6546173*	*NULL*	*Yes*
KLAM0014937	*42.0165123*	*-121.6853281*	*NOFM*	*No*
KLAM0014939	*42.0122145*	*-121.668475*	*NOFM*	*No*
KLAM0014941	*42.02065*	*-121.65528*	*NULL*	*Yes*
KLAM0014943	*42.0205607*	*-121.6492719*	*NULL*	*Yes*
KLAM0014945	*42.016221*	*-121.652758*	*NULL*	*Yes*
KLAM0014946	*42.02045*	*-121.65903*	*NULL*	*Yes*
KLAM0014952	*42.0201919*	*-121.6298135*	*NOFM*	*No*
KLAM0014956	*42.0133071*	*-121.6339106*	*NEW*	*Yes*
KLAM0014984	*42.00579*	*-121.6686*	*NULL*	*Yes*

Well ID	Latitude	Longitude	Flowmeter Status	Flowmeter Analyzed
KLAM0014992	42.038887	-121.5200429	NULL	Yes
KLAM0015034	42.0092968	-121.4175491	NULL	No
KLAM0015045	42.038835	-121.3805742	NULL	Yes
KLAM0015050	42.0418352	-121.375722	BRK	No
KLAM0015111	42.067727	-121.4524575	BRK	No
KLAM0015113	42.0406929	-121.2031626	NOFM	No
KLAM0015114	42.0246167	-121.3446656	NULL	Yes
KLAM0015129	42.049023	-121.2316392	NULL	Yes
KLAM0015130	42.023085	-121.2096319	NULL	Yes
KLAM0015131	42.0328765	-121.200865	NOAC	No
KLAM0050168	42.0537153	-121.3886775	NULL	Yes
KLAM0050341	42.2548406	-121.5514833	NULL	Yes
KLAM0050445	42.3313977	-121.6886538	NULL	Yes
KLAM0050464	42.08161	-121.7328	NULL	Yes
KLAM0050623	42.1255669	-121.512315	NULL	Yes
KLAM0050763	42.0042285	-121.3396093	NULL	Yes
KLAM0051034	42.2829651	-121.463835	NOAC	No
KLAM0051179	42.30413	-121.4577	NULL	Yes
KLAM0051231	42.1275795	-121.8092415	NULL	Yes
KLAM0051602	42.0519396	-121.4376369	BRK	No
KLAM0051611	42.0316877	-121.4185139	NULL	Yes
KLAM0051612	42.0138915	-121.3803157	NULL	Yes
KLAM0051675	42.2027963	-121.8158943	NOFM	No
KLAM0051783	42.15611	-121.86282	NOFM	No
KLAM0051848	42.031506	-121.667331	NULL	No
KLAM0051920	42.1767763	-121.3374117	NULL	Yes
KLAM0052633	42.195061	-121.389207	NULL	No
KLAM0052646	42.0385337	-121.5374857	NULL	Yes
KLAM0052647	42.0716	-121.67852	NULL	Yes
KLAM0052650	42.07693	-121.71848	NULL	Yes
KLAM0052651	42.07681	-121.72156	NULL	Yes
KLAM0052686	42.2219369	-121.733575	NULL	No
KLAM0052697	42.100044	-121.67088	NULL	Yes
KLAM0052701	42.14625	-121.26729	NULL	Yes
KLAM0052703	42.18216	-121.66176	NULL	Yes
KLAM0052706	42.041009	-121.4631258	NULL	Yes
KLAM0052711	42.0568399	-121.6654889	NULL	Yes
KLAM0052712	42.1355601	-121.9129997	NOFM	No
KLAM0052759	42.0424441	-121.4633977	NEW	Yes
KLAM0052761	42.0285305	-121.5315293	BRK	No
KLAM0052765	42.04958	-121.4254537	NOFM	No
KLAM0052776	42.1517562	-121.7616123	NULL	Yes
KLAM0052778	42.15278	-121.55685	BRK	No
KLAM0052787	42.1308239	-121.910175	NULL	Yes

Well ID	*Latitude*	*Longitude*	*Flowmeter Status*	*Flowmeter Analyzed*
KLAM0052790	*42.0536333*	*-121.5346824*	*NULL*	*Yes*
KLAM0052795	*42.015141*	*-121.512356*	*NULL*	*Yes*
KLAM0052797	*42.082561*	*-121.709375*	*NULL*	*Yes*
KLAM0052806	*42.17599*	*-121.52341*	*NULL*	*Yes*
KLAM0052816	*42.1421*	*-121.68459*	*NOAC*	*No*
KLAM0052817	*42.115529*	*-121.7277002*	*NULL*	*Yes*
KLAM0052818	*42.15557*	*-121.64922*	*NULL*	*Yes*
KLAM0052824	*42.096912*	*-121.7135654*	*NULL*	*Yes*
KLAM0052825	*42.118396*	*-121.719536*	*SHAR*	*Yes*
KLAM0052830	*42.0953685*	*-121.7006413*	*NULL*	*Yes*
KLAM0052831	*42.127257*	*-121.734701*	*NULL*	*Yes*
KLAM0052835	*42.2224962*	*-121.7394236*	*NULL*	*No*
KLAM0052840	*42.0241078*	*-121.3937197*	*NULL*	*No*
KLAM0052910	*42.0594054*	*-121.575613*	*NULL*	*Yes*
KLAM0052911	*42.16206*	*-121.55358*	*NULL*	*Yes*
KLAM0052916	*42.1065*	*-121.78603*	*NULL*	*Yes*
KLAM0052918	*42.121868*	*-121.512076*	*NULL*	*Yes*
KLAM0052922	*42.12759*	*-121.51682*	*NULL*	*Yes*
KLAM0052923	*42.0753583*	*-121.7148688*	*NULL*	*Yes*
KLAM0052925	*42.1292535*	*-121.7463043*	*NULL*	*Yes*
KLAM0052932	*42.0569877*	*-121.6004806*	*NULL*	*Yes*
KLAM0052935	*42.0058892*	*-121.3932686*	*NULL*	*Yes*
KLAM0052941	*42.13115*	*-121.74225*	*NULL*	*Yes*
KLAM0052964	*42.0083073*	*-121.3793331*	*NULL*	*Yes*
KLAM0052970	*42.10981*	*-121.79943*	*NULL*	*Yes*
KLAM0052972	*42.0239438*	*-121.5320299*	*NULL*	*Yes*
KLAM0052973	*42.1044767*	*-121.667747*	*NULL*	*Yes*
KLAM0053043	*42.020463*	*-121.567589*	*NULL*	*Yes*
KLAM0053049	*42.3208489*	*-121.6985086*	*NULL*	*Yes*
KLAM0053080	*42.118156*	*-121.512458*	*NULL*	*Yes*
KLAM0053137	*42.08116*	*-121.73418*	*NULL*	*Yes*
KLAM0053142	*42.1489354*	*-121.7573287*	*NULL*	*Yes*
KLAM0053188	*42.1591661*	*-121.7771847*	*NULL*	*Yes*
KLAM0053201	*42.0183*	*-121.51177*	*NULL*	*Yes*
KLAM0053234	*42.1404057*	*-121.7717979*	*NULL*	*Yes*
KLAM0053250	*42.0054024*	*-121.4081472*	*NULL*	*Yes*
KLAM0053269	*42.0205979*	*-121.5026313*	*NULL*	*Yes*
KLAM0053320	*42.14507*	*-121.87567*	*NEW*	*No*
KLAM0053340	*42.0190081*	*-121.346375*	*NULL*	*Yes*
KLAM0053341	*42.2423068*	*-121.7541828*	*NOFM*	*No*
KLAM0053571	*42.14495*	*-121.87573*	*NULL*	*Yes*
KLAM0053581	*42.13227*	*-121.49426*	*NOFM*	*No*
KLAM0053717	*42.0529766*	*-121.5906648*	*NULL*	*Yes*
KLAM0053732	*42.1487249*	*-121.7574006*	*NULL*	*Yes*

Well ID	*Latitude*	*Longitude*	*Flowmeter Status*	*Flowmeter Analyzed*
KLAM0053736	*42.13388*	*-121.4862*	*NULL*	*Yes*
KLAM0053737	*42.1424773*	*-121.6309298*	*NOAC*	*No*
KLAM0053738	*42.03145*	*-121.37374*	*NULL*	*Yes*
KLAM0053747	*42.040697*	*-121.5558284*	*NULL*	*Yes*
KLAM0053755	*42.191298*	*-121.675246*	*NULL*	*Yes*
KLAM0053757	*42.031744*	*-121.408369*	*NULL*	*Yes*
KLAM0053758	*42.028477*	*-121.490057*	*NULL*	*Yes*
KLAM0053773	*42.0186223*	*-121.6986104*	*NOFM*	*No*
KLAM0053778	*42.0781532*	*-121.8777643*	*NULL*	*Yes*
KLAM0053779	*42.16821*	*-121.51206*	*NULL*	*Yes*
KLAM0053792	*42.04593*	*-121.46021*	*NULL*	*Yes*
KLAM0053936	*42.072232*	*-121.692903*	*NULL*	*Yes*
KLAM0053940	*42.126014*	*-121.7826528*	*NULL*	*Yes*
KLAM0054078	*42.1772531*	*-121.6590972*	*NULL*	*No*
KLAM0054305	*42.13239*	*-121.49103*	*NULL*	*Yes*
KLAM0054337	*42.23019*	*-121.8617238*	*NULL*	*No*
KLAM0054561	*42.0970079*	*-121.697917*	*NULL*	*Yes*
KLAM0054594	*42.1980597*	*-121.7970477*	*NOFM*	*No*
KLAM0054829	*42.079965*	*-121.688549*	*NULL*	*Yes*
KLAM0054881	*42.2234255*	*-121.7343446*	*NOFM*	*No*
KLAM0055168	*42.223337*	*-121.7284436*	*NOFM*	*No*
KLAM0055311	*42.11877*	*-121.6788*	*NEWQ*	*No*
KLAM0055747	*42.048897*	*-121.742004*	*BRK*	*No*
KLAM0055767	*42.0022455*	*-121.5607101*	*NULL*	*Yes*
KLAM0056125	*42.097066*	*-121.6641853*	*NULL*	*No*
KLAM0056130	*42.0337761*	*-121.895356*	*NULL*	*No*
KLAM0056330	*42.054849*	*-121.536524*	*NULL*	*Yes*
KLAM0056425	*42.0291501*	*-121.5015753*	*NULL*	*Yes*
KLAM0056426	*42.0275539*	*-121.4824049*	*NULL*	*Yes*
KLAM0056562	*42.011367*	*-121.662951*	*NOFM*	*No*
KLAM0057326	*42.2894861*	*-121.4367881*	*NOFM*	*No*
KLAM0057366	*42.01654*	*-121.49259*	*NULL*	*Yes*
KLAM0057367	*42.1478*	*-121.54483*	*NULL*	*Yes*
KLAM0057371	*42.0329565*	*-121.4682703*	*NULL*	*Yes*
KLAM0057372	*42.0458621*	*-121.4430354*	*NULL*	*Yes*
KLAM0057387	*42.00173*	*-121.52201*	*NULL*	*Yes*
KLAM0057403	*42.02579*	*-121.50804*	*NULL*	*Yes*
KLAM0057409	*42.06301*	*-121.43782*	*NULL*	*Yes*
KLAM0057410	*42.00167*	*-121.58431*	*NULL*	*Yes*
KLAM0057412	*42.11821*	*-121.71939*	*SHAR*	*Yes*
KLAM0057431	*42.03778*	*-121.52647*	*NULL*	*Yes*
KLAM0057441	*42.249455*	*-121.793369*	*NOFM*	*No*
KLAM0057529	*42.01648*	*-121.50416*	*NULL*	*No*
KLAM0057552	*42.2574993*	*-121.4628253*	*NULL*	*Yes*

Well ID	*Latitude*	*Longitude*	*Flowmeter Status*	*Flowmeter Analyzed*
KLAM0057564	*42.0297149*	*-121.8968673*	*BRK*	*No*
KLAM0057565	*42.0352161*	*-121.8991906*	*NULL*	*Yes*
KLAM0057566	*42.2661961*	*-121.4623441*	*NOFM*	*No*
KLAM0057567	*42.2345058*	*-121.505849*	*NOFM*	*No*
KLAM0057660	*42.0713659*	*-121.2564354*	*NULL*	*Yes*
KLAM0058135	*42.11565*	*-121.8137*	*NULL*	*Yes*
KLAM0058142	*42.027619*	*-121.393706*	*NULL*	*Yes*
KLAM0058146	*42.03628*	*-121.3583*	*NULL*	*Yes*
KLAM0058293	*42.0013869*	*-121.5512489*	*NULL*	*Yes*
KLAM0058533	*42.0274416*	*-121.6374188*	*BRK*	*No*
KLAM0058594	*42.0159975*	*-121.5019679*	*NULL*	*Yes*
KLAM0058839	*42.1100268*	*-121.1941048*	*NULL*	*Yes*
KLAM0058848	*42.2519363*	*-121.6055472*	*NULL*	*Yes*
KLAM0059347	*42.065134*	*-121.767242*	*NULL*	*Yes*
KLAM0059380	*42.02723*	*-121.20205*	*NULL*	*Yes*
KLAM0060500	*42.18643*	*-121.91932*	*NULL*	*No*
KLAM0060518	*42.2265245*	*-121.4769478*	*NOFM*	*No*
KLAM0060671	*42.104224*	*-121.778624*	*NULL*	*Yes*
KLAM0060765	*42.1418*	*-121.7961*	*NULL*	*No*
KLAM0060840	*42.011319*	*-121.239789*	*NULL*	*Yes*
KLAM0060909	*42.1393602*	*-121.6496767*	*NOFM*	*No*
KLAM0061036	*42.061698*	*-121.761306*	*NULL*	*No*
KLAM0061160	*42.067625*	*-121.7730201*	*NULL*	*Yes*
KLAM0061453	*42.046315*	*-121.558217*	*NULL*	*No*
LAKE0051215	*42.0896971*	*-121.6761037*	*BRK*	*No*

Flowmeter Status	
BRK	Flowmeter broken
BRKQ	Flowmeter possibly broken
NEW	New flowmeter or different flowmeter from last visit
NEWQ	Possibly new flowmeter or different flowmeter
NOAC	No access to well or flowmeter
NOFM	No flowmeter located
NULL	No status noted during field visit
PTU	Partial use was measured at this visit
RBT	Flowmeter was rebuilt or possibly rebuilt
SHAR	Shared flowmeter between > 1 well

Appendix B

List of Wells visited for 2025 water level measurements

Well ID	Latitude	Longitude	Measured By	Fall 2024 to 2025 Water Level Change (feet)	Spring 2010 to 2025 Water Level Change (feet)
KLAM0002277	42.3417099	-121.66779	OWRD	0.43	-2.79
KLAM0002286	42.329573	-121.665678	OWRD	--	--
KLAM0010013	42.1283878	-121.8105832	OWRD	5.1	0.86
KLAM0010252	42.15698585	-121.4780849	OWRD	4.08	-4.67
KLAM0010253	42.1329779	-121.9150682	USGS	1.76	-3.26
KLAM0010258	42.1768023	-121.4508019	OWRD	1.56	1.01
KLAM0010362	42.13663985	-121.248076	OWRD	1.51	--
KLAM0010462	42.0387262	-121.4280086	OWRD	3.27	-20.42
KLAM0010518	42.0640827	-121.6784444	OWRD	6.97	-15.58
KLAM0010574	42.0081908	-121.2357299	OWRD	1.04	1.26
KLAM0010814	42.18117315	-121.3357208	OWRD	1.68	1.43
KLAM0010948	42.18378815	-121.6991117	USGS	1.32	-0.44
KLAM0011059	42.1231508	-121.678907	USGS	6.32	--
KLAM0011139	42.2353246	-121.5210406	OWRD	3.76	-1.58
KLAM0011254	42.0208437	-121.405944	OWRD	3.68	-9.87
KLAM0011656	42.2613827	-121.7950383	USGS	1.97	3.4
KLAM0011950	42.22862549	-121.7619474	USGS	-3.43	-11
KLAM0012487	42.2078098	-121.7053818	USGS	5.11	-4.7
KLAM0012925	42.189206	-121.670425	OWRD	3.04	-8.82
KLAM0013353	42.20327996	-121.408991	OWRD	1.29	0.9
KLAM0013400	42.20073639	-121.3565348	OWRD	1.84	1.24
KLAM0013435	42.162034	-121.374418	OWRD	--	--
KLAM0013456	42.21954245	-121.4681033	OWRD	1.61	1.02
KLAM0013491	42.1702877	-121.5138608	OWRD	4.35	-4.56
KLAM0013582	42.1511299	-121.3302969	OWRD	0.03	6.11
KLAM0013600	42.14491365	-121.2528771	OWRD	--	--
KLAM0013800	42.0641717	-121.8509002	USGS	4.42	-3.12
KLAM0013812	42.04587679	-121.9050771	USGS	4.02	-3.62
KLAM0014525	42.10445837	-121.7643502	USGS	7.96	-18.1
KLAM0014559	42.0566123	-121.7472318	OWRD	2.42	--
KLAM0014563	42.06308698	-121.761149	USGS	3.11	-3.13
KLAM0014625	42.0981072	-121.661531	OWRD	5.67	-14.31
KLAM0014777	42.05316307	-121.5363329	OWRD	2.21	-21.11
KLAM0014781	42.0548382	-121.5238632	USGS	3.37	-16.93
KLAM0014829	42.0675277	-121.4578849	OWRD	3.5	-32.45
KLAM0014844	42.05289009	-121.4004032	OWRD	3.76	-22.32
KLAM0014882	42.12083496	-121.2204964	OWRD	3.51	4.4
KLAM0014889	42.0829916	-121.2171923	OWRD	--	1.41
KLAM0014914	42.0239221	-121.7011273	OWRD	3.95	-11.43
KLAM0014918	42.02438775	-121.6007001	USGS	3.24	--
KLAM0014966	42.02212117	-121.5993084	USGS	2.45	0.43

Well ID	Latitude	Longitude	Measured By	Fall 2024 to 2025 Water Level Change (feet)	Spring 2010 to 2025 Water Level Change (feet)
KLAM0015045	42.03883501	-121.3805742	OWRD	3.63	-7.96
KLAM0015050	42.0418352	-121.375722	OWRD	3.72	-20.13
KLAM0015051	42.041883	-121.404585	OWRD	2.57	-5.32
KLAM0015105	41.9976	-121.3967	OWRD	0.43	--
KLAM0015114	42.0246167	-121.3446656	OWRD	3.66	-18.8
KLAM0015130	42.02308499	-121.2096319	OWRD	--	--
KLAM0016807	42.1706009	-121.5775147	OWRD	4.43	-3.72
KLAM0050228	42.00341388	-121.889395	USGS	5.83	-1.72
KLAM0050318	42.19678157	-121.4011608	OWRD	1.01	0.65
KLAM0050325	42.165647	-121.6855166	USGS	1.1	4.09
KLAM0050493	42.2587953	-121.6438126	OWRD	4.42	-4.79
KLAM0050934	42.3000856	-121.4492272	OWRD	1.75	1.1
KLAM0051130	42.1036473	-121.7617556	USGS	2.68	1.04
KLAM0051131	42.1401223	-121.4869345	OWRD	1.24	-2.95
LAKE0051215	42.08969706	-121.6761037	OWRD	7.07	-15.25
KLAM0051602	42.05193959	-121.4376369	OWRD	3.19	-16.18
KLAM0051611	42.03168768	-121.4185139	OWRD	3.25	-23.19
KLAM0051612	42.0138915	-121.3803157	OWRD	2.4	2.92
KLAM0051795	42.06593318	-121.4678627	OWRD	6.03	-30.4
KLAM0051920	42.17677627	-121.3374117	OWRD	1.67	--
KLAM0051922	42.19834415	-121.3969723	OWRD	1.61	1.04
KLAM0052096	42.15067816	-121.2614517	OWRD	2.02	1.59
KLAM0052194	42.05306726	-121.4427981	OWRD	3.62	-16.9
KLAM0052204	42.15067816	-121.2614517	OWRD	4.04	6.21
KLAM0052697	42.100044	-121.67088	OWRD	6.72	-14.61
KLAM0052706	42.041009	-121.4631258	OWRD	2.81	-19.4
KLAM0052795	42.015141	-121.512356	OWRD	2.26	-17.3
KLAM0052797	42.082561	-121.709375	OWRD	7.35	-15.65
KLAM0052864	42.14303	-121.876573	OWRD	3.39	-2.94
KLAM0052910	42.05940542	-121.575613	OWRD	4.96	-27.55
KLAM0052923	42.07535831	-121.7148688	OWRD	7.1	--
KLAM0052970	42.10981	-121.79943	OWRD	5.24	-4
KLAM0052973	42.10447674	-121.667747	OWRD	5.45	-12.28
KLAM0053043	42.020463	-121.567589	OWRD	2.21	-17.49
KLAM0053142	42.1489354	-121.7573287	OWRD	6.79	-12.91
KLAM0053188	42.15916606	-121.7771847	OWRD	6.71	-13.4
KLAM0053269	42.02059791	-121.5026313	OWRD	2.31	-17.54
KLAM0053531	42.1487826	-121.7573204	OWRD	3.55	-3.96
KLAM0053717	42.05297663	-121.5906648	OWRD	5.2	--
KLAM0053755	42.191298	-121.675246	OWRD	3.39	-8.75
KLAM0053771	42.09584428	-121.7893733	OWRD	9.43	-4.35
KLAM0053778	42.07815315	-121.8777643	OWRD	3.47	-3.85
KLAM0053940	42.12601404	-121.7826528	OWRD	--	-4.05

Well ID	*Latitude*	*Longitude*	*Measured By*	*Fall 2024 to 2025 Water Level Change (feet)*	*Spring 2010 to 2025 Water Level Change (feet)*
KLAM0054529	42.138175	-121.6424	OWRD	1.91	-8.58
KLAM0057412	42.11821	-121.71939	OWRD	6.81	--
KLAM0060224	42.023583	-121.601774	USGS	3.75	--