

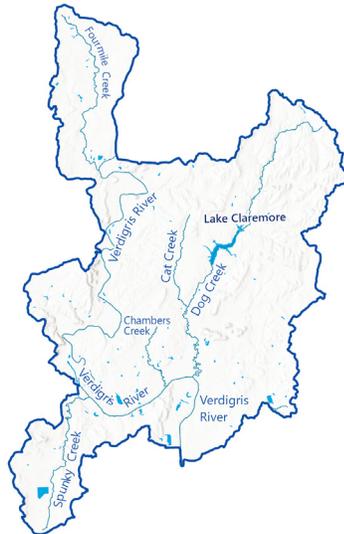
# BASIN 78

## Verdigris River (To Oologah Dam) - 2 Middle Arkansas Region



**Surface Water Legend**

- Planning Basin
- OWRB Major Streams
- OWRB Lakes



**Groundwater Legend**

- Planning Basin
- Minor Bedrock Aquifer
- Cherokee Group (CG)
- Northeastern Oklahoma Pennsylvanian (NOP)
- Minor Alluvial Aquifer
- Verdigris River (Vr)



Interactive maps can be viewed through the OCWP dashboards, accessible at [oklahoma.gov/owrb/water-planning](http://oklahoma.gov/owrb/water-planning)

## SUMMARY

- Basin 78 - Verdigris River (To Oologah Dam) - 2 demands are supplied by a combination of surface water, groundwater, and out-of-basin supplies.
- Water demand (withdrawal) is projected to increase by 3,707 acre-feet per year (20%) between 2020 and 2075.
- Physical surface water gaps are projected in Basin 78 as early as 2030 and will continue through 2075.
- There are no alluvial groundwater demands in this basin.
- Physical bedrock groundwater depletions are projected in Basin 78 as early as 2030 and will continue through 2075.
- Basin 78 is projected to have surface water available for appropriation through 2075.
- Basin 78 is projected to have groundwater available for appropriation through 2075.
- To mitigate projected water supply shortages in this basin, the following strategies will typically be most effective:
  - Reduce water demand through conservation, water loss reduction, and other activities (PS, SSI, OG, TE). **WSS**
  - Reduce water demands through agricultural water saving options (CI, LS). **WSS**
  - Continue/increase reliance on in-basin surface water (all sectors). **WSS** **WDI**
  - Continue/increase reliance on in-basin groundwater (all sectors). **WSS** **WDI**



OWRB Water  
Planning Page  
[oklahoma.gov/owrb/water-planning](http://oklahoma.gov/owrb/water-planning)

Refer to the **“Guide to Region and Basin Fact Sheets”** for a description of the types of information detailed in this fact sheet.

**Water Demand Sectors:** PS = Public Supply, SSI = Self-supplied Industrial, OG = Oil & Gas, TE = Thermoelectric Power, CI = Crop Irrigation, LS = Livestock, SSD = Self-supplied Domestic

**OCWP Statewide Recommendations** are designed to address current and anticipated water supply challenges and are noted throughout this fact sheet with the following icons: **WIW** Water Infrastructure & Workforce, **WM** Water Management, **WSS** Water Supplies & Storage, and **WDI** Water Data & Information



## Population

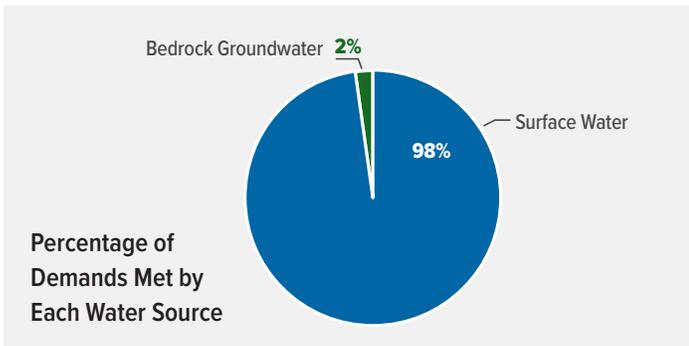
How is the population expected to change in the future?

2020	2030	2035	2045	2060	2075
52,030	52,506	53,156	54,143	55,828	57,483

## Water Demand Projections

How much water is needed to meet Oklahomans' needs?

Basin 78 accounts for approximately 8% of the overall water demands of the Middle Arkansas Region.



### Total Demand by Sector (AFY)

	2020	2030	2035	2045	2060	2075
Self-supplied Domestic	319	321	324	328	334	341
Self-supplied Industrial	-	-	-	-	-	-
Crop Irrigation	218	247	247	247	247	247
Livestock	439	427	427	416	402	389
Oil & Gas	7	7	7	7	7	7
Public Supply	14,506	14,666	14,858	15,168	15,695	16,205
Thermoelectric Power	2,707	2,988	3,197	3,481	4,073	4,714
<b>Total</b>	<b>18,196</b>	<b>18,657</b>	<b>19,060</b>	<b>19,647</b>	<b>20,758</b>	<b>21,903</b>

AFY = acre-feet per year; Small differences may result due to rounding.

## Physical Water Shortages

Will there be enough "wet water" physically available to meet anticipated needs?

WIW WM WSS

	Magnitude (AFY)					Frequency <sup>1</sup>
	2030	2035	2045	2060	2075	2075
Surface Water Gap	8	12	13	222	546	21%
Alluvial Groundwater Depletion	-	-	-	-	-	No AGW Demand
Bedrock Groundwater Depletion	321	324	328	334	341	N/A

1. Probability of a water shortage occurring in at least one month of the year.

## Legal Water Availability

Will there be water available for permitting after meeting 2075 demands?

WM WSS

Estimated Surface Water available for appropriation in 2075 (AFY)	Inside 2016 Water Settlement Area? <sup>1</sup>	Is there a downstream mainstem restriction? <sup>2</sup>	Estimated Groundwater available for appropriation in 2075 (AFY)
1,062,000	No	No	459,600

- If, yes – basin wholly or partially subject to the provisions of the 2016 Water Settlement Agreement.
- If, yes – mainstem restriction may impact water available for appropriation within the basin.

## Water Management Strategies

What approaches are most viable for meeting future needs and mitigating shortages?

WSS WDI WIW WM

Water Management Category	Demand Sector	Basin 78 Evaluation
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All sectors	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All sectors	Effective at Meeting Future Demands
Stormwater Capture & Use	PS, SSI	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies
Water Transfers	All sectors	No Shortage or Needs Met by Other Strategies

In addition to the water management strategies, water users need:

- Options to address water quality concerns, which could include expanding source water protection programs and expanding water quality studies.
- Ways to address infrastructure limitations, which could include additional water funding from the State, Federal, and/or public-private partnerships, and by providers setting water rates that fully fund system operation and maintenance.