POTOMAC BASIN REPORTED WATER USE

Comprehensive Water Resources Plan



INTRODUCTION

In accordance with one of the technical recommendations of the <u>Potomac Basin</u> <u>Comprehensive Water Resources Plan's</u> water use and supplies challenge area, this pamphlet has been produced to document and share high-level results. This pamphlet provides a "report on basin-wide water uses," and ultimately acts as a first step toward estimating, "projected demands and consumptive demands."

The Potomac Basin Comprehensive Water Resources plan explains the recommendation as follows:

"Effective water use planning requires consideration of upstream uses, regardless of political boundaries, to achieve multiple interstate objectives including maintaining adequate surface and ground water supplies for diverse users during times of drought and meeting flow-by requirements throughout the basin including the Potomac flow-by at Little Falls dam. To this end, a first step in planning for sustainable water uses in the basin is to develop a clear understanding of the current and anticipated future locations, amounts, and uses of surface and ground water. The ICPRB developed a basinwide database of withdrawals and consumptive use (Ducnuigeen et al. 2015). The database was used to estimate current and future withdrawals and consumptive use for the basin above Little Falls as part of the 2015 Washington Metropolitan Area Water Supply Study: Demand and resource availability forecast for the year 2040 (Ahmed et al. 2015). With modification, the database can be expanded and used as a resource for understanding surface and ground water use, including consumptive use, in a more spatially explicit way in the basin, including the Coastal Plain, as part of a basin-wide assessment."

To address the objectives of this recommendation, ICPRB staff modified and updated the database of withdrawals and consumptive uses. These modifications resulted in a compilation of water withdrawal data for all 11 HUC8 watersheds in the Potomac basin from 2003 to 2020, although additional sparse data are available as far back as 1983. This pamphlet reports on a first step in understanding the basinwide state-reported withdrawals and consumptive uses; namely, it summarizes 2017 reported water usage across all water use sectors and all HUC8 watersheds in the basin. Methods and results are summarized below.

METHODS

The withdrawal and consumptive use database was updated through collaborative efforts between ICPRB and basin jurisdiction staff. Once withdrawal data were collected from each state in the Potomac basin, ICPRB staff organized the data into a universal format. The resulting edition of the withdrawal and consumptive use database has one table with all withdrawal records in the basin and another table containing withdrawal site descriptions. Site descriptions include owner information, withdrawal use type/sector, HUC8 code, and other information about the withdrawal site.

The 2017 snapshot was produced using the updated database. The snapshot represents the sum of the reported water withdrawals (in million gallons per day - MGD) for each HUC8 watershed in the Potomac basin by water use sector. Note that this snapshot analysis looks exclusively at the quantity of the withdrawal. The summary was produced for 2017 to complement the unreported water usage totals estimated in ICPRB's publication on Potomac Basin Unreported Water Use (Moltz et al. 2021).

RESULTS

Water withdrawals reported to the states in the Potomac basin equate to approximately 4,100 million gallons per day (MGD). The North Branch Potomac watershed, covering parts of Pennsylvania, Maryland, and West Virginia, has the greatest amount of reported water withdrawals, over 1,000 MGD, dominated primarily by the Mount Storm Power Station (Figure 1). The Lower Potomac watershed has the second largest amount of reported water withdrawals, also dominated by power generation at the NRG Morgantown Generating Station. The Cacapon-Town watershed, which covers portions of Maryland, Pennsylvania, Virginia, and West Virginia, has the lowest total reported water withdrawals, less than 1 MGD (Figure 1). These withdrawal amounts do not represent the amount of water consumed or removed from the system. Instead, the value provided here is the full amount withdrawn. A portion of this water, varying by user and use type, is discharged back to the system.



Total withdrawals by water use sector were also calculated and aggregated by HUC8. Overall, hydroelectric and power generation represent more than three-quarters (77.7%) of the reported water withdrawals in the Potomac basin (Figure 2). The remaining reported water withdrawals are mainly associated with public water supply (16.3%). Commercial, agricultural irrigation, livestock, aquaculture, and self-supplied domestic each represent less than 1% of total water withdrawal.



FIGURE 2. Percent of reported water withdrawals by sector in the Potomac basin.

NEXT STEPS

This snapshot is a first step in addressing the relevant comprehensive plan water use recommendation. Further work will include evaluating historic water withdrawals for each sector and HUC8 to estimate future withdrawals and consumptive usage. The results of this reported use snapshot, the unreported water uses report, and future predictive modeling will provide a comprehensive picture of water use in the Potomac basin.

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HUC8	HUC8 Name	Aquaculture	Commercial	Hydroelectric	Industrial	Irrigation	Livestock	Mining	Power Generation	Public Water Supply	Self- Supplied Domestic	Other	Total
02070001	South Branch Potomac	8.41	0.01	0	0	0	0	0.10	0	4.63	0	0	13.15
02070002	North Branch Potomac	0.30	0.07	0	35.75	0.11	0.00	8.18	997.80	10.24	0	0	1052.45
02070003	Cacapon-Town	0	0.02	0	0.00	0.00	0.00	0	0	0.72	0	0	0.74
02070004	Conococheague- Opequon	9.32	0.92	625.46	0.13	0.38	0.04	17.81	0	35.92	0.02	0	690.00
02070005	South Fork Shenandoah	0.96	0.47	0	10.68	1.32	0.01	0	0	25.74	0	0	39.17
02070006	North Fork Shenandoah	0.73	0.34	0	3.59	0.15	0.20	0	0	11.19	0	0	16.20
02070007	Shenandoah	0	0.25	498.82	0.07	0.11	0.06	0	0	4.29	0	0	503.59
02070008	Middle Potomac- Catoctin	0.01	0.82	0	0.77	1.30	0.01	0.14	270.75	462.68	0	0	736.47
02070009	Monocacy	4.25	0.67	0	5.51	0.66	0.20	10.67	0.09	11.98	0.12	0	34.15
02070010	Middle Potomac- Anacostia- Occoquan	0	1.33	0	0.19	1.44	0	0.77	0.46	82.96	0	0.22	87.36
02070011	Lower Potomac	0.27	1.42	0	1.01	0.56	0	1.92	784.94	17.01	0.02	112.15	919.31
Total		24.24	6.32	1124.27	57.70	6.03	0.52	39.58	2054.04	667.36	0.17	112.37	4092.59



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