

An Inventory of

Potomac Basin Entities

with a Role in Sustainable Water
Resources Management

Comprehensive Water Resources Plan



Introduction

In approving the Compact creating the Interstate Commission on the Potomac River Basin (ICPRB), the U.S. Congress empowered the ICPRB to conduct studies on pollution and other water problems, to cooperate with and assist other agencies in the formulation of plans and activities, and to disseminate to the public information about those problems and recommended actions. To guide those actions, in 2018 the ICPRB promulgated an ambitious “Potomac Basin Comprehensive Water Resources Plan” that described a shared vision for the basin. To achieve that vision, the Plan contained four challenge areas and fourteen recommended actions that ICPRB, in concert with other agencies, should take. One overarching recommendation related to all challenge areas: “Develop an inventory of **roles, responsibilities, and areas of authority** and discuss how effectively current programs and activities are being carried out.” (emphasis added)

Purpose

This pamphlet is used in concert with a spreadsheet inventory to identify entities in the Potomac basin that either directly or indirectly affect the realization of the [Potomac Basin Comprehensive Water Resource Plan’s vision](#) for the basin. It also summarizes the roles, responsibilities, and areas of authority of those entities to inform and integrate future comprehensive planning and implementation activities.

The comprehensive plan advisory committee members and stakeholder participants of the Comprehensive Plan Virtual Event Series reviewed and provided feedback on the draft inventory in 2020 and internal improvements have been underway since that time. Ongoing comments are welcome and can be submitted to obtain a copy of the spreadsheet inventory or to submit comments, email ProgramOperations@icprb.org. The inventory will be discussed during the 2023 review of the plan’s milestones and measures of success and may assist in defining activities for the next five-year period.

Methods

The inventory was compiled in a spreadsheet workbook in two phases. First, the list of entities was developed and, secondly, information about the entities’ roles, responsibilities and areas of authority were obtained, recorded, and summarized. The methods are described by phase in this section.

Entities

The Potomac Basin Comprehensive Water Resources Plan describes relevant entity types in Section 4.1 (titled Roles and Responsibilities). They include municipal, state, regional, and federal government agencies; non-governmental organizations; drinking water suppliers, other commercial entities, academic institutions, and individuals. The compiled entity types for this effort are identical to those called out in Section 4.1 of the plan with three exceptions. County governments were added in the inventory as they have a role to play in sustainable water resources management. Commercial entities and individuals were removed in the inventory. The water resource impacts of commercial entities are being considered separately in a forthcoming comprehensive evaluation of water uses in the basin. Further, it is not practical or efficient to collect information on individuals for this purpose. As such, the final list of entity types included in the inventory is as follows: municipal, county, state, regional, and federal government agencies; non-governmental organizations; community drinking water suppliers, and academic institutions. As part of the effort to identify entities, information on 209 localities without local government functions was obtained but are not included in the Table 4 summary. In addition, information about 1,315 transient and non-transient non-community drinking water suppliers were obtained from EPA Region 3. They are included as two drinking water supplier entities (transient and non-transient non-community). The full listings are available in the inventory workbook.

Three of the entity categories (drinking water suppliers and county and municipal governments) are subdivided based on size for the purposes of this inventory, in recognition of the differences in organizational capacity. Specifically, a threshold of 5 MGD is used to separate small and large drinking water suppliers. County and municipal governments are divided based on a population threshold of 500,000 and 100,000 people, respectively.

The initial list of entities contained stakeholder participants of the comprehensive planning process (advisory committee member organizations and subscribing organizations to the plan’s email distribution list). Additional entities were identified based on readily available data sources and stakeholder comments (Table 1). Basic information compiled for each entity include name, website, and (where applicable and readily available) mission statement.

Table 1. Entity types, subdivisions, and sources.

TYPE	SUBVISION	SOURCE
Municipal Government	Large (> 100,000 people) Small (< 100,000 people)	National Atlas of the United States; Census.gov
County Governments	Large (> 500,000 people) Small (< 500,000 people)	Census.gov
State Governments	—	Stakeholder participant list and professional judgement
Regional Governments	—	Stakeholder participant list and professional judgement
Federal Government	—	https://fas.org/sgp/crs/misc/R42653.pdf
NGOs	—	http://www.potomacriver.org/Atlas-Maps/Stewards-Map/
Drinking Water Suppliers	Large (> 5 MGD) Small (< 5 MGD)	ICPRB CO-OP Consumptive Use Database (Ducnuigeen et al. 2015; Ahmed et al. 2020)
Academic Institutions	—	Listing provided to ICPRB during the 2020 virtual event series and academic stakeholder participants

Roles, Responsibilities, and Areas of Authority

For each entity identified using the methods described above, information was obtained about roles, responsibilities, and areas of authority. Characteristics considered were developed in close consultation with the basin-wide plan and are shown in Figure 1. Note that the term “Areas of Authority” is used broadly to indicate an entity’s interest and engagement in one of the Potomac Basin Comprehensive Water Resources Plan’s challenge areas and does not necessarily indicate regulatory, or other legal, authorities. Characteristics were determined by searching readily available web-based information including, but not limited to, programmatic websites and publications using relevant search terms (Table 2).

In some cases, assumptions were made for bulk sets of entities at a time. Specifically, small drinking water suppliers, small municipalities, and small county governments were not reviewed individually but were assigned consistent roles, responsibilities, and areas of authority based on assumptions of activities at that level. Two exceptions to this include characterizing individual entities based on the results of spot-checking and distinguishing small municipalities that serve as community drinking water suppliers. This is an area of uncertainty in the results and an area for future improvement.

Figure 1: Categories for roles, responsibilities, and areas of authority.

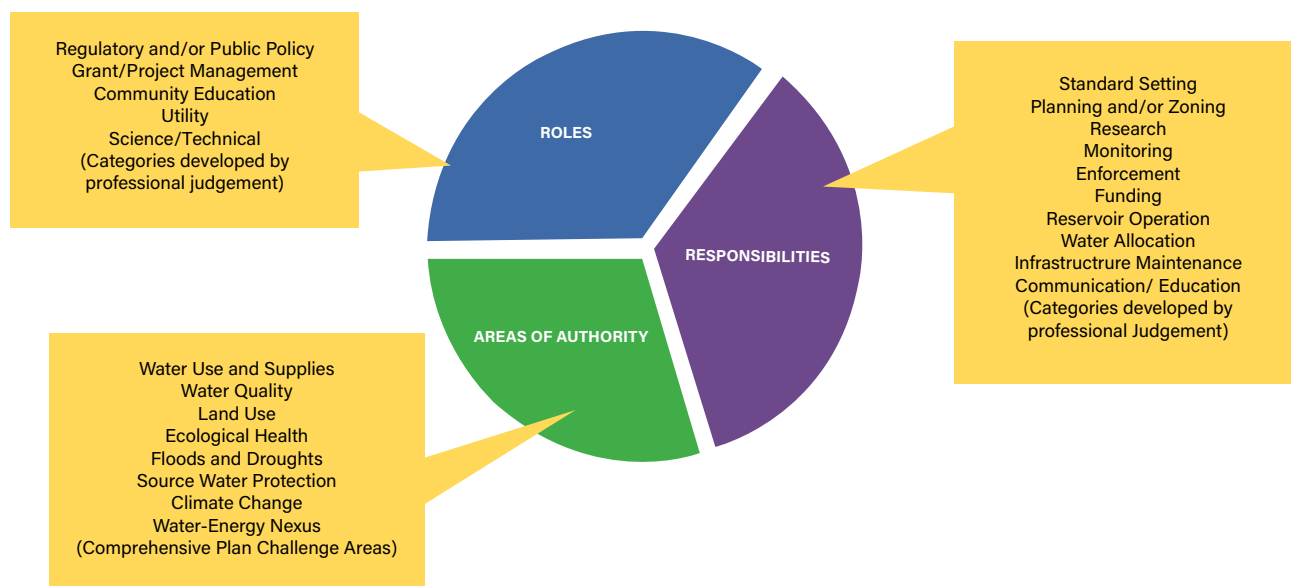


Table 2. Example search questions and terms for each category.

	Categories	Example Search Questions (Yes=1, No=0)	Example Search Terms (Present=1, Absent=0)
ROLES	Regulatory and/ or Public Policy	Does the entity have regulatory authority? Does the entity develop public policy?	law, regulatory, regulation, policy, rule
	Grant/Project Mgmt	Does the entity perform grant/project management, giving or receiving funds?	funding, project management, grant management
	Citizen/ Community	Is the entity engaged with the citizens and the broader community?	citizen activity, volunteer, community
	Education	Is education and/or outreach part of the entity's activities?	education, outreach
	Unity	Does the entity function as a drinking water utility?	utility, drinking water, provider, supplier
	Science/Technical	Does the entity conduct scientific and technical activities?	research, scientist, science, technical
RESPONSIBILITIES	Standard Setting	Does the entity set water-related standards?	setting standards, legal authority
	Planning and/ or Zoning	Is the entity responsible for planning and zoning?	zoning, land use planning, planning
	Research	Does the entity conduct research to expand the state of the science?	research, scientist, science
	Monitoring	Does the entity monitor water quality?	water quality, sampling, data, database, assurance, control
	Enforcement	Is enforcement part of the entity's main activities?	fine, penalty, enforcement, police
	Funding	Does the entity provide or manage funding?	proposal, fund, grant
	Reservoir Operations	Does the entity own, operate, maintain, or make decisions about reservoirs?	reservoir operation, water release
	Water Allocation	Does the entity allocate water?	water allocation, operation
	Infrastructure Maintenance	Does the entity design, build, or maintain water-related infrastructure?	pipeline, pipe, construction, infrastructure, dam
Communication/ Education	Are communication and education part of the entity's activities?	communication, education, outreach	

AREAS OF AUTHORITY	Water use and Supplies	Is the entity involved in the social, political, environmental, management, or science of water use and supply?	water use, supply, demand
	Water Quality	Is the entity involved in the social, political, environmental, management or science of water quality?	water quality, testing, contamination, laboratory
	Land Use	Is the entity involved in the social, political, environmental, management or science of land use as it relates to sustainable water resources management?	land use, management, land
	Ecological Health	Is the entity involved in the social, political, environmental, management or science of ecological health?	ecology, ecological health, ecological
	Floods and Droughts	Is the entity involved in the social, political, environmental, management or science of floods and droughts?	flood, drought, dry events, storm
	Source Water Protection	Is the entity involved in the social, political, environmental, management or science of source water protection?	water quality, monitoring, spill, source water
	Climate Change	Is the entity involved in the social, political, environmental, management or science of climate change?	climate, climate change, global warming
	Water-Energy Nexus	Is the entity involved in the social, political, environmental, management or science of the water-energy nexus?	water and energy, water-energy nexus, hydropower, water for energy production

Roles, responsibilities, and areas of authority are recorded in the inventory using a convention of “0”s and “1”s where “0” represents no and “1” represents yes. Blank cells indicate that the information has not yet been determined. To illustrate the point, regulatory entities like Maryland Department of the Environment or Virginia Department of Environmental Quality receive a “1” under the regulatory and/or public policy role. A screenshot of a small portion of the inventory is shown in Table 3 to assist in visualizing the spreadsheet design.

Table 3. Snapshot of inventory content for the roles of a few academic institutions.

Organization	Website	Mission Statement	Type	Roles (Check all that apply)					
				Regulatory and/or Public Policy	Grant/Project Mgmt	Citizen/Community	Education	Utility	Science/Technical
American University	www.american.edu/	Chartered by Congress in 1893 as a national university to serve the public interest and build the nation, American University educates active citizens who apply knowledge to the most pressing concerns facing the nation and world.	Academic	0	1	1	1	0	1
DC Water Resources Research Institute, UDC	https://www.udc.edu/causes/land-grant/wrri/UDC	The Center for Sustainable Development and Resilience (CSDR) provides relevant and innovative applied research and education to students, District residents, and the world in the areas of sustainable infrastructure, sustainable spaces, urban economics and entrepreneurship, and behavioral and social change.	Academic	0	1	1	1	0	1
George Mason University	www2.gmu.edu/	The Center for Sustainable Development and Resilience (CSDR) provides relevant and innovative applied research and education to students, District residents, and the world in the areas of sustainable infrastructure, sustainable spaces, urban economics and entrepreneurship, and behavioral and social change.	Academic	0	1	1	1	0	1
Georgetown University	www.georgetown.edu/	The Center for Sustainable Development and Resilience (CSDR) provides relevant and innovative applied research and education to students, District residents, and the world in the areas of sustainable infrastructure, sustainable spaces, urban economics and entrepreneurship, and behavioral and social change.	Academic	0	1	1	1	0	1
James Madison University	www.jmu.edu/	An academic community dedicated to creating and communicating knowledge, Georgetown provides excellent undergraduate, graduate and professional education in the Jesuit tradition for the glory of God and the well-being of humankind.	Academic	0	1	1	1	0	1
Maryland Water Resources Research Center, UMD	blog.umd.edu/mwrrc/	MWRRRC was established in 1965 to develop new technology and more efficient methods for resolving local, state and national water resources problems. In addition to supporting research, its mission includes training water scientists and engineers and disseminating information to the public. Comparable centers exist in every state, usually at the principal Land Grant University.	Academic	0	1	1	1	0	1

For evaluation and analysis, the percentage of entity types with each role, responsibility, and area of authority were calculated by summing the “1”s, dividing by the total number of entities in each category, and multiplying by one hundred. For example, four of four, or one hundred percent of the large county governments engage in planning activities (4/4 * 100 = 100%).

Findings

In total, 733 entities were identified in the Potomac basin. Small drinking water suppliers, small municipal governments, and academic institutions represent the three most numerous entity types; large municipal and county governments are the least numerous. Note that not all “entities” are unique organizations. As examples, some small drinking water suppliers are also small municipal governments, and some counties have multiple departments individually listed.

Table 4 provides a more thorough summary of inventory contents. The full inventory workbook is available by contacting ProgramOperations@icprb.org. As entities in the Potomac basin change over time, it is essential to view this product as a snapshot of reviewed data sources rather than a comprehensive, once-and-done activity.

Table 4. Summary of inventory contents. The relative percentage of entities having each role, responsibility, and area of authority are represented using dark-to-light shading. Darker color indicates 100 percent of entities have the indicated role, responsibility or authority; white indicates 0 percent of the entities have them.

	Entity types	Municipal Gov		County Gov		State Gov n=35	Regional Gov n=18	Federal Gov n=20	NGO n=76	Drinking Water Suppliers		Academic n=136
		Large	Small	Large	Small	–	–	–	–	Large (>5 mgd) n=14	Small (<5 mgd) n=196	
ROLES	Regulatory and/or Public Policy	100%	100%	100%	100%	91%	56%	85%	0%	0%	0%	0%
	Grant/Project Mgmt	100%	100%	100%	100%	86%	83%	100%	37%	29%	2%	98%
	Citizen/Community	100%	100%	100%	100%	14%	33%	15%	83%	100%	99%	100%
	Education	100%	100%	100%	100%	71%	72%	100%	21%	57%	99%	100%
	Utility	75%	38%	0%	7%	3%	0%	0%	0%	100%	92%	0%
	Science/Technical	38%	0%	50%	4%	63%	33%	95%	13%	43%	1%	100%
RESPONSIBILITIES	Standard Setting	100%	100%	100%	60%	77%	22%	75%	0%	0%	0%	0%
	Planning and/or Zoning	100%	98%	100%	72%	17%	67%	60%	9%	0%	0%	0%
	Research	0%	0%	25%	0%	60%	28%	100%	16%	21%	1%	100%
	Monitoring	38%	0%	25%	9%	51%	17%	85%	33%	100%	99%	26%
	Enforcement	100%	100%	100%	32%	60%	6%	55%	0%	0%	1%	0%
	Funding	38%	0%	25%	11%	69%	39%	100%	9%	21%	1%	99%
	Reservoir Operations	0%	0%	0%	4%	0%	6%	15%	0%	29%	1%	0%
	Water Allocation	13%	0%	0%	0%	11%	0%	10%	0%	7%	0%	0%
	Infrastructure Maintenance	100%	100%	25%	7%	20%	11%	25%	0%	100%	99%	0%
	“Communication/Education”	100%	100%	100%	100%	89%	83%	95%	75%	100%	100%	100%
AREAS OF AUTHORITY	Water Use and Supplies	100%	98%	100%	21%	20%	28%	55%	3%	100%	100%	43%
	Water Quality	100%	100%	100%	39%	80%	94%	85%	80%	100%	100%	55%
	Land Use	100%	98%	100%	89%	74%	83%	80%	55%	43%	1%	47%
	Ecological Health	50%	0%	0%	0%	40%	28%	75%	37%	0%	1%	51%
	Floods and Droughts	88%	1%	0%	37%	94%	89%	95%	45%	100%	92%	53%
	Source Water Protection	50%	0%	0%	35%	54%	61%	40%	39%	100%	98%	42%
	Climate Change	50%	1%	75%	7%	74%	44%	85%	25%	50%	1%	56%
	Water-Energy Nexus	25%	0%	0%	7%	29%	17%	35%	16%	29%	1%	41%

This inventory characterizes the breadth and depth of current authorities and activities with respect to water resource management in the Potomac River watershed. The information assembled here can be used to enhance communication and coordination, inform and integrate future water resource management activities, and foster opportunities for improvement and synergistic success. Major findings of the inventory are summarized below. Note that these findings represent the percent of entities that have the indicated role, responsibility, or area of authority. It does not indicate the quality, completeness, or sufficiency of that work for sustainable water resources in the basin.

Roles

- The regulatory and policy roles in the basin are held by governmental agencies. Of these, regional-scale governmental institutions have the fewest percent of entities with these roles. Note that while some drinking water suppliers are municipal governments, they were not considered regulatory in their drinking water supplier capacity (e.g., zero percent of drinking water suppliers are shown as having a regulatory or public policy role).
- Grant/project management is a widely held role across entities in the Potomac basin with government and academia having the largest percentages of entities with this role.
- Citizen and community engagement and education are broadly held roles across most entity types.
- The role of drinking water utility is primarily held by large municipal governments and individual drinking water suppliers.
- Large municipal and county governments, drinking water utilities, state, regional, and federal government, and academic institutions all have large scientific and technical roles in the basin.

Responsibilities

- Standards are set by all levels of governmental agencies. While some drinking water suppliers are municipal governments, they were marked as not setting standards in their capacity as a drinking water supplier.
- Zoning occurs at the local (county and municipal) level in the Potomac basin, with additional planning efforts occurring at the larger government agency scale.
- The responsibility of research predominantly falls to academic institutions and the federal government, with a limited percent of state government and other entities reporting research responsibilities.
- Water quality monitoring occurs most consistently in the drinking water supplier category, but also is performed by water quality departments of large municipal, large county, state, regional, and federal governments. Twenty-six percent of academic institutions were found to have water quality monitoring initiatives in the basin. One-third of non-governmental organizations also conduct water quality monitoring.
- Enforcement primarily occurs within local government entities, but also at other levels of government.
- The largest percent of entities providing funding are federal and state governments while almost all academic institutions have responsibilities managing project funds.
- Reservoir operation for drinking water supply is a specialized activity performed by a handful of large drinking water suppliers, the U.S. Army Corps of Engineers, and ICPRB's Section for Cooperative Water Supply Operations on the Potomac.
- Similarly, water allocation activities are a specialized activity performed by a few government agencies in the basin.
- Municipal governments and drinking water suppliers were found to be the primary entities responsible for infrastructure maintenance, with a small percentage of large county, state, and federal government agencies also reporting responsibility for infrastructure maintenance.
- Communication and education are a common theme across all entity types.

Areas of Authority

Entities in the basin collectively provide coverage across all eight of the challenge areas in the comprehensive plan, referred to as “areas of authority” in the inventory. Water quality is a focus of most (611) of the 733 entities investigated, followed by water use and supply (483). They are primarily governments and drinking water suppliers. The area that is a focus of the fewest entities is the water-energy nexus (99). Relatively few entities also focus on ecological health (137) or climate change (165). Small municipalities and county governments typically have low or no engagement in five of the challenge areas (ecological health, floods and droughts, source water protection, climate change, and water-energy nexus).

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