Date: July 8, 2019
To: Water Resources Development Program, Director's Office
From: Harmony Burright
Subject: Water Supply Planning Typology

Introduction

This document was developed to assist with the following:

- support discussions with places and organizations interested in water supply planning
- provide a useful input to pre-planning (Step 0) and Step 1 guidance development
- help us think strategically about different types of water planning that the Department may want to support in the future
- provide a lens to inform the place-based planning program assessment

The intended audience is the Water Resources Development Program, the Director's Office and other internal stakeholders interested in the future of water planning. This was a high-level assessment that depended upon water plans that had been collected over the past 3 years and additional plans that were shared by team members or found in a simple web-based search. In total, 42 plans were reviewed. The result is a typology, and associated materials. A typology is an attempt to classify or categorize things with similar traits or characteristics. It is a way to find and convey commonalities in order to organize and simplify complex information.

Water Supply Planning

A water supply plan lays out strategies and actions to meet instream and/or out-of-stream water supply needs. Water supply is defined as the appropriate amount of water (QUANTITY), at the right time (TIMING), in the right place (LOCATION/DISTRIBUTION), of sufficient quality (QUALITY), to meet intended instream and out-of-stream uses.

A plan is distinct from a study or an assessment in that it lays out what individuals or organizations will *do* to achieve agreed upon goals. Studies or assessments investigate an issue, opportunity, or project. Studies or assessments may examine potential actions, compare alternatives, or answer questions regarding the issue, opportunity, or project. The results of studies and assessments provide important inputs to a plan. A plan may also recommend that additional studies or assessments be conducted.

Effective planning is as much about the *process* as it is about the resultant *plan.* A well-designed process will produce a more useful and meaningful plan that will focus and guide implementation. The process can set the stage for effective implementation by identifying and including partners with the necessary expertise, resources, and authority to follow-through on identified actions. An effective process will itself yield important interim outcomes that will be vital to implementation, such as building trust and relationships between partners, assembling available information, making the case for why action is necessary, learning how to collaboratively solve problems as a group, beginning to build awareness in the broader community, establishing relationships with funders and decision-makers.

An effective plan will lay out a clear path forward and help align resources to implement actions. The format should be tailored to the appropriate audience, which could be internal colleagues, external partners, members of the public, funders, external decision-makers, or a combination thereof.

Types of Water Supply Planning

The different water plans assessed for this effort can best be categorized by the relative scope and scale of the water supply issue(s) to be addressed. Scope and scale are interrelated - scope can affect scale and vice versa.

- **Scope** describes the number and type of issues or opportunities that the planning effort seeks to address and/or the problem to be solved. For instance, a more narrow scope will address a specific issue and/or opportunity and a more broad scope will look at multiple issues and/or opportunities. See Table 1 for a description of geographic scales.
- **Scale** describes the relative size or extent of something and can be expressed as the geographic and temporal scale of the planning effort. For instance, the scale can address issues covering a small or large area and may address near-term and/or long-term issues. See Table 1 for a description of geographic scales. See Figure 1 for a description of temporal scales.

Some planning processes will be very narrow in scope and scale, focusing on a specific project that affects a specific user in a small area in the near-term. Other planning processes will be very broad in scope and scale with the purpose of understanding large-scale trends and issues and identifying potential actions across a watershed, basin, or region over a longer-term planning horizon. Some may be narrow in scope, but cover a large geographic area (e.g., flooding). Alternately a plan may be very broad in scope, but cover a small geographic area (integrated water management for a municipality).

There are many different names for water supply plans and planning efforts. Table 2 presents a typology of water supply plans that categorizes different plans based on common scope and scale.

Table 1. Geographic scale - the spatial component of a planning effort

Geographic Scale	Description of Scale	Example Scale
Specific Project	Specific project that may affect one or more uses or users – the boundary is defined as what affects or is affected by the project	Dam, Restoration Site, Treatment Plant
Specific Use(r)	Specific water use or water user and an issue or set of issues affecting that use or user – the boundary is defined by the use(r)s	City, Irrigation District, Landowner, Recreation Group, Conservation Group
Specific Issue	Specific issue that may affect that may affect one or more uses or users – the boundary is defined as what affects or is affected by the issue	Source Water Protection, Flooding, Commingling Aquifers
Specific Body of Water	Specific body of water that may vary in scale and may support limited or multiple uses – the boundary is defined as a body of water and upstream and downstream areas	River, Tributary, Pond, Reservoir, Lake, Aquifer
Watershed/ Basin/ Sub-Basin/ Catchment	A watershed or basin that follows hydrologic features and may be nested within other watersheds or basins – the boundary is defined as the area that catches and drains water to a common point	Watershed, Basin, Sub-Basin, Catchment
Region	Multiple watersheds or basins that share something in common either hydrologically or administratively – the boundary is defined by a shared characteristic	Multiple Watersheds that May Cross Administrative Boundaries
State	The area within state boundaries – the boundary is defined by state boundaries	Oregon

Figure 1. Temporal scale - the time component of a planning effort, also known as a planning horizon

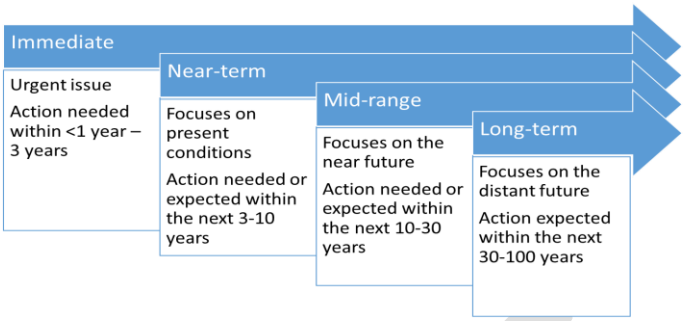

Table 2. A general typology of water plans (most water plans will fit into one of these categories)

Plan	Scope	Scale	Example from Oregon
Water Project Plan	Actions to implement a specific water project (either instream or out-of-stream) that has been identified.	Specific Project ↔ Region Immediate ↔ Near-term	Seal Rock Water District Beaver Creek Water Supply Project Plan
Issue-Specific Water Plan	Strategic actions to address a specific water issue or set of issues (either instream or out-of-stream) that have been identified.	Specific Issue ↔ Region Immediate ↔ Near-term	Columbia City Source Water Protection Plan
Water-Related Hazard Plan (e.g. Drought, Flood, etc.)	Strategic actions to mitigate the effects of a specific hazard or set of hazards. May include plans for emergency preparedness.	Specific Use(r) ↔ Region Immediate ↔ Long-term	North Santiam Drought Contingency Plan
One Water/Total Water/Integrated Water Plan	Holistic management of water supply, wastewater, and stormwater systems. Generally with a focus on a single or set of water providers/utilities.	Specific Use(r) ↔ Region Near-term ↔ Long-term	City of Bend Integrated Water System Master Plan
Water Supply and Demand Plan	Current and future water supplies, current uses, projected uses/needs, and alternatives to meet current and future needs for a use(r) or set of use(r)s.	Specific Use(r) ↔ Region Near-term ↔ Long-term	Regional Water Providers Consortium Water Supply Plan
Water Conservation Plan	Potential for water conservation and strategies/plans to conserve water. May also include components of a Water Supply and Demand Plan.	Specific Use(r) ↔ Region	City of Medford Water Management Conservation Plan
River Basin/ Groundwater Management or Allocation Plan	Coordination of uses and users within on a river or groundwater system to meet various water needs through shared water management. Is specific to current and/or potential users on a shared system.	Specific Body of Water ↔ Region Near-term ↔ Mid-range	Umatilla Sub-Basin 2050 Water Management Plan
Watershed Plan	Human and natural dynamics affecting water in a basin or watershed, critical issues, and potential actions to address the critical issues. Generally with a focus on watershed health.	Watershed Near-term ↔ Mid-range	Hood River Watershed Action Plan
Integrated Water Resources Plan	Holistic approach that brings together diverse interests across different sectors to pursue an integrated, coordinated approach to water. Generally looks at the intersection between quantity, quality, habitat, land use, etc. at a watershed scale.	Watershed ↔ Region Near-Term ↔ Long-Term	Water Managers Group Integrated Water Resources Management Strategy

Accounting for Complexity

Generally speaking, the complexity of a planning process will increase as the scope and/or scale increases. Other factors affecting complexity are:

- Amount of pre-planning work (relationship building, information gathering, etc.)
- Amount and quality of available information from studies/assessments
- Current or past conflict
- Number and diversity of interests represented
- Current level of trust between water stakeholders
- Level of public interest and scrutiny
- Number and complexity of relevant regulations
- Overlapping authorities and jurisdictions
- External deadlines associated with pressures or opportunities and sense of urgency
- Level of engagement with government
- Amount of resources and skills/expertise of participants
- Type of decision-making process used (e.g., centralized decision-making versus consensus)

The scope, scale, and relative complexity of the planning effort will greatly affect the time and cost needed to complete the plan as well as the process you use. As the scope and scale of the planning effort increases, so too will the level of engagement and inclusivity since more individuals and organizations will add value to the process and also have the potential to be impacted by the plan.

Other Considerations

Ideally, all water supply planning efforts should include or take into account the following considerations, proportional to the scope, scale, and complexity:

- Potential points of integration between water quantity, quality, ecosystem needs, land use, infrastructure, energy, etc.
- Place-based context and considerations (e.g., the environmental, social, economic, and other factors that characterize a place and will affect the process or outcomes)
- Hydrologic/geologic boundaries (e.g., watershed, aquifer)
- Inclusivity of interested and affected interests/stakeholders
- Opportunities for public involvement, as appropriate

A planning effort should result in a written plan that charts out the strategies and actions to be taken to address the critical issue or opportunity and helps to facilitate and coordinate implementation of those actions. The most effective plans will have clear metrics and a process for monitoring and evaluation and will also be written for the intended audience, be that internal colleages or decision-makers, partners, external decision-makers, members of the public, or funders.

There are numerous frameworks, guidance documents, and templates to help structure different water supply planning efforts and resultant plans. It is also helpful to look at examples from other places who have undertaken planning efforts. There is no one size fits all approach. Every effort is a little bit different and may use unfamiliar approaches or terminology. Some planning efforts are supported or sponsored by federal, state, or non-governmental organizations and may come with financial, planning, and technical assistance or other support. Table 3 includes an overview of state and federally sponsored or supported studies, assessments, and plans that include water. Most of these are not water supply planning efforts, per se, but may be related to water supply.

Figure 2. Example scope and scale of different water planning efforts

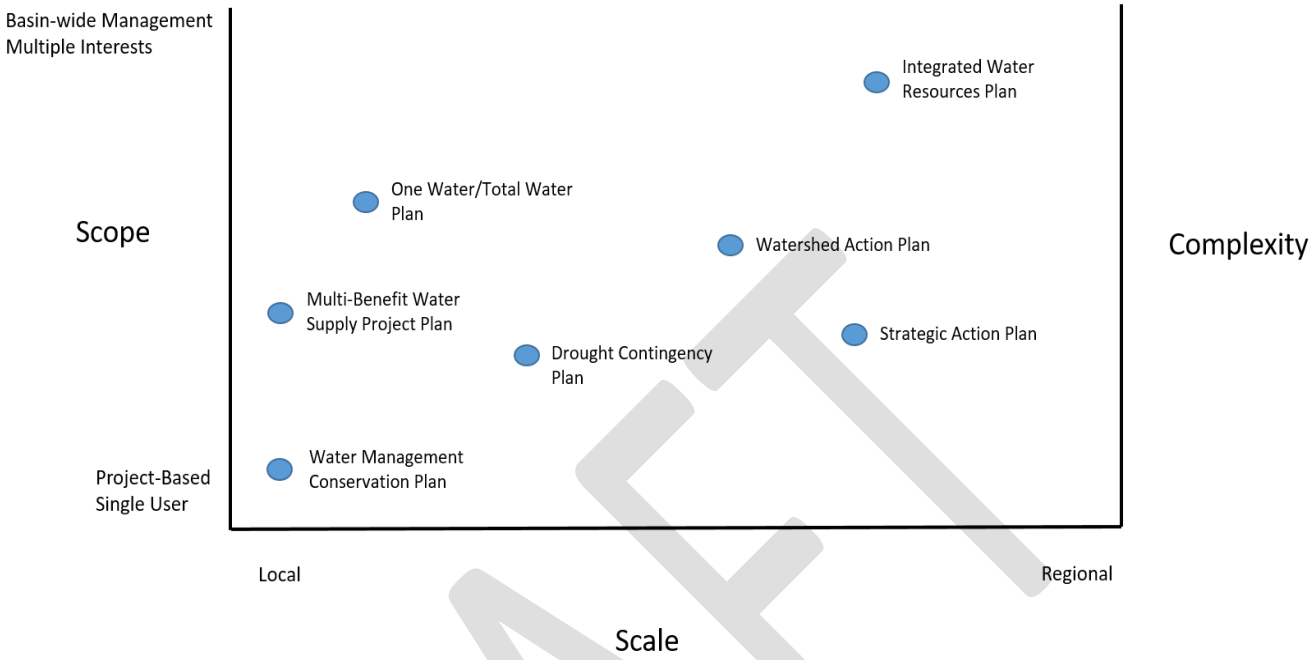

Table 3. State and federally sponsored or supported studies, assessments, and plans that include water

Specific Study or Plan	Sponsor	Scope	Scale	Locally Led[4]	Technical[5]	Financial[6]	Guidance
Basin Studies	OWRD[1]	Water supply and development	OWRD Administrative Basin	No	No	No	Statute/rule?
Water Management Conservation Plans	OWRD[1]	Water conservation programs and policies	Municipalities and Irrigation Districts	Yes	No	No	Guidance
Place-Based Integrated Water Resources Planning	OWRD[1]	Water supply (quantity, quality, ecosystem)	Varies	Yes	Yes	Yes	Guidance
Water Storage, Conservation, and Reuse Feasibility Studies	OWRD[1]	Water conservation, storage, and reuse projects	Varies	Yes	No	Yes	ORS 541.561-581, OAR 690-600, Storage Study Guidance
Strategic Action Plans	OWEB[1]	Habitat restoration, watershed health, instream restoration	Extent of Key Habitat	Yes	Depends	Yes	Guidance
Watershed Assessments	OWEB[1]	Watershed health and limiting factors	Watershed	Yes	Depends	Yes	Manual
Comprehensive Land Use Plans	DLCD[1]	Land use	County	Yes	Yes	Yes	Statute/rules?
Natural Hazard Mitigation Plans	DLCD[1]	Natural hazards	County	Yes			Guidance
Agricultural Water Quality Plans	ODA[1]	Water quality from agricultural land	Water Quality Management Areas	Yes – Advisory Committee	Yes	Yes (for SWCDs)	
Irrigation Modernization Plans	EnergyTrust[1] Farmer's Conservation Alliance[3]	Irrigation infrastructure and hydropower	Irrigation District	Yes	Yes	No	
Total Maximum Daily Load and Water Quality Management Plans	DEQ[1]	Water quality – non-point source	USGS Basin	No	Yes	No	
Water Quality Status/Action Plan	DEQ[1]	Water quality, land use, and watershed health	DEQ Administrative Basin	No	Yes	No	
Water System Master Plans	OHA[1]	Water supply, quality, infrastructure, rates, etc	Municipalities	Yes	Uncertain	Uncertain	
Sustainable Infrastructure Plan	OHA[1]	Water supply infrastructure	Water Providers	Yes	Yes	Yes	
Water/Wastewater Infrastructure Planning	IFA[1]	Water supply infrastructure	Water Providers	Yes	No	Yes	
Basin Assessments	ODFW[1]	Species water needs	ODFW Administrative Basin?	No	Yes	No	
Species Conservation and Management Plan	ODFW[1]	Species and habitat management	Varies	No	Yes	No	
Conservation Business Plans	OWEB[1] & Wild Salmon Center[3]	Habitat restoration (see Strategic Action Plan)	Watershed	Yes	Yes	Yes	
Cooperative Watershed Management	Bureau of Reclamation[2]	Water supply (varies)	Varies	Yes	Uncertain	Yes	
WaterSMART Basin Studies	Bureau of Reclamation[2]	Water supply (varies)	Varies	Yes	Yes	No	Manual
WaterSMART Drought Contingency Plans	Bureau of Reclamation[2]	Natural hazard – drought	Varies	Yes	Yes	Yes	
Shared Vision Planning	Army Corps of Engineers[2]	Water supply (varies)	Varies	Depends	No	No	Framework
Planning Assistance to States	Army Corps of Engineers[2]	Water supply (varies)	Varies	Yes	Yes	No	
Long-Range Plans and Conservation Innovation Strategies	NRCS[2]	Conservation needs and actions on private lands	Extent of Natural Resource Concern	No	Yes	No	
PL-566 Watershed Plan	NRCS[2]	Rural and agricultural water needs (varies)	Varies	Yes	Yes	Yes	Manual & Handbook
Species Recovery Plan	USFWS[2] and NOAA Fisheries[2]	Species and habitat management	Varies	No	Yes	na	
Sub-Basin Plan	NWPCC[2]	Species and habitat management	Sub-Basin	Yes	Plans complete	Plans complete	
Habitat Conservation Plan	USFWS[2] - NOAA Fisheries[2]	Habitat restoration and conservation	Extent of Habitat	Depends	Yes	Yes	Handbook
Water Improvement District Plan	na	Water improvement need/issue	Varies	Yes	No	No	
Watershed Plan	EPA[2]	Water quality	Watershed	Yes	See DEQ plans	See DEQ plans	Handbook

1 State agency that has a nexus with the study, assessment, or planning program.
2 Federal agency that has a nexus with the study, assessment, or planning program.
3 Non-Governmental Organization that has a nexus with the study, assessment, or planning program.
4 A local entity not employed by the sponsor or advisory committee provides direction, oversees contents, or is responsible for approving the study, assessment, or plan.
5 Technical assistance is formally offered by the sponsor to assist with the study, assessment or plan.
6 Financial assistance is made available by the sponsor to assist with the study, assessment of plan.