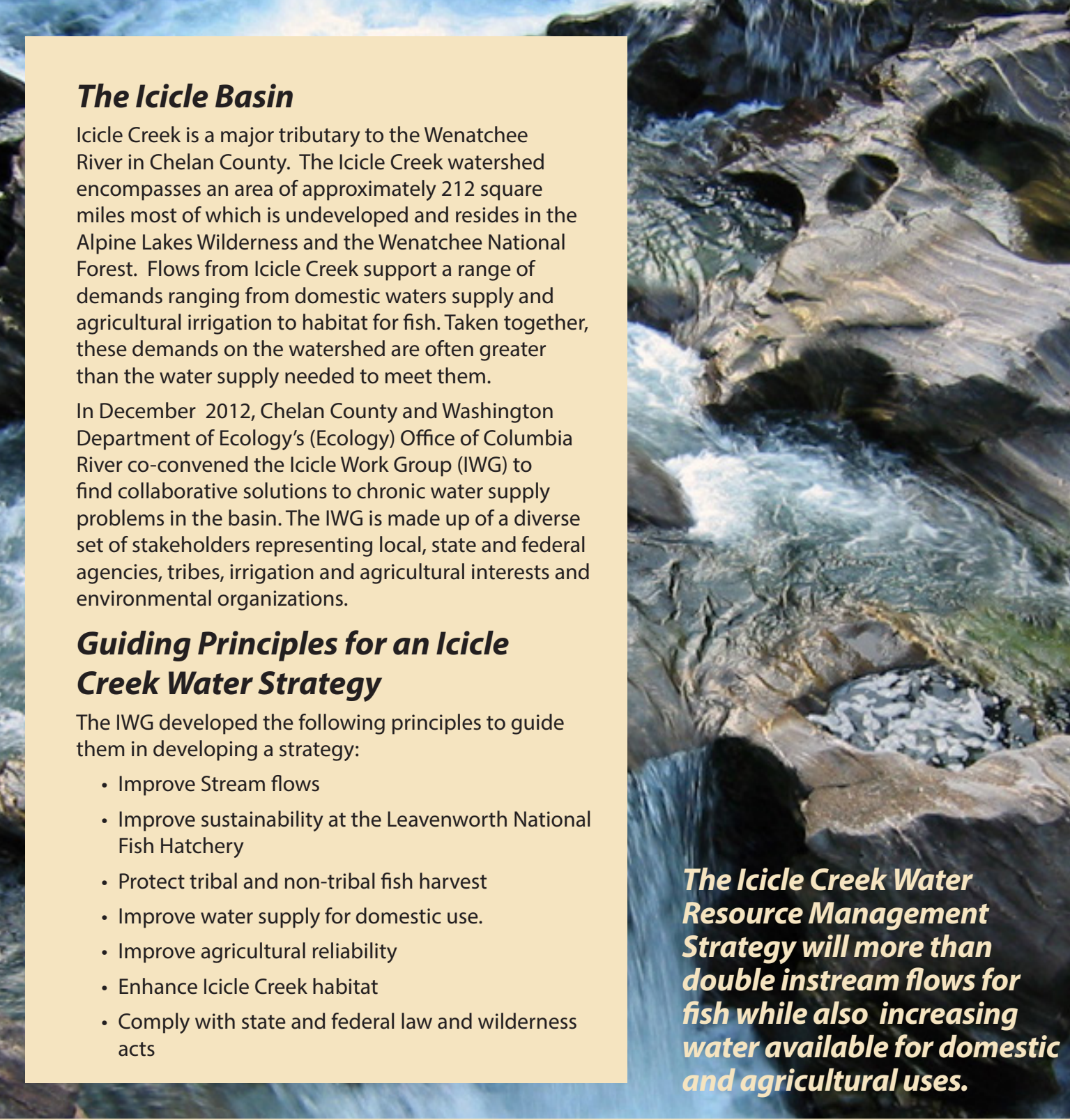


# Icicle Strategy

Revitalizing Icicle Creek; Increasing Water Supply

ICICLE WORK GROUP

FEBRUARY 2016



## The Icicle Basin

Icicle Creek is a major tributary to the Wenatchee River in Chelan County. The Icicle Creek watershed encompasses an area of approximately 212 square miles most of which is undeveloped and resides in the Alpine Lakes Wilderness and the Wenatchee National Forest. Flows from Icicle Creek support a range of demands ranging from domestic waters supply and agricultural irrigation to habitat for fish. Taken together, these demands on the watershed are often greater than the water supply needed to meet them.

In December 2012, Chelan County and Washington Department of Ecology's (Ecology) Office of Columbia River co-convended the Icicle Work Group (IWG) to find collaborative solutions to chronic water supply problems in the basin. The IWG is made up of a diverse set of stakeholders representing local, state and federal agencies, tribes, irrigation and agricultural interests and environmental organizations.

## Guiding Principles for an Icicle Creek Water Strategy

The IWG developed the following principles to guide them in developing a strategy:

- Improve Stream flows
- Improve sustainability at the Leavenworth National Fish Hatchery
- Protect tribal and non-tribal fish harvest
- Improve water supply for domestic use.
- Improve agricultural reliability
- Enhance Icicle Creek habitat
- Comply with state and federal law and wilderness acts

*The Icicle Creek Water Resource Management Strategy will more than double instream flows for fish while also increasing water available for domestic and agricultural uses.*

# ICICLE STRATEGY

The purpose of the Icicle Creek Work Group ("Work Group") is to develop a comprehensive Icicle Strategy through a collaborative process that will achieve diverse benefits defined by all of the Guiding Principles below. The Work Group will use best available science to identify and support water management solutions that lead to implementation of high-priority water resource projects within the Icicle Creek drainage.



- ICICLE STRATEGY**
- i. Conservation
  - ii. Groundwater Augmentation
  - iii. Pump Exchange
  - iv. Modification of Existing Storage
  - v. New Storage
  - vi. Water Markets
  - vii. Fish Passage and Screening
  - viii. Habitat Improvement
  - ix. Tribal Fishery Enhancement

**Icicle Work Group Co-Conveners**



**Improve Stream Flows**

- 60 cfs minimum flows (drought years)
- 100 cfs minimum flows (non-drought years), short-term goal
- 250 cfs minimum flows (non-drought years), long-term goal
- 2,600 cfs maximum flow to preserve habitat function

**Improve Sustainability at the Leavenworth National Fish Hatchery**

- Meet U.S. v. Oregon and other agreements specifying fish production requirements
- 57 cfs supply protected long-term (at least 20 cfs conservation goal)
- Diverse source availability (temperature, pathogen-free) to maximize fish health
- Structures to minimize unintended fish passage impediment

**Improve Agricultural Reliability**

- Automate / Optimize Alpine Lakes for improved reliability (plus instream flow benefit)
- Restore/repair 8-Mile Lake up to 2,500 acre-feet (225 acre-foot agricultural benefit, 900 ac-ft additional instream flow/ municipal benefit)
- Current interruptible agricultural users have firm supply in average water years / agriculture water bank (2 to 4 cfs)

**Enhance Icicle Creek Habitat**

- Improve passage at Boulder Field
- Make investments in physical habitat improvement with consideration for high flow habitat and low flow refuge, minimize fish passage impediments, and improve limiting factor spawning/rearing
- Offset project-related terrestrial impacts with land acquisition/easements

**Improved Water Supply for Domestic Use.**

- 2,300 to 4,100 acre-feet of reliable year-round supply (3 to 6 cfs average, 6 to 12 cfs peak), magnitude conditioned upon Legislation on reserve.

**Protect Tribal and Non-Tribal Fish Harvest**

- Catch per unit of effort (CPUE) improved
- Maintain multi-species harvest opportunities
- Tribal Impacts Assessment and Adaptive Management Plan being implemented, addressing attraction flows, sediment transport, fish migration/straying, site access and amenities

**Comply with State and Federal Law and Wilderness Acts**

- Identify and engage regulators in the process
- Environmental review completed (project check)
- All projects appropriately permittable (project check)
- All diversions (LNFH, IPID, COIC) appropriately screened (project check) Identify and engage regulators in the process

**Average Water Year  
Water Supply Benefits**

4 cfs added for Agriculture      5 cfs added for Domestic Use

77 cfs added for Habitat and Instream Flows

63 cfs Average Base Flow

**Drought Year  
Water Supply Benefits**

4 cfs added for Agriculture      5 cfs added for Domestic Use

47 cfs added for Habitat and Instream Flows

20 cfs Average Base Flow