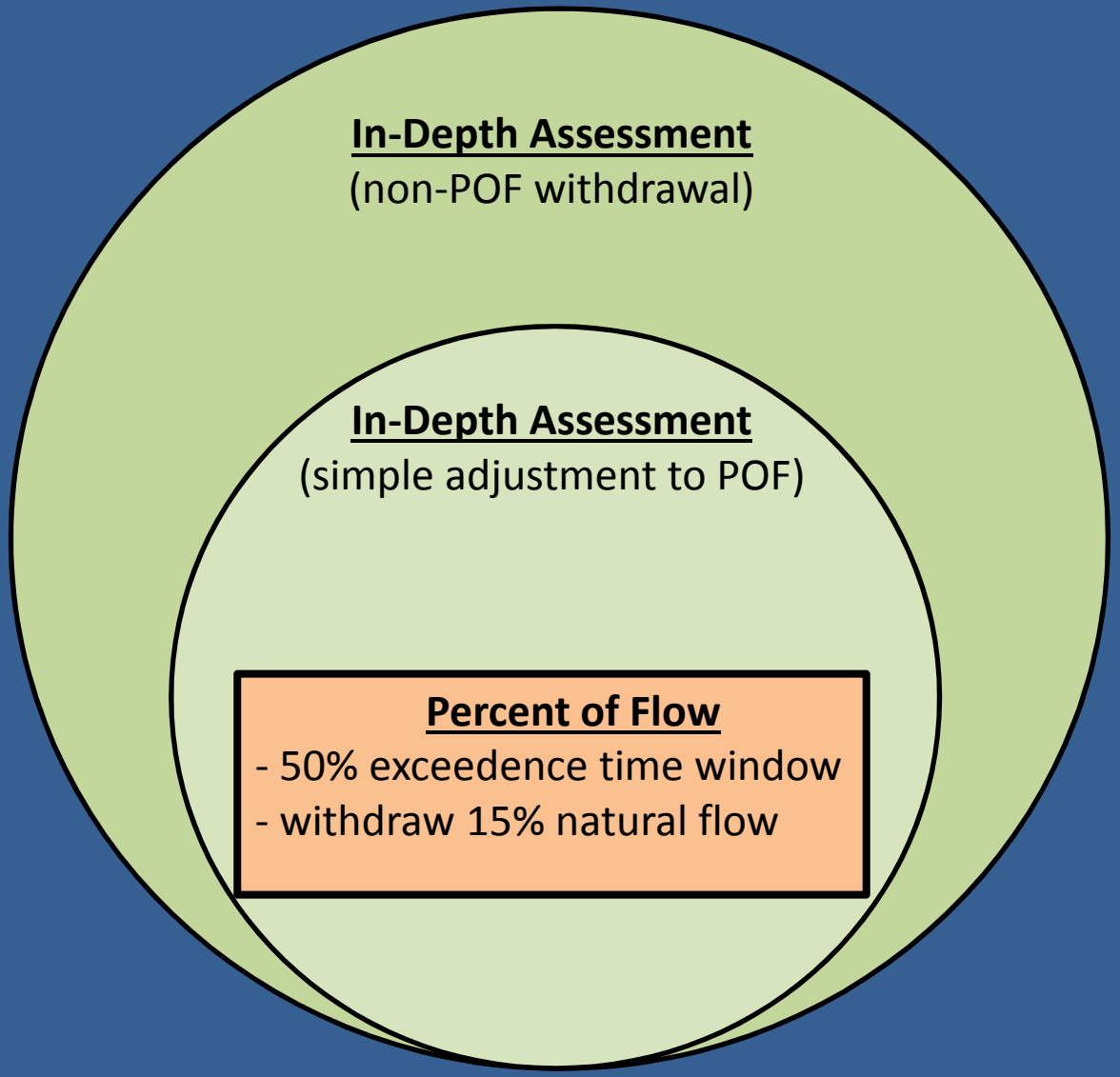
Seasonally Varying Flows:
A Two Tier Approach For Study and Allocation



SB 839 Science Sub-group Report

A Proposed "Percent of Flow" Approach for Water Storage Projects in Oregon

Senate Bill 839 Science Subgroup Report
February 1, 2014

SCIENCE SUBGROUP

Brett Brownscombe, Convenor

- Mr. Don Anglin, USFWS
- Dr. Leslie Bach, TNC
- Dr. Tim Hardin, ODFW
- Dr. Valerie Kelly, USGS
- Mr. Ken Stahr, WRD

SCIENCE SUBGROUP

Mandate (See Section 19 (4) of the bill)

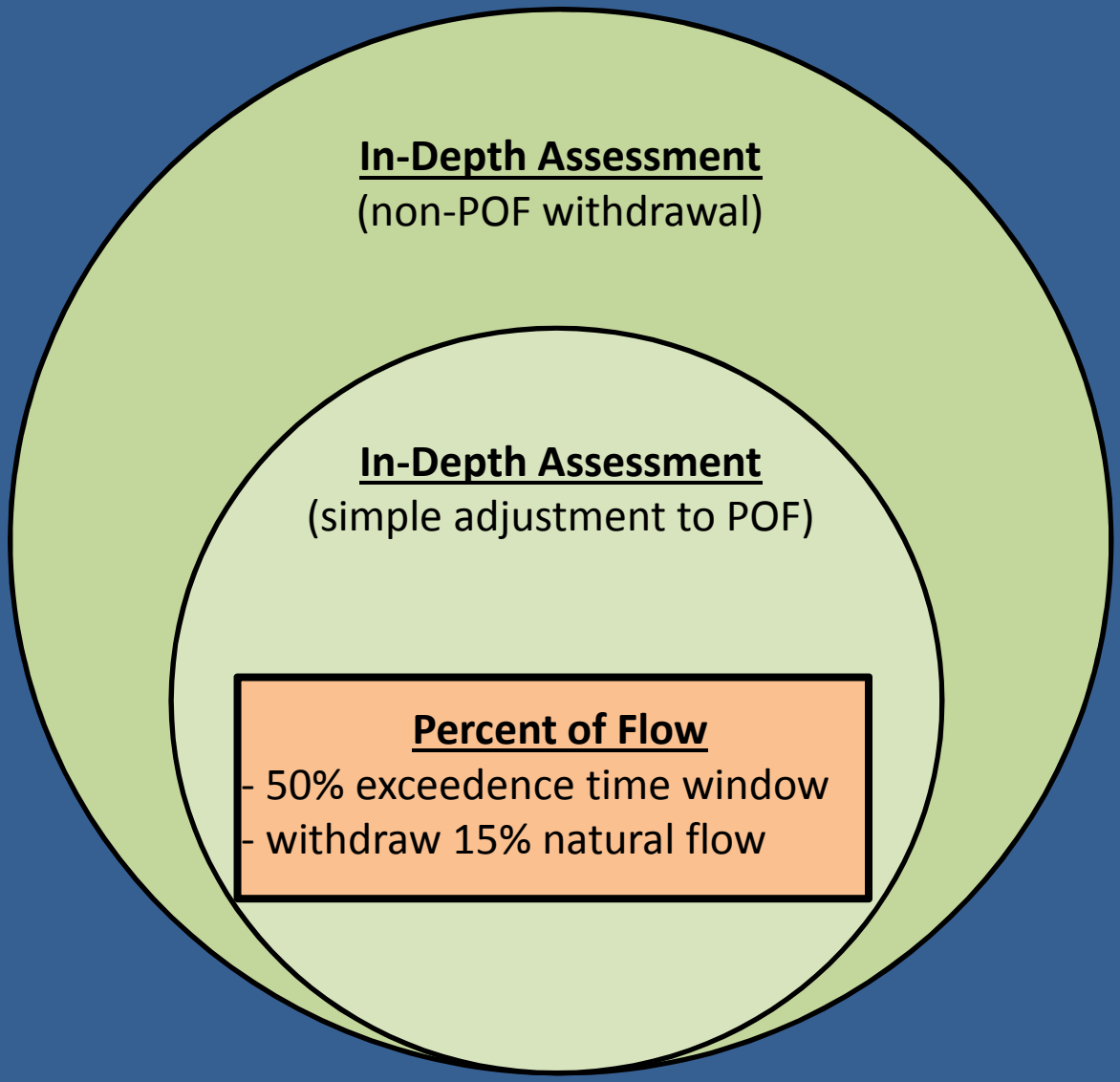
- Address the functional needs of watersheds for SVFs :
  1. Stream channel development & maintenance
  2. Connectivity to floodplains
  3. Sediment transport and deposition
  4. Migration triggers
  5. Fish spawning and incubation
  6. Juvenile fish rearing
  7. Adult fish passage
- Make recommendations re SVF methods to the Task Force

Organization

- Met 5 times during Fall 2013
- Literature review and colleague interviews
- Fundamentals:
  - consider the biological, ecological and physical functions of SVFs outside the irrigation season,
  - allow storage of water for multiple benefits,
  - use WRD's already-existing method to determine water availability.

Considerations during development

- ✓ ease of implementation
- ✓ level of protectiveness
- ✓ time/resources involved in study



Science Subgroup Proposed SVF Methods

- Part 1: What Are Seasonally Varying Flows ?
- Part 2: In-Depth Assessment
- Part 3: Percent of Flow Assessment
- Part 4: Q and A

What Are Seasonally Varying Flows?

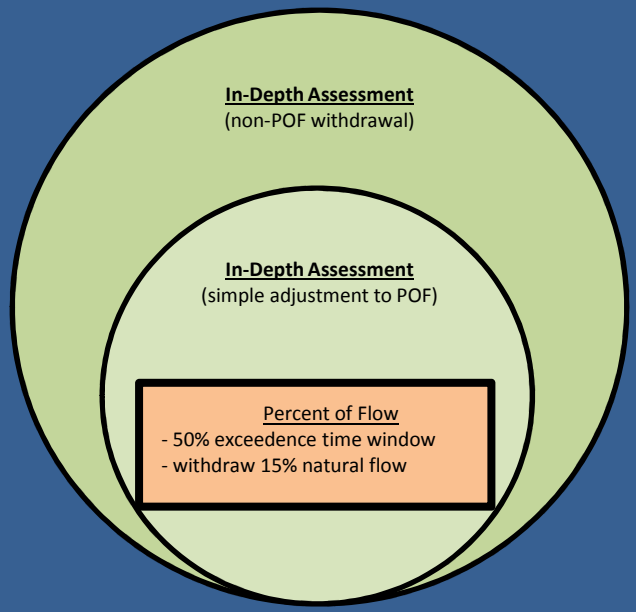
Dr. Valerie Kelly

Introduction. Framing the Discussion

The Department shall establish seasonally varying flows using a methodology established by Water Resources Commission rules. (Senate Bill 839, 2013)

In-Depth Assessments

Dr. Tim Hardin
Dr. Leslie Bach

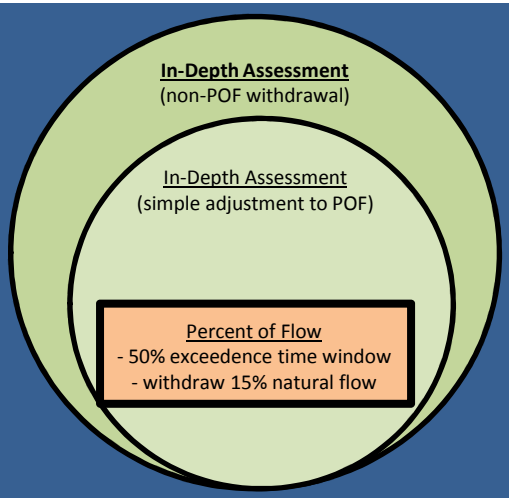


Chapter 2. More than a Percent of Flow Approach: In-Depth Methods to Request Additional Water

Instream flow studies must evaluate flow needs and opportunities in terms of hydrology, biology, geomorphology, water quality, and connectivity. (Instream Flow Council 2008)

Percent of Flow Assessment

Mr. Ken Stahr



Chapter 1. When Water Is Available for Storage: Diverting a Percent of Flow

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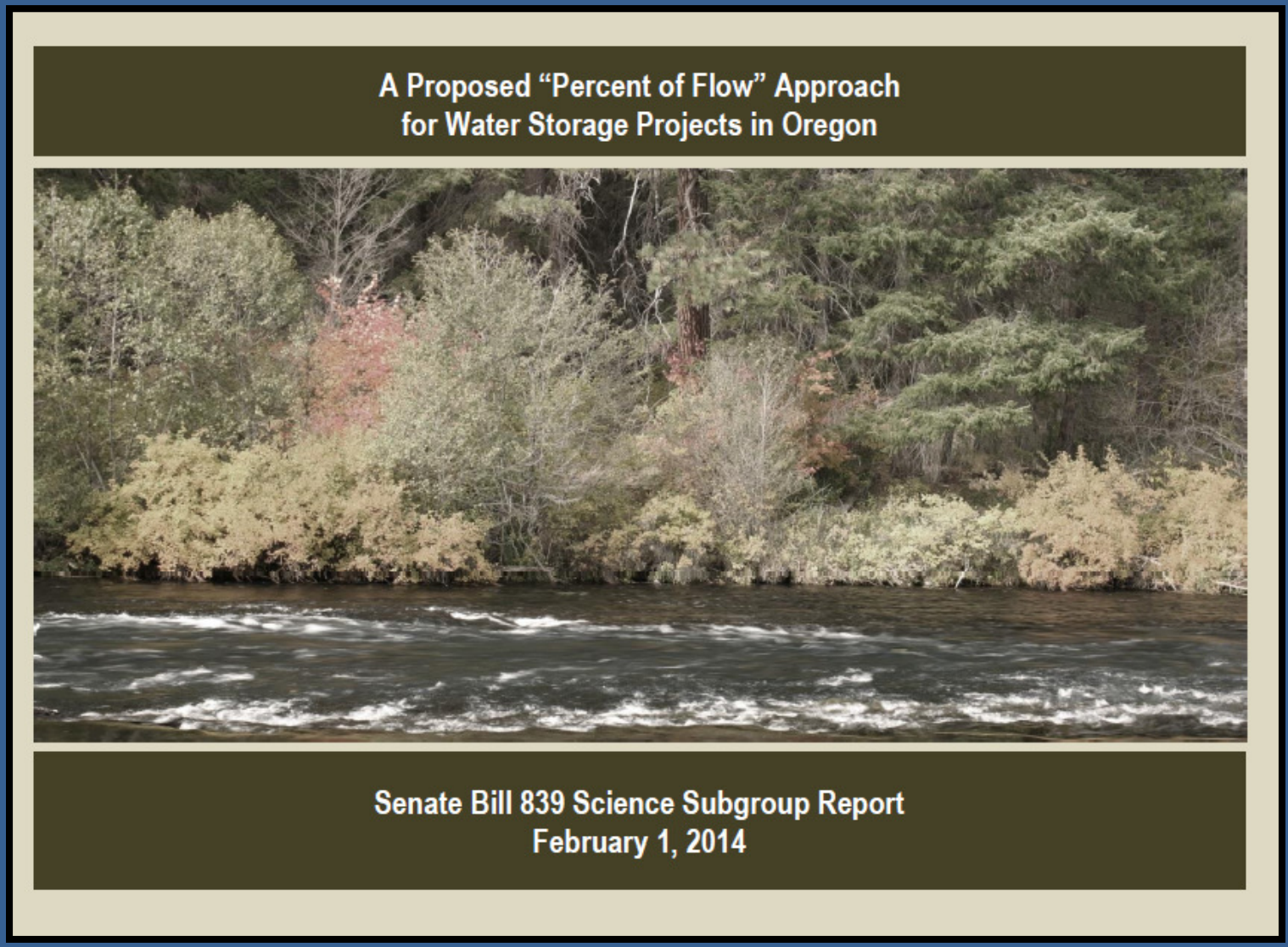
All streams and rivers should have instream flows that maintain or restore, to the greatest extent possible, ecological functions and processes similar to those exhibited in their natural or unaltered state. (Instream Flow Council 2008)

A strong consensus now exists within the scientific community around the need to maintain some semblance of natural flow variability to sustain the ecological health of river ecosystems and the array of goods and services they provide to society. (Richter 2009)

Seasonally Varying Flow Q and A



Thank You

- Southwest Florida Water Management District:
  - Doug Leeper, Chief Advisory Environmental Scientist
  - Ron Basso, Chief Hydrologist, Water Resources Bureau
  - Darrin Herbst, Water Use Permit Bureau Chief, Water Use Permit Bureau
  - Claire Muirhead, WUP Evaluation Manager, Water Use Permit Bureau
  - Owen Thornberry, Senior Professional Geologist/Engineer, Water Use Permit Bureau
  - Marty Kelly, Environmental Scientist (Retired)
- Texas Parks and Wildlife Department
  - Kevin Mayes, Biologist, Texas Instream Flow Program
- Alberta Environment and Sustainable Resource Development
  - Michael Seneka, Senior Hydrologist, Water Policy Branch
- Main Department of Environmental Protection
  - Mark Margerum, Lawyer, Instream Water Rights Program

Discussion and Public Comment