Upper Illinois River Instream Flow Pilot Study

ADVISORY GROUP MEETING

June 27, 2019 | Oklahoma City

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

carollo

Agenda

No.	Topic
1	Welcome and Overview
2	Upper Illinois River Basin Pilot Study
3	Review previously identified areas of general consensus
4	Core elements of ISF assessment
	BREAK
5	Discussion: Administrative approaches for implementing, monitoring, administering
	WORKING LUNCH
6	Discussion: Study Criteria and Assessment Methodologies
7	Discussion: Stream Basin Selection and Prioritization
	BREAK
8	Discussion: Basin Stakeholder Involvement and Structure
9	Unresolved Questions and Issues from Pilot Study and Today's Workshop
10	Next Steps and Wrap-Up

1. Welcome and Overview

Meeting Objectives

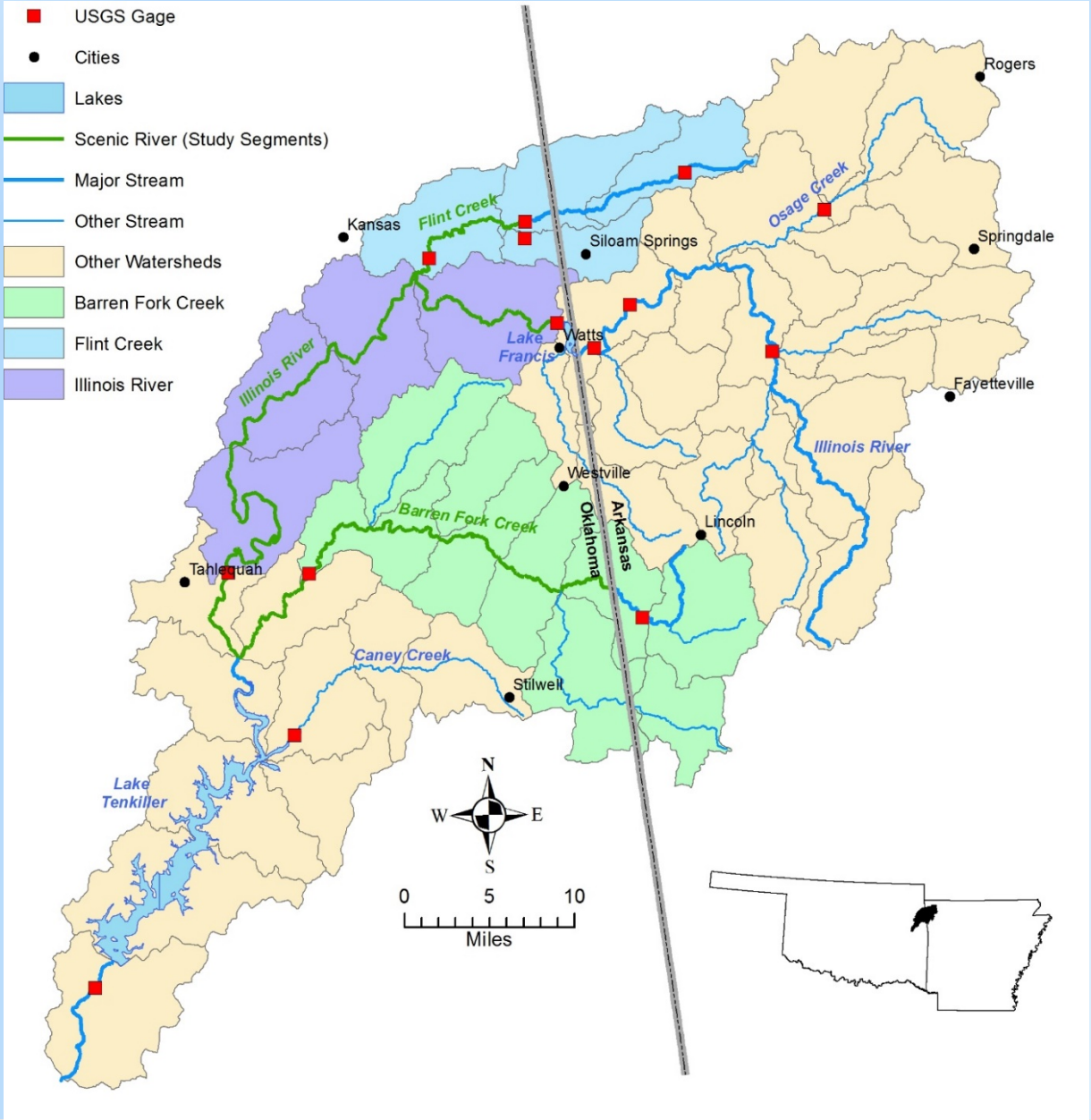
Review and Discuss Final Phase of Pilot Study

Discuss and Gain Feedback on Core Elements of ISF Programs as They Relate to Studies and Implementation

Discuss Unresolved Questions and Next Steps

2. Upper Illinois River Basin Pilot Study

Pilot Study Area: Upper Illinois River Watershed



Primary Goals of the ISF Pilot Study

Test and refine a conceptual ISF framework and study process that could be considered for use in other basins

Develop environmental and recreational flow ranges on the upper Illinois River including Barren Fork and Flint Creeks

- consistent with interests and needs of the local watershed uses and users
- recommended flows and approach to implementation

Better understand the benefits and implications of an ISF program, consistent with the overall goal of managing water resources in Oklahoma for multiple uses

Identify questions and concerns with the process

Project Background

Year	Action
2009	OWRB convened OCWP Instream Flow (ISF) workgroup.
2011	Workgroup developed "OCWP Instream Flow Issues and Recommendations." – Recommended an ISF pilot study on a state-designated scenic river.
2012	Oklahoma Comprehensive Water Plan (OCWP) – Recommended evaluation of nonconsumptive uses of water, including ISF.
2013	OWRB created Oklahoma Instream Flow Advisory Group.
2014	ISF pilot study approach submitted to OWRB, U.S. Army Corps of Engineers (USACE), and Instream Flow Advisory Group (CH2M HILL, 2014). – ID scenic reaches of Illinois River, Barren Fork Creek, and Flint Creek. – Instream Flow Incremental Methodology (IFIM) selected
2017	Upper Illinois River Instream Flow Assessment (CH2M HILL, 2017) – Physical Habitat Simulation (IFIM Phases 1 – 3)

ISF Pilot Study Workplan

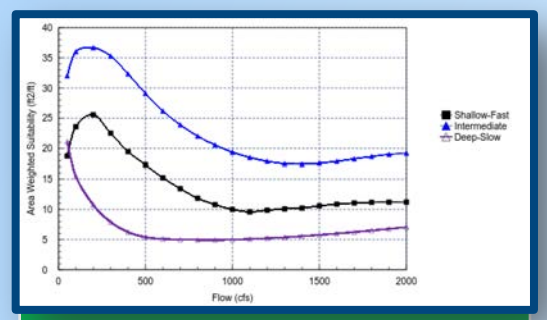
1. Issue Identification

Oklahoma Comprehensive Water Plan OCWP

2. Study Planning

IFIM Process

3. Study Implementation



Flow/habitat modeling

- How do flows correlate to habitat quality?
- What do recreational uses need?

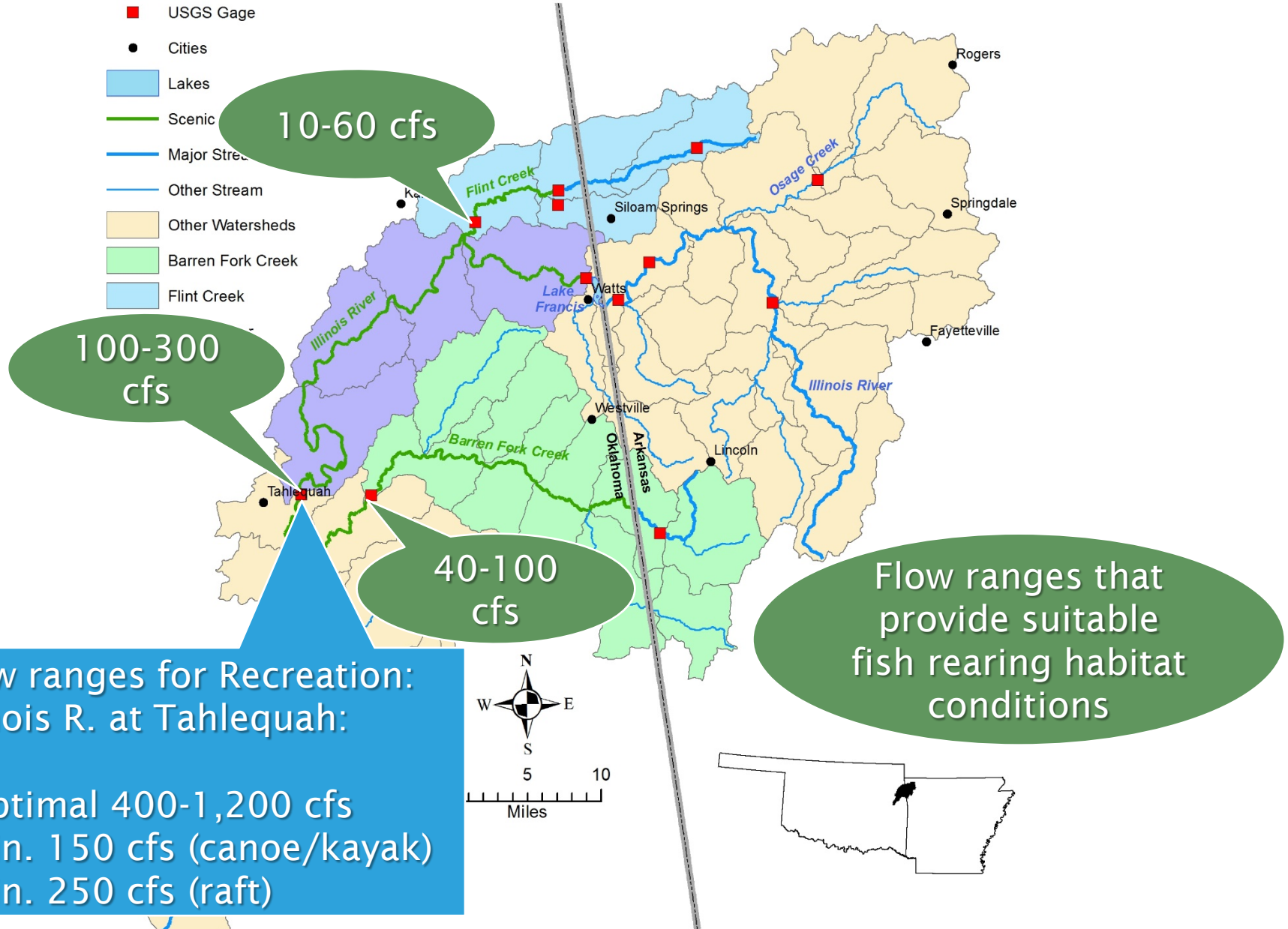
4. Alternatives Analysis

- What will happen as demands increase?
- What options are there for balancing competing needs in drought?

5. Issue Resolution

6. Process Evaluation

Key Findings of the Habitat Modeling Phase



Flow ranges for Recreation:
Illinois R. at Tahlequah:

- Optimal 400-1,200 cfs
- Min. 150 cfs (canoe/kayak)
- Min. 250 cfs (raft)

Flow ranges that provide suitable fish rearing habitat conditions

2018 Streamflow Analysis

Upper Illinois River, Barren Fork, and Flint Creek

Desktop evaluation.

Projected upstream consumptive incremental demands through 2060 and assessed impacts on streamflow.

Compared resulting streamflow to ISF habitat suitability ranges.

Identified frequency and magnitude of shortages in 2060 (where consumptive demands and ISF goals could not both be met).

Scenarios tested: High ISF flow, Low ISF flow, “Shared shortage”, and No ISF. **Shortages were observed in all scenarios tested.**

Summer 2018: Met individually with four User Groups to solicit feedback

CONSUMPTIVE	Municipal/ Industrial	Agricultural
NON-CONSUMPTIVE	Aquatic species / Environmental	Recreation

Some Takeaways from Summer 2018 Workshops *[not unanimous]*

- No immediate consensus
- Prefer avoiding shortages vs. managing shortages (conservation, storage…?)
- Reducing consumptive uses would be difficult
- Intermittent shortages easier than extended shortages
- Concerned about NOT meeting the recommended habitat flow range

Four Categories of ISF Implementation were Discussed

Adopt / Implement a Numeric Standard

Voluntary Mechanism

Monitoring and/or Adaptive Management

No Action

- *NOT mutually exclusive.*

Administrative Approaches for Implementation

Numeric Standard

- Stakeholder consensus on balancing
- Select an ISF amount
- Decide how to regulate
- Exempt existing permits?

Voluntary Mechanism

- Non-regulatory
- Approach from the "top" or from the "bottom"
- Water Bank/Trust

Monitoring/ Adaptive Management

- Approach from the "top" or from the "bottom"
- What to monitor
- Triggers with ensuing management goals

No Action

- No stakeholder recommendation for action
- Precedent as the Pilot Study on Scenic River

November 2018 Public Meeting

Tahlequah

Plan

- Diverse Representation
- Discuss & resolve counter viewpoints
- Find the best solution for the Basin

Result

- Disproportionate representation
- Generally favored numeric standards
- No firm recommendation

Limitations of the Pilot Study

Limitation	Potential Resolution
Final workshop input lacked diverse representation	Basin Stakeholder Committee (BSC) Formation
No formal recommendation from local stakeholders	Charge BSC with responsibility
Unfamiliar with OCWP demand projections and methods	Next OCWP update: inform stakeholders of opportunities to learn about demand projections
Socioeconomic impacts info lacking	Expand scope and budget for future analyses
Water quality impacts info lacking	Expand scope and budget for future analyses to include this


Pilot Study Q&A

* This slide added back into slides during Q&A session

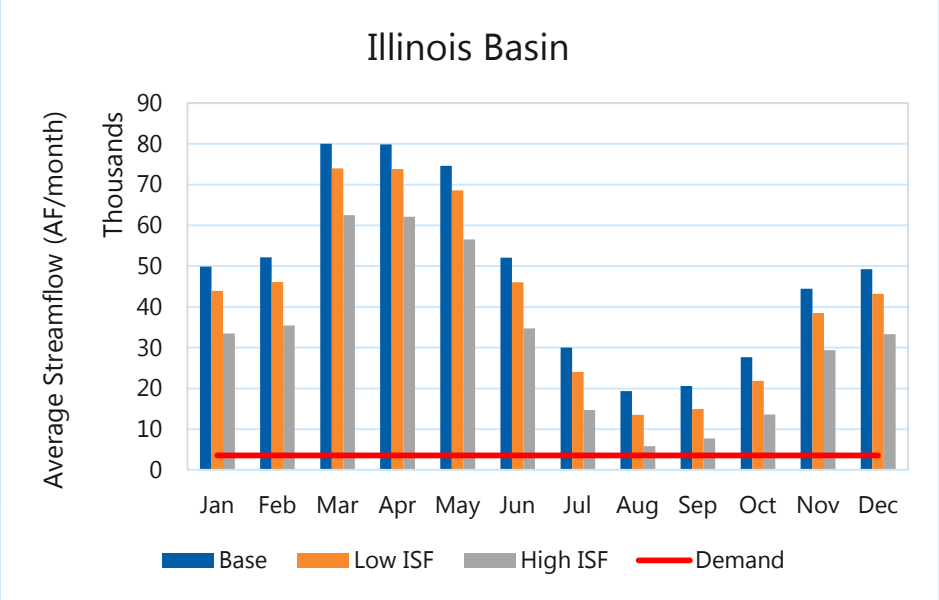
Illinois River Analysis

Demand Class (Subtotal)	2007 (AFY)	2060 (AFY)	Incremental 2060 (AFY)
Crop Irrigation	1,500	2,800	1,300
Livestock	300	300	0
Municipal & Industrial	8,100	14,100	6,000
Self-Supplied Residential (SSR)	4,500	8,100	3,600
Total	**14,400**	**25,300**	**10,900**
Total (cfs)	**19.9**	**35.0**	**15.1**

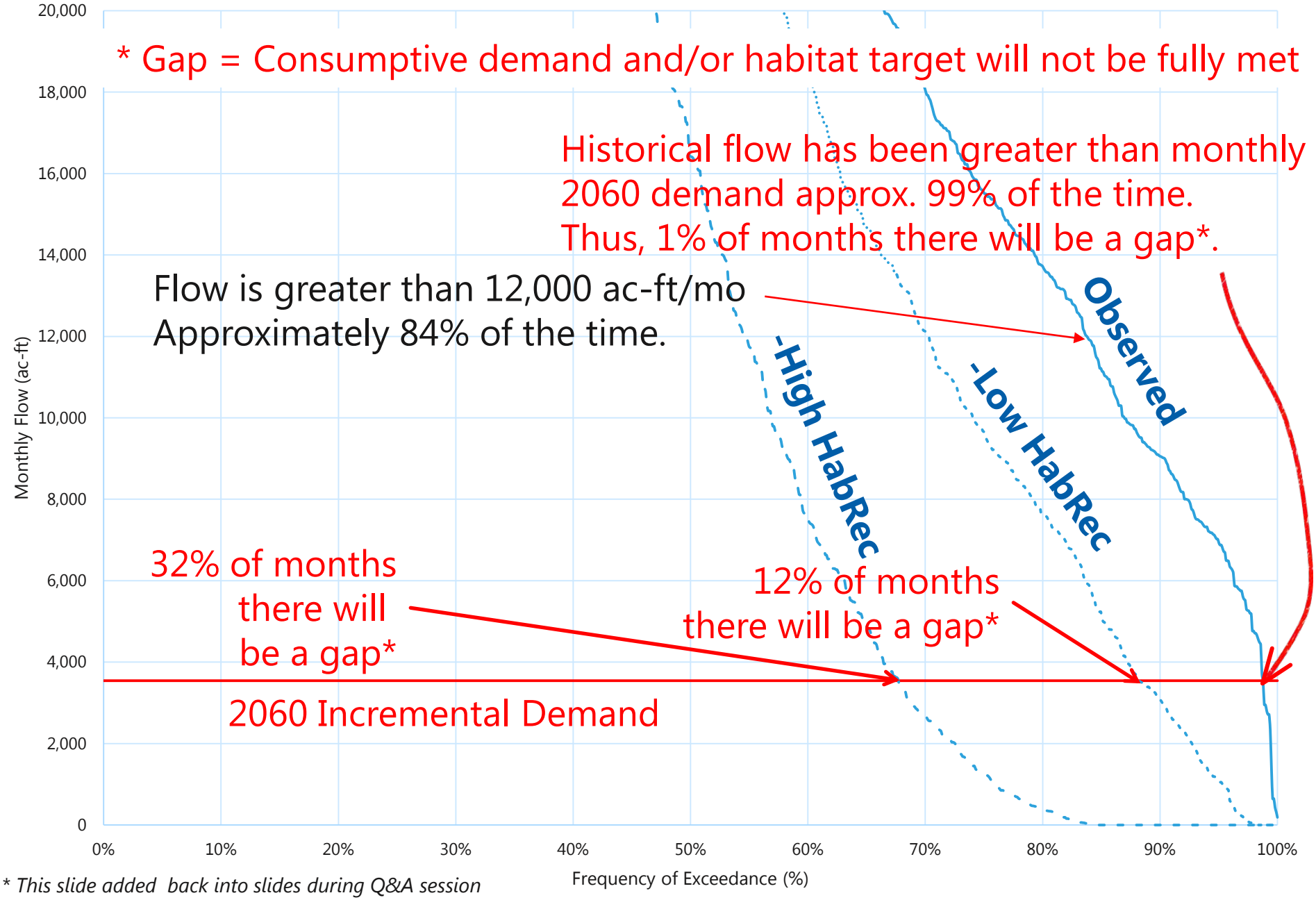
Habitat Recs:

Low: 100 cfs (72,400 AFY)

High: 300 cfs (217,200 AFY)



Illinois River (Monthly Flow Frequency, 1935 - 2017)



** This slide added back into slides during Q&A session*

From Pilot Study Draft Report added during Q&A session at meeting

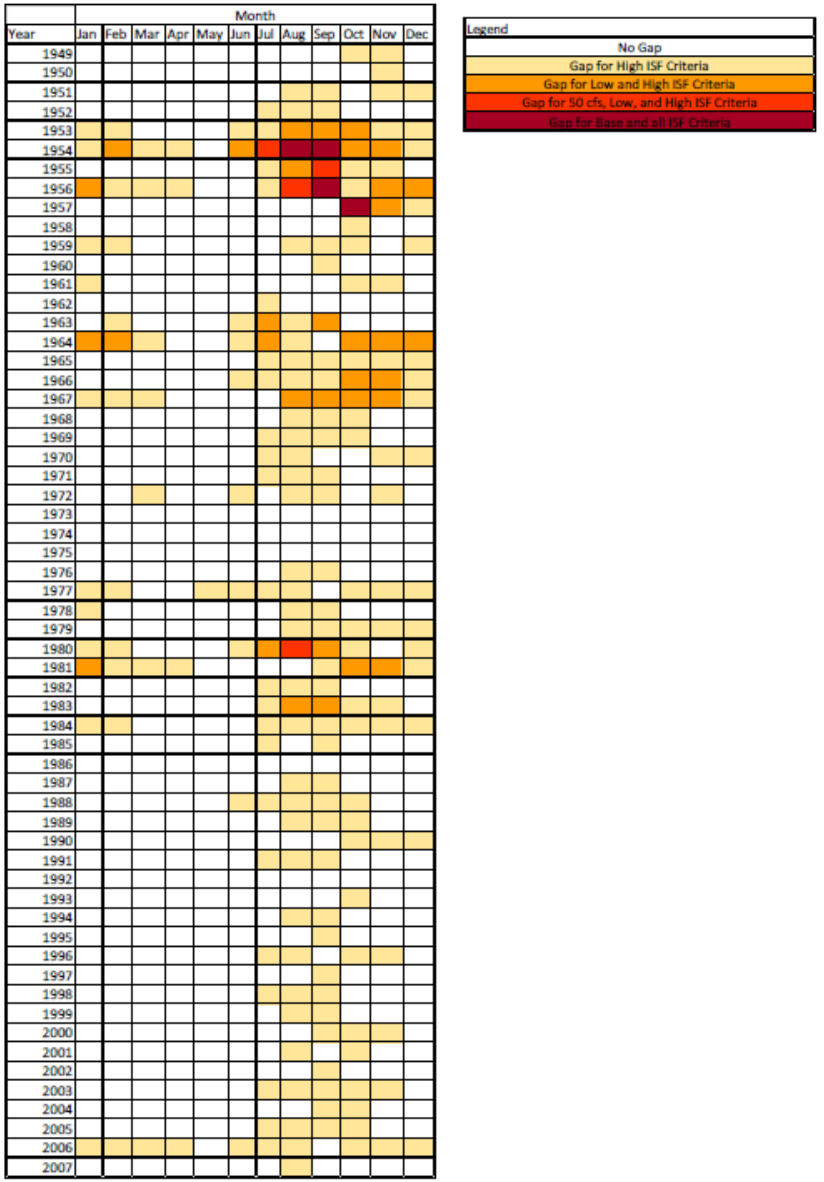
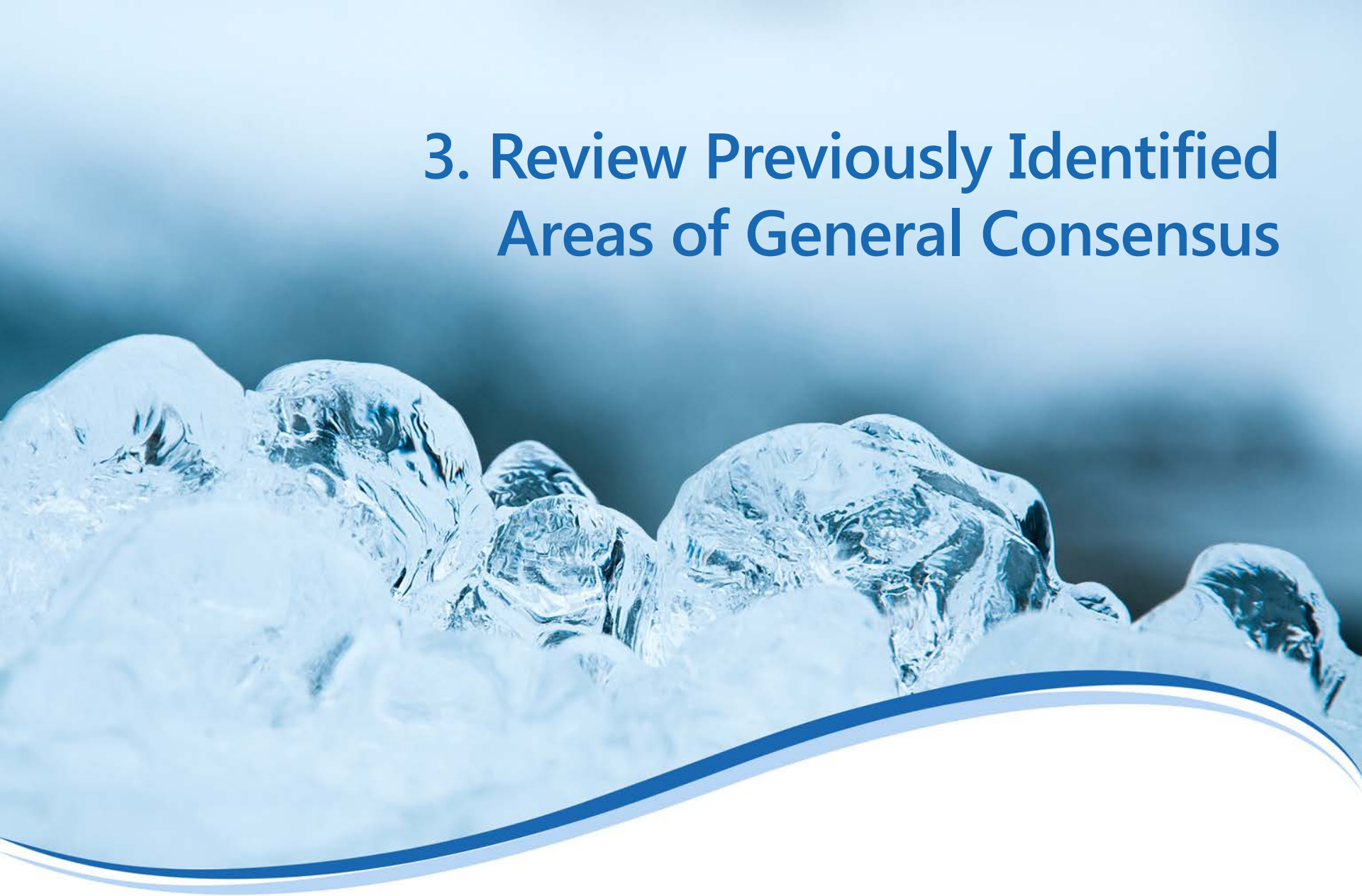


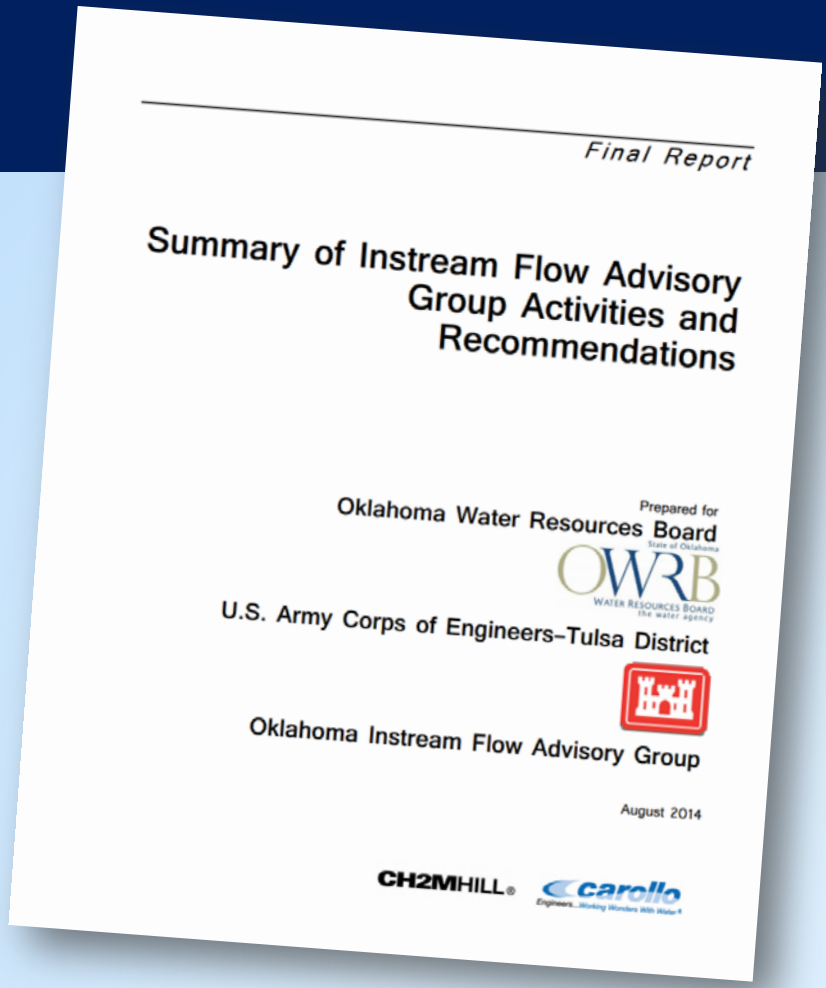
Figure 2.10 Heat Map depicting Monthly Time Series of Projected Shortages (1949-2017 Hydrologic Conditions)

3. Review Previously Identified Areas of General Consensus



Areas of Previous Advisory Group Consensus

- Previous dialogue → baseline
- Review and confirm today



Areas of Previous Advisory Group Agreement

Agree that ISF studies should not be required statewide

Agree existing water rights should be protected

Agree that OWRB already has the authority to implement ISF at least in scenic rivers and ORWs

Agree on an incentive mechanism where water “donated” from existing permit to instream flow protection should be protected from use-or-lose provisions

Previous Advisory Group Dialogue (2014)

Existing consumptive water rights should have priority over ISFs

A “one size fits all” approach will not work across Oklahoma. An adaptive process that reflects local hydrology and locally unique uses of water in the watershed is required.

Science supports sound policy decisions

There is legal authority for ISF protection in Scenic Rivers but uncertainty regarding other watersheds

Questions and concerns regarding ISFs cannot be answered in the abstract. They must be put in the context of an actual watershed, thus the proposed pilot study

4. Core Elements of an ISF Process

Core Elements of ISF Assessment and Implementation— where, what, how, by whom

Core Element:

Administrative Approaches: Implementing, Monitoring, and Administering ISFs

- Emphasis on similar "process" for each basin?
- Overview of other states
  - Who administers, and who participates
  - Tools employed for administration of ISF.
- Input on these approaches for Oklahoma

Core Element:

Study Criteria and Assessment Methodologies

- The scientific method employed for ISF determination
- The technical methods employed must support the eventual implementation approach;
- Must provide for informed decision-making.

Core Element:

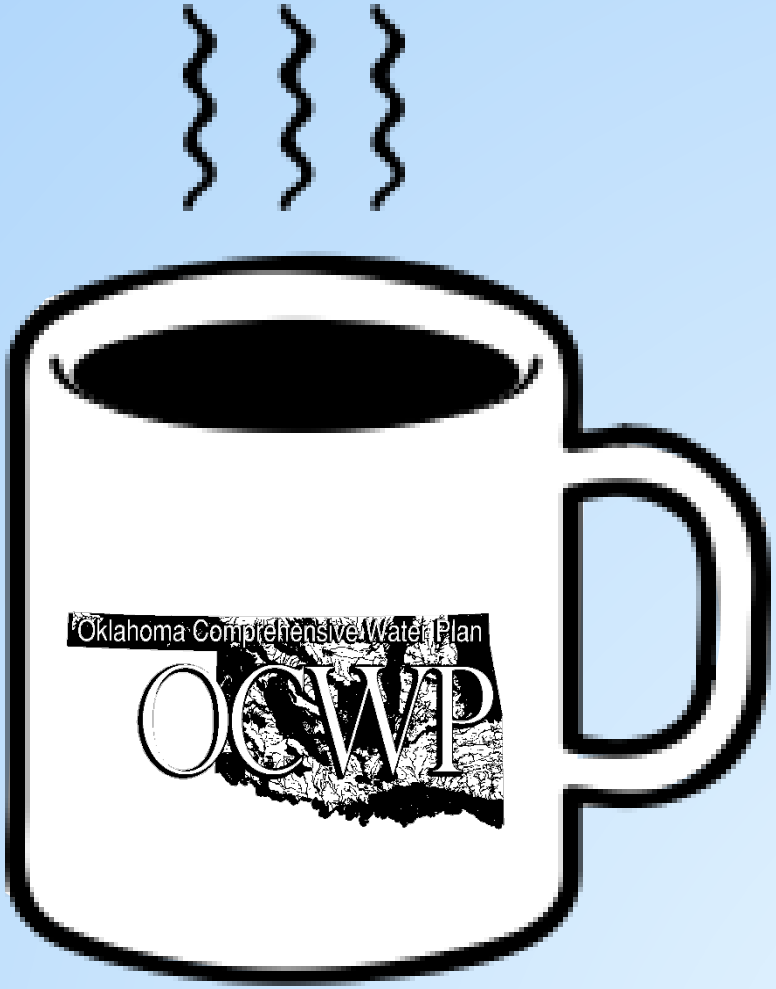
Stream Basin Selection and Prioritization

- "Basin" scale process
  - Sub-basins can be defined at local level
- Review of potential approaches
  - Consider needs & drivers,
  - Potentially incorporate into adaptive management with permitting or development triggers
- How to select a prioritization approach?

Core Element:

Stakeholder Involvement and Structure

- Authority: “Bottom-Up” or “Top-Down” framework
- Basin Stakeholder Committee (BSC): role/ responsibilities
- Need for Technical Advisory Group
- Influence on selection of basin-specific administrative approaches
  - Numeric Standard,
  - Voluntary Mechanisms,
  - Monitoring/Adaptive Management,
  - No Action



A break.

5. Discussion: Administrative Approaches for Implementing, Monitoring, Administering

Administrative Approaches:

Implementing, Monitoring, & Administering ISFs

- ISF program may be locally backed, but administered at State level
- Responsibilities can include:

Developing rules and regulations	Issuing water use permits.
Selecting methods to determine ISF criteria.	Enforcing ISF permit limits.
Obtaining and evaluating data on ISF requirements.	Monitoring and evaluating the program effectiveness.
Setting instream flow criteria.	Managing adaptive management issues.
Incorporation of ISF criteria into water management plans.	Advising on development of water conservation, drought, and other water management plans.
Using water allocation guidelines or limits from water management plans to inform permitting decisions.	Public awareness on ISF issues.

Administrative Approaches:
Considerations from Other State Processes

- ISF management typically through:
  - ISF permits
  - ISF special conditions in permits for other uses
  - Voluntary approaches

Administrative Approaches:

General Tools Available for ISF Administration

- ISF Permit or permit condition
- Voluntary conversion/donation of existing right
- Term leases, leasing programs
- Minimum desirable streamflow targets
- Water Reserve/Water Bank/Water Trust
- Permanent acquisition by state or others
- Administrative rulemaking

Administrative Approaches:

Key Questions for the Advisory Group:

1. Which administrative approaches should be considered further?
2. Which administrative approaches should not be considered at this time?
3. Should ISF implementation occur from local requests or at state level or other?
4. Should voluntary approaches be investigated and implemented?

Working Lunch.

6. Discussion: Study Criteria and Assessment Methodologies

Study Criteria:

Consistent, Understandable Science

- Desktop vs. comprehensive methods
- Balancing consistency basin-to-basin while flexible to accommodate localized variation
- Assessing shortages: informing the balancing process
- Monitoring / adaptive management

Study Criteria:

Objectives for Science

- Specify amount of water needed for protection.
- Reliable information to appropriately balance competing uses.
- If contested, necessary to have a technically defensible, consistent scientific approach.

Consistency	Flexibility
Equitable application across state	Varying conditions across state

Study Criteria:

Considerations:

- Risk to ecology
- Available expertise
- Funding availability
- Complexity of local issues

Simpler	More Complex
Desktop (Typically minimum flows)	**Incremental/Comprehensive**
Lower risk, minimal complexity	More rigorous sampling, site specific studies, modeling
Less resource intensive	More resource intensive
Examples:	**Examples**:
Tennant, Lyons, Aquatic Base Flow, Wetted Perimeter, R2CROSS, Water Quality targets e.g. 7Q2, 7Q10	IFIM, PHABSIM, MESOHABSIM, Range of Variability, ELOHA

- Adaptive Management
  - Framework for ongoing monitoring, and funding

Study Criteria:

Key Questions for the Advisory Group:

1. Do you prefer simpler or more complex methods?
2. Who can propose/conduct studies? State agencies, anyone?
3. Flexibility in the scientific methods?
4. Are there specific methods recommended?
5. Support/recommend adaptive management—monitoring and future decision making?

7. Discussion: Stream Basin Selection and Prioritization

Prioritization:

Method for Prioritizing Basins

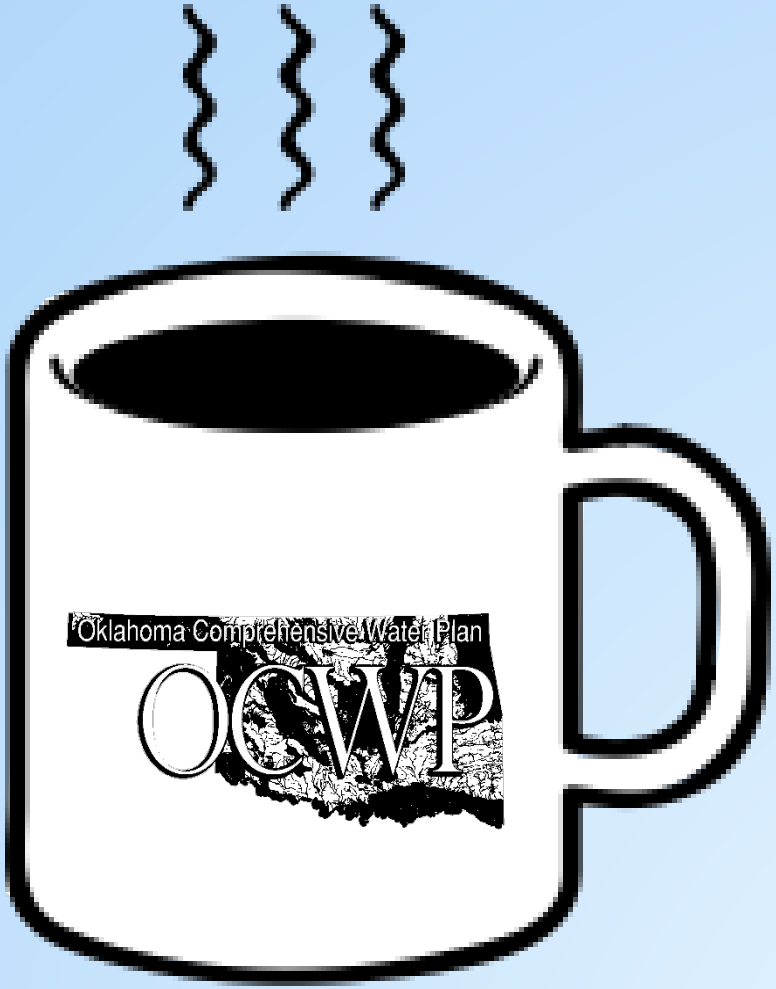
- Selecting basins for study
- Review of potential approaches
  - Consider needs & drivers
  - Potentially incorporate into adaptive management with permitting or development triggers

Approach	Description
Self-Nomination	Priority to basins where Local stakeholders petition the state
Permits-based Analysis	Prioritize basins by percent of surface water allocated,
East to West	Prioritize eastern basins where unappropriated water is commonly available
Ecoregion	Stream groupings based on ecoregions with like characteristics of climate, geology, soils, and vegetation. (established by OSU and USGS effort; Turton et. al. 2008)
Rivers with Special Designation	Initiate analyses on designated Scenic Rivers; Future expansion if deemed successful/of value/ transferable elsewhere
Legislatively Driven	Prioritize basins as expressed by a legislative mandate

Prioritization:

Key Questions for the Advisory Group:

1. Is there a preferred prioritization approach for studies?
2. Who should determine the prioritization approach – and how?
3. What thresholds, if any, should be employed for prioritization?



A break.

8. Discussion: Basin Stakeholder Involvement and Structure

Basin Stakeholder Involvement:

Stakeholder Framework

- Stakeholder group degree of authority, role, responsibilities?
- Seeking stakeholder input?
- Guide selection between 4 key strategies?
  - Numeric Standard,
  - Voluntary Mechanisms,
  - Monitoring/Adaptive Management,
  - No Action

Basin Stakeholder Involvement:
Responsibility

- Recommending ISF goal-setting;
- Consensus-based process towards submittal of recommendation to OWRB regarding preferred path forward on ISF;
- Would BSC Oversee basic phases of ISF planning?
  - Issue planning?
  - Study planning?
  - Study implementation?
  - Alternatives analysis (deliberating between and selecting among the four strategies noted above) ?
  - Development of findings and recommendations?

Basin Stakeholder Involvement:

BSC Composition

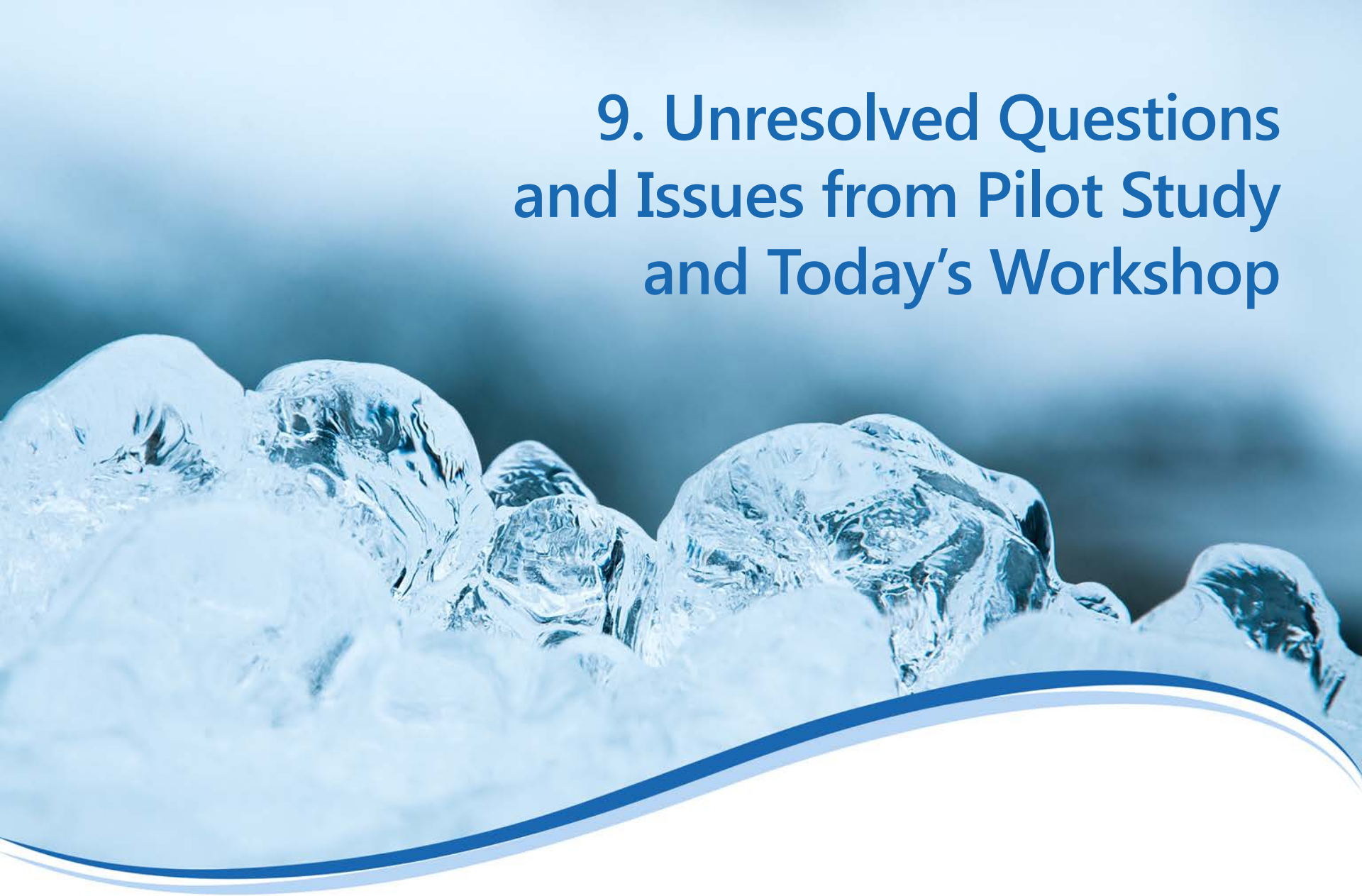
- Diversity of consumptive and non-consumptive stream users
- Representative of local basin interests
- Examples:
  - ❖ Agricultural.
  - ❖ Commercial fishing.
  - ❖ Cultural and tribal interests.
  - ❖ Environmental interests.
  - ❖ Industrial water users.
  - ❖ Municipalities.
  - ❖ Power generation.
  - ❖ Public interest groups.
  - ❖ Recreational.
  - ❖ River authorities/water districts.

Basin Stakeholder Involvement:

Key Questions for the Advisory Group:

1. How much authority should stakeholder groups have? To conduct a study, petition the OWRB to conduct a study, direct priorities to protect their basin?
2. Who are the members?
3. Input on basin stakeholder group composition
4. Need for technical advisory group and composition

9. Unresolved Questions and Issues from Pilot Study and Today's Workshop



10. Next Steps and Wrap-Up

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