
Transboundary Water Governance in the Western US:

The Role of Organizational & Informational Infrastructure*

Prof. Tanya Heikkila
School of Public Affairs
University of Colorado Denver
tanya.heikkila@ucdenver.edu

*Study funded by NSF-0451559,
Prof. Edella Schlager, University of Arizona, Co-PI

Governance through Interstate River Compacts

- Compacts are state-to-state agreements (like “treaties”)
 - To allocate waters of transboundary rivers – a large-scale “commons”
 - Commonly consist of:
 - Allocation rules
 - Commission
 - Devise rules and regulations to administer compact
 - Special subcommittees and/or staff
 - Support and implement work of commission
 - Monitoring
-

Criticisms about the Capacity of Interstate Compacts to Govern Shared Waters

- Compacts expected to be weak and ineffectual
 - Outdated, rigid, inflexible?
 - No sunset clauses, questionable hydrologic data
 - Few incentives to invest in capacity?
 - Long shadow of the future; limited attention to monitoring and enforcement
 - Incentives to obscure information?
 - Concerns for state autonomy and need to comply with state water allocation laws
-

Are the Critics Correct?

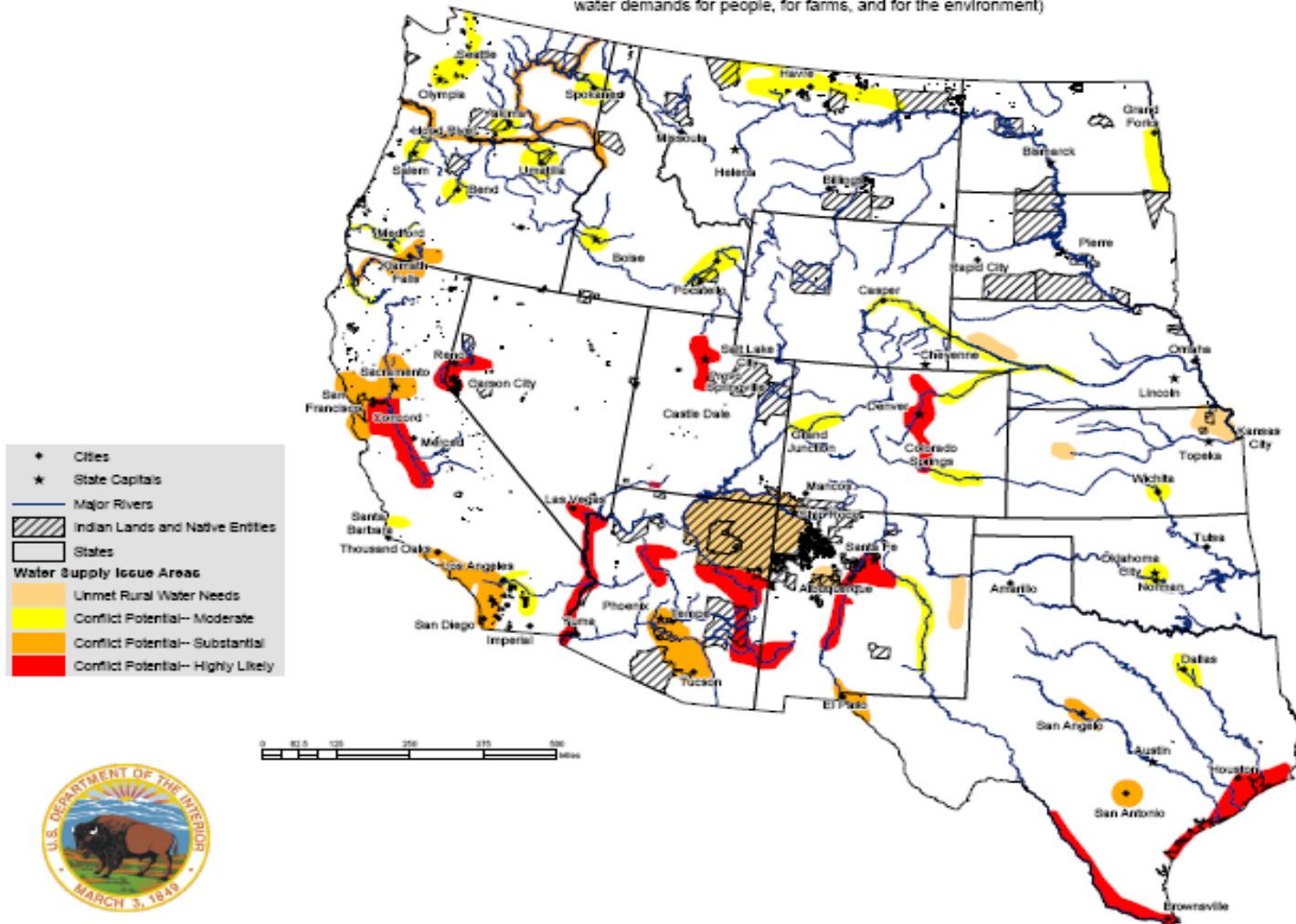
- Organizational & information infrastructure widely recognized as important for institutional performance – So let's take a look:
 - What institutional capacity exists?
 - Focus on organizational & information infrastructure
 - Considering the starting point -- authority
 - Do these institutions invest in capacity building?
 - Does capacity facilitate problem solving and conflict resolution?
-

Why Do We Care?

Practical Management Challenges

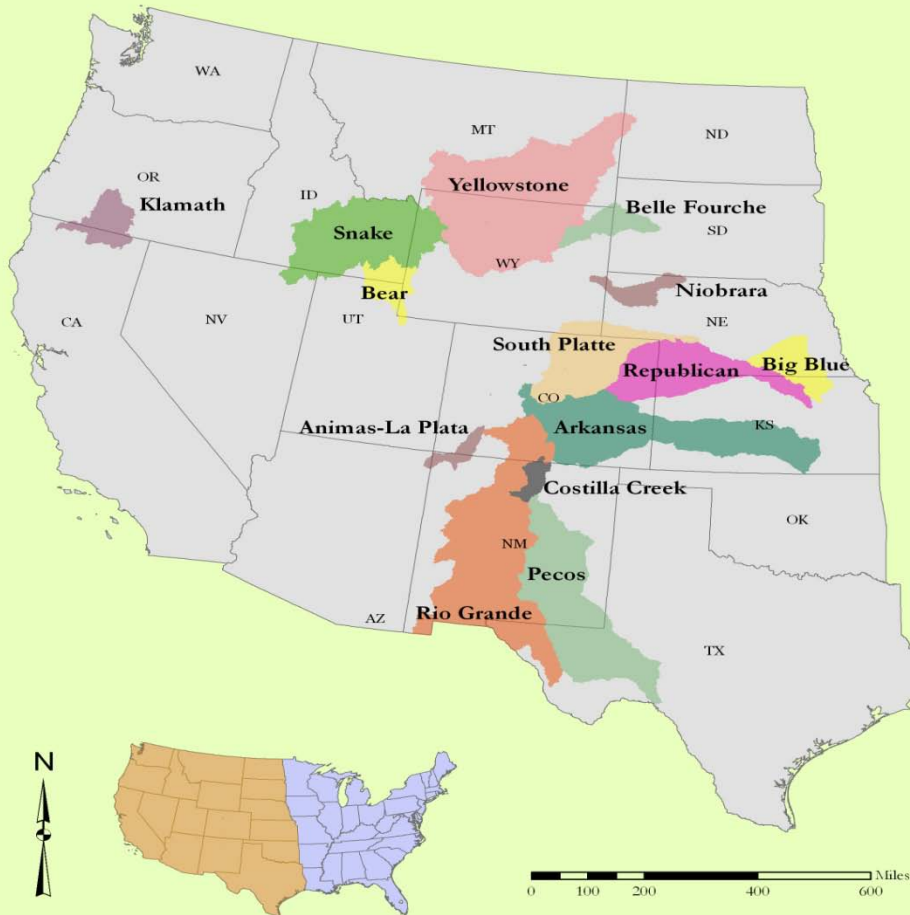
Potential Water Supply Crises by 2025

(Areas where existing supplies are not adequate to meet water demands for people, for farms, and for the environment)



The Research Setting & Methods: 14 Interstate Water Compacts

Interstate River Compacts



- Western interstate compacts
 - Focus only on state-to-state agreements
 - Where federal government is not a central participant
- Coded and scored
 - Institutional authority
 - Compact agreements
 - Organizational and information infrastructure
 - Reports, meeting minutes
 - Changes over time
 - Conflicts and problem solving events and solutions
 - Reports, meeting minutes, court documents

	States	Date	Governing Structure	Scope	Conflict Resolution
Arkansas	CO, KS	1942	Commission	SW, GW	Yes
Bear	ID, UT, WY	1958, 80	Commission	SW, GW, WQ	No
Belle Fourche	SD, WY	1943	None (allowed)	SW	No
Big Blue	KS, NE	1971	Commission	SW, GW, WQ	No
Costilla Creek	CO, NM	1944, 63	State H ₂ O Officials	SW	No
Klamath	CA, OR	1956	Commission	SW, WQ	Yes
La Plata	CO, NM	1922	State H ₂ O Officials	SW	No
Pecos	NM, TX	1949	Commission	SW, WQ	No
Republican	CO, KS, NE	1943	Commission	SW, GW	Yes
Rio Grande	CO, NM, TX	1938	Commission	SW, WQ	No
Snake	ID, WY	1949	State H ₂ O Officials	SW	Yes
South Platte	CO, NE	1923	None	SW	No
Upper Niobrara	WY, NE	1962	None (allowed)	SW, GW	No
Yellowstone	MT, WY (ND)	1950	Commission	SW	Yes

Table 4: Compact Capacity Features and Number of Problems & Conflicts Addressed

	Capacity Scores*			Problem and Conflict Performance*	
	<i>Authority Score</i>	<i>Organizational Infrastructure Score (0-13)</i>	<i>Information Infrastructure Score (0-7)</i>	<i># of Problem-Solving Events</i>	<i>Conflict Events Addressed / # of conflicts</i>
Arkansas	6	12	6	6	2/5
Bear	6	13	5	11	4/7
Belle Fourche	3	1.5	1	0	No conflicts
Big Blue	6	10.5	7	1	No conflicts
Costilla	6	6	4	5	1/1
Klamath	6	5	1.5	0	0/5
La Plata	3	1.5	1	0	0/1
Pecos	5	10	6	0	0/1
Republican	4	5	5	0	0/1
Rio Grande	5	7	6.5	3	1/3
Snake	4	1	1	0	0/1
S. Platte	1	0	3	0	No conflicts
U. Niobrara	3	0	1	0	No conflicts
Yellowstone	5	8	2	6	0/3
<i>Mean</i>	4	6	3.5	2.3	0.5 / 2

** Orange = high; Yellow = medium; Green = low

Table 6. Institutional Capacity Building by Compacts that have Addressed Problems or Conflicts

PROBLEMS	<i>Organizational Infrastructure</i>			<i>Information Infrastructure</i>			
	New Committee ^a	New Staff ^b	Collaborate ^a	New Reports ^a	Info Gathered ^a	Monitoring ^c	<i>Capacity Building Score</i>
<i>Compacts (with capacity color code)</i>							
Arkansas	4 (1)	2	0	2	2	1	11
Bear	3(1)	1	3 (0)	9	10	1	27
Big Blue	1(1)	0	1 (1)	1	1	1	5
Costilla	1(1)	1	0	2	2	3	9
Rio Grande	0	0	0	0	0	0	0
Yellowstone	3(0)	0	4 (0)	2	5	1	15
<i>total</i>	<i>12(4)</i>	<i>4</i>	<i>8</i>	<i>16</i>	<i>20</i>	<i>7</i>	<i>Mean= 11</i>

CONFLICTS

<i>Compacts</i>							
Arkansas	1(0)	0	0	0	0	0	1
Bear	1 (0)	0	1 (1)	2	2	1	7
Costilla	0	0	0	0	1	0	1
Rio Grande	0	0	0	0	1	0	1
Yellowstone	0	0	0	0	0	0	0
<i>total</i>	<i>2(0)</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>4</i>	<i>1</i>	<i>Mean= 2</i>

a - outcomes may be short-term capacities; permanent outcomes are in parentheses

b – new staff outcomes are permanent

c – new monitoring outcomes are permanent, but may be an expansion of the existing monitoring systems and not necessarily new types of monitoring

Summary of Findings

- Most compacts have moderate authority to develop capacity
 - Organizational capacity initially higher than information capacity
 - Investments in capacity occur
 - But often modest
 - Capacity can support problem solving
 - And vice versa
 - More capacity building may require incentive alignment
 - A couple compacts have incentives aligned naturally due to physical circumstances (e.g. both states get to be upstream)
-

Future Directions

- Assess why certain compacts invest in more capacity than others
 - Examine the negotiation and decision-making processes that have facilitated this capacity building
 - Continue to assess differences in the water management outcomes
 - Such as reduced conflicts over time or greater compliance with water allocation rules
-