Water in the Native World: An intersection of Indigenous Water Knowledge and Hydrologic Sciences

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I am Bitterwater.
I am from the Navajo Nation.
Water is Sacred
Tribes

Cozetto et al., 2013
567 Federally Recognized Tribes
Tribes in the Colorado River Basin

- 29 federally recognized tribes
- Tribes hold ~20%, or 2.9 million acre-feet
  - More water than Arizona’s allocation from the river
- Tribal water share will increase
  - As 13 tribes without confirmed rights settle their claims with federal and state governments
- Colorado River is fully allocated
  - Tribes threaten to take water from current users
Colorado River Basin Ten Tribes Partnership

Formed in 1992 by 10 federally recognized tribes with reserved water rights in the Colorado River Basin.

1. Ute Indian Tribe
2. Ute Mountain Ute Tribe
3. Southern Ute Indian Tribe
4. Jicarilla Apache Nation
5. Navajo Nation
6. Chemehuevi Indian Tribe
7. Colorado River Indian Tribes
8. Fort Mojave Indian Tribe
9. Quechan Indian Tribe
10. Cocopah Indian Tribe

To strengthen tribal influence among the seven Basin States over the management and utilization of Colorado River water resources.
Arizona Tribal Water Rights

- 22 tribes, 4% of population, ⅓ of AZ land
- Adjudicated rights in Arizona v California (781,994 afy)
  - Cocopah, Colorado River Indian Tribe (CRIT), Fort Mohave Tribe, and Fort Yuma
- P4 Entitlement: Hopi Tribe & Cocopah
- Settlements (9 tribes)
  - Paper water versus Wet Water
- Outstanding (11 tribes) with 37,107 af remaining
- Gila River Indian Community - largest tribal water rights settlement in the history of the US (653,500 AFY)
Water not as a commodity
Placed-Based Water Cycle

Regional, watershed based

- Male rain
- Canyons
- Painted

- Rocks, Dine
- Hopi
- Ponds

- Plateau
  - High desert
  - Ground water

- Yaupai
  - Click for pop-up of tribe-specific hydrocycle
  - 3D capability

- Low desert
- Basin & Range

- Tucson
- O'odham

- Male rain
- Monsoon

- Evap

Karletta
Derrick
Carolina
Terri
Stoke

- Ex: CA watershed
5 Factors to Consider

- Changes in climate, hydrology, and ecosystems
- Spirituality & Culture
- Ecosystem services & land-use
- Socio-economic
- Political
- Infrastructure

LEGEND:
- Hazard
- Vulnerability/Adaptive Capacity Component

CLIMATE CHANGE IMPACTS ON TRIBES
“We use the term ‘water is life,’ it’s the lifeline of the people.”

Russell Begaye
Navajo Nation
President
“The San Juan represents a male river in Diné culture. To me the river is a life giving force to the Diné people and ecosystems.”

“The river means the past of our [Diné] people, the present destruction of our natural world came to us, and the future of our lives here as Navajo people in our own lands we have to protect now or there is no future.”

EPA Perception vs. Diné Reality
Diné Fundamental Philosophy: Hózhó

Critical Thinking (Nitsáhákees)

Reflection (Siih hasin)

Planning (Nahat’á)

Implementation (liná)
environment

hózhó

social

health
## Activities in Questionnaire

<table>
<thead>
<tr>
<th>Activity Categories</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural &amp; Spiritual</td>
<td>14</td>
</tr>
<tr>
<td>Recreational</td>
<td>12</td>
</tr>
<tr>
<td>Livelihood</td>
<td>9</td>
</tr>
<tr>
<td>Arts &amp; Crafts</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42</strong></td>
</tr>
</tbody>
</table>

![Image of cultural activity](image1.png)

![Image of recreational activity](image2.png)

![Image of livelihood activity](image3.png)

![Image of arts & crafts activity](image4.png)
Adult Activities Pre- & Post Spill
Emerging Voices of Tribal Perspectives in Water Resources

http://ucowr.org/journal-issue-archives/163
“We need our own data to communicate to the world our own perspective on our own crises and trauma.”

- Teach-In