Arizona Wilderness Brewing Company has a true passion for its craft. It is a passion which stems from the owner exploration of the vastly diverse state of Arizona. They allow their love for Arizona to influence their vision for creating high quality, artfully crafted beers. This passion has turned into a mission in which highlighting Arizona’s agricultural community is a root cause. It is the essence of naturalism and conservation that truly excites this brewery.
WHO IS ARIZONA WILDERNESS BREWING COMPANY?
WHO IS ARIZONA WILDERNESS BREWING COMPANY?

- Founded by Jonathan Buford and Pat Ware in 2013
- Voted Best New Brewery of the Year by RateBeer in 2014
- Heavy focus on foraged ingredients, conservation, and supporting local farmers
WHO IS ARIZONA WILDERNESS BREWING COMPANY?

Foraging:
WHO IS ARIZONA WILDERNESS BREWING COMPANY?

Conservation:

- Sinagua malt
- Composting
- Waterless urinals
- Side streaming waste products
WHO IS ARIZONA WILDERNESS BREWING COMPANY?

Focuses on working with local farmers and producers
WATER’S ROLE IN BREWING

- Growing cereal grains
- Growing hops
- Water (as an ingredient)
- Cleaning
SUSTAINABILITY & CONSERVATION EFFORTS
HUMMINGBIRD SPRINGS SAISON

1st Western Rivers Brewers Council Branded beer

Goals:

• Engage Colorado River Basin small businesses in advocating for sound water polity

• Expand Audobon’s reach outside of their own network to connect with a different audience
A statewide campaign to better inform Arizonans about water issues, water reuse and technologies currently available to purify recycled wastewater producing safe, high-quality drinking water.
AZW & THE AZ PURE WATER BREW CHALLENGE

Why we decided to get involved:

• Brewing is very water intensive
• We live in one of the driest areas of the country
• Improve public perception of this process and the water
• Educate our clientele
• Strong alignment with some of our core business philosophies
<table>
<thead>
<tr>
<th>Compound</th>
<th>Unit</th>
<th>PURE Water</th>
<th>EPA/WHO Guideline Value</th>
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<tbody>
<tr>
<td>pH</td>
<td>pH units</td>
<td>7.6</td>
<td>6.5 – 8.5</td>
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<tr>
<td>Conductivity</td>
<td>S/cm</td>
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<tr>
<td>Alkalinity</td>
<td>mg/L as CaCO₃</td>
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<td>-</td>
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<tr>
<td>Total Dissolved Solids</td>
<td>mg/L</td>
<td>18.6</td>
<td>500</td>
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<tr>
<td>Hardness</td>
<td>mg/L as CaCO₃</td>
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<tr>
<td>Calcium</td>
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<tr>
<td>Fluoride</td>
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<td>&lt;0.2</td>
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<tr>
<td>Nitrite</td>
<td>mg/L</td>
<td>&lt;0.1</td>
<td>0.06 – 0.91</td>
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<tr>
<td>Nitrate</td>
<td>mg/L</td>
<td>&lt;2</td>
<td>10</td>
</tr>
<tr>
<td>Ammonia</td>
<td>mg/L as N</td>
<td>&lt;0.09</td>
<td>1.2 (aesthetic)</td>
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<tr>
<td>Chloride</td>
<td>mg/L</td>
<td>&lt;10</td>
<td>250</td>
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<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>0.07</td>
<td>&lt;0.3 for 95% of samples</td>
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<tr>
<td>Manganese</td>
<td>mg/L</td>
<td>&lt;0.01</td>
<td>0.05</td>
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<tr>
<td>Sulfate</td>
<td>mg/L</td>
<td>&lt;0.5</td>
<td>250</td>
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<tr>
<td>Phosphate</td>
<td>mg/L</td>
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<tr>
<td>Sodium</td>
<td>mg/L</td>
<td>5.78</td>
<td>200</td>
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<tr>
<td>Total organic carbon</td>
<td>mg/L</td>
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</tr>
<tr>
<td>Chlorine</td>
<td>mg/L</td>
<td>1.1</td>
<td>-</td>
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<tr>
<td>Total coliforms</td>
<td>MPN/100mL</td>
<td>Absent</td>
<td>-</td>
</tr>
<tr>
<td>Fecal coliforms</td>
<td>MPN/100mL</td>
<td>Absent</td>
<td>-</td>
</tr>
<tr>
<td>Enterovirus</td>
<td>Present/absent</td>
<td>Absent</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) Results typical of PURE Water produced at the Agua Nueva WRF in Tucson.
(2) Lowest published limit of either U.S. EPA or WHO.
AZW & THE AZ PURE WATER BREW CHALLENGE

What we brewed and why...

AZ Pure Water DIPA
AZW & THE AZ PURE WATER BREW CHALLENGE

Outcomes:

• Reactions to the beer
• Pouring at the Water Symposium
• Brewing Contest
WATER CONSERVATION BEYOND THE BREWERY
Watermelon Gose
Sinagua Malt & the Verde River
Agriculture and Conservation

Working with land and water managers in the Verde Valley to explore innovative ways to restore streamflow to the threatened Verde River while promoting our community and heritage.

Photo Credit: Rick Triana for The Nature Conservancy
An aerial view of salt flats and hydromorphological formations of the Colorado River Delta in Mexico. Photo credit: © Nick Hall for The Nature Conservancy.
The Verde River: A Precious Resource

- Provides critical habitat to nearly 50 threatened, endangered, sensitive, or special status fish and wildlife species.
- Utilized by agricultural through the Verde Valley to drive the local economy.
- Holds cultural significance to its surrounding tribal communities.
- Provides a crucial water supply to the Phoenix metropolitan area.
The Verde River Valley
Phoenix Metropolitan Area

Aerial view of tracks housing in Anthem © Dan Campbell/TNC
RECAP: WHY IS THIS RIVER SO IMPORTANT?

- Where it travels
  - Prescott, Sedona, Phoenix

- Habitat
  - Increased flow means more wildlife

- Economy
  - Farmers and recreation
WHAT IS MALTED BARLEY?

- Important ingredient in beer
- Malting process: steeping, germination, kilning
- How it's used in the brewing process
Crop Switching
CROP SWITCHING

- Corn and Alfalfa to Barley
- Water requirements of corn/alfalfa
- Benefits of barley crops in AZ
Water Requirements for Barley Compared to Alfalfa and Corn

- **Alfalfa**
- **Barley**
- **Corn**

Streamflow (Cubic Feet/Second)
Consumptive Use (Inches/Month)
First beer brewed with AZ grown and Sinagua malted barley
PROGRESS REPORT

• 15 acre test crop in 2016
• 144 acres planted in 2017
• Impact to the river
• What is the future of the project?

END RESULT:
Verde gets more flow
Farmers get access to a local market
Brewers get barley with a tie to the land
Thank you!

Questions?