



UNIVERSITY OF
ARKANSAS

**University of Arkansas – CSCE Department
Capstone II – Final Presentation – Spring 2021**

Ozark Creek Gauges

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Purpose

- **Redesign:** We redesigned the layout of the website to make it more readable for new users
- **Who did it benefit?**
 - Arkansas Canoe Club members and local paddlers
- **Additions:**
 - Modernized table and key
 - Map View
 - Submission process for new rivers and locations

Original Website



Ozark Creek Information Summary

Last Page Update: 04/21 14:12

| Name | Rating | Size | Level | Ref. Gauge | Time | C.Q. | Photos |
|---|--------|------|-------|---|----------------------------|------|--------|
| Adkins Cr. | III-V | VS | X → | USGS: Buffalo at Boxley 2.49 [7, 8.5, 11] | 04/21 13:30 (0.7 hr) | B+ | |
| Archey Cr. | II+ | M | X → | USGS: Big Piney Cr at Hwy 164 nr Dover 2.02 [4, 5.5, 8] | 04/21 13:45 (0.4 hr) | C | |
| Baker Cr. | II-IV | S | X → | USGS: Cossatot R. at Vandervoort 2.74 [5, 6, 8] | 04/21 13:45 (0.4 hr) | B | |
| Bear Cr. | III-V | VS | X → | USGS: Richland Cr. at Witts Springs 2.16 [6, 7, 8.5] | 04/21 13:30 (0.7 hr) | C+ | |
| Beech Cr. | III-V | VS | X → | USGS: Buffalo at Boxley 2.49 [6.5, 8.5, 10] | 04/21 13:30 (0.7 hr) | B+ | |
| Ben Doodle Cr. | IV-V | XS | X → | USGS: Lee Cr. at Short, OK 3.28 [14, 18, 24] | 04/21 13:15 (0.9 hr) | C+ | |
| Big Devils Fork Cr. | III-V | VS | X → | USGS: Richland Cr. at Witts Springs 2.16 [6, 7, 8.5] | 04/21 13:30 (0.7 hr) | B+ | |
| Big Piney Cr (abv Longpool) | II+ | L | L → | USGS: Big Piney Cr at Hwy 164 nr Dover 2.02 [2.0, 3.0, 5.0] | 04/21 13:45 (0.4 hr) | A | |
| Big Piney Cr (blw Longpool) | I-II | L | O → | USGS: Big Piney Cr at Hwy 164 nr Dover 2.02 [1.2, 2.0, 5.0] | 04/21 13:45 (0.4 hr) | A | |

Key

Name: Name of the river/creek/run. Linked to a detailed description.

Class: International classification/rating for the creek at optimal levels. At higher levels, the creek may be more difficult than this rating indicates!

Size: approximate stream/watershed size. Refer to the chart below for details:

| Size | Width (ft) | Watershed (sq mi) | Rain Rate (in/hr) | Window |
|------|------------|-------------------|-------------------|----------------------------------|
| XS | < 20 | < 1 | 1.5 | 3-6 hrs |
| VS | 20-30 | 1-4 | 1.0 | 6-12 hrs |
| S | 30-40 | 4-10 | 0.75 | 1 day |
| M | 40-75 | 10-25 | 0.5 | 1-2 days |
| L | > 75 | > 25 | 0.2 | 2-5 days |
| H | > 150 | > 75 | 0.1 | 5+ days |
| DC | N/A | N/A | N/A | Dam Controlled - Check Schedule! |
| A | N/A | N/A | N/A | Always Runs |

Note: Window is the typical time to reach "too low" levels without further precipitation.

Level: current stream level and trend. Refer to the chart below for details:

| Color/Code | Level | Description |
|------------|------------|--|
| X | Too Low | Creek is too low for fun paddling. |
| L | Low | Creek is low but paddlable. May have to drag/portage in places. |
| O | Optimal | Creek is perfect for paddling. The ratings listed are for this range. |
| H | High/Flood | Creek is high and potentially very dangerous. Many more hazards are present in this range and ratings typically are tougher than what is listed. |

Note: Trend arrows indicate whether the creek is falling or rising.

Web Scraping



- Stream Level changes over time
- USGS Water Services REST Api
 - Pass Stream ID #
 - Returns latest observation results in XML format
- Extract Level and Time
- Limitation
 - Very slow: Approx. 30 seconds
 - Put on separate thread.
 - Begins every index call
 -

Mapbox and Stream Labeling

- Created Georeferenced Datasets
 - Referenced the old website for Exact location
 - Traced Streamline
 - Placed Markers for Put in/Take Out
- Import datasets into Map Style
 - What the user actually sees
 - Color palette (Background/streamline)
 - Shapes of Markers
- Used the access token provided by Mapbox to integrate into our website



User Experience

- Color Coding
 - Levels denoted by color and symbol (for accessibility purposes)
- Table Refresh
 - Accommodates the latency between page rendering and value extraction
 - Ensures the table has the most updated info
- Sort Function
 - Sorts via each attribute
 - Allows the user to find the stream most relevant to them
- User Submissions
 - Form that sends email to creek gauges gmail
 - Users can suggest new creeks to be added to the site

| Levels | | |
|--------|------------|---|
| Gauge | Levels | Description |
| X | Too Low | Do not paddle |
| L | Low | Paddlable, but might be too low in some parts |
| O | Optimal | Perfect for paddling |
| H | High/Flood | Too high and potentially dangerous |

Submission type:

Choose..

Name: *

Enter your name..

Contact Info: *

Enter your email..

River Name: *

Enter river name..

Message: *

Enter your message..

Submit

Demo



OZARK CREEK GAUGES

[HOMEPAGE](#)

[RIVER MAP](#)

[ABOUT](#)

Future Work:

- Allow users to physically draw rivers onto our map
 - We were unable to implement it with Mapbox
 - Would have to implement verification features to ensure accurate submissions
- Allow user specific customization of the table
 - Exp: a more experienced paddler may have different opinions on what is to high or low for specific rivers
- Allow users to submit their pictures of a river
 - In the original website, users submitted pictures by emailing the webmaster