# DELIVERING REAL-TIME WATER QUALITY DATA FROM THE LAKE NAMEKAGON CHAIN TO THE PUBLIC

Wisconsin Department of Natural Resources Surface Water Grants Program

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## BURKE CENTER BUOY PROJECT

The Burke Center at Northland College deployed three research buoys; one each in the deep holes on Lake Namekagon, Jackson Lake, and Garden Lake in Bayfield County near Cable, WI, primarily within the Town of Namakagon. Lake Namekagon is a well-known lake in northwestern Wisconsin with high social, economic, and environmental value to the region. A majority of the shoreline is developed with residential properties. The watershed of the lake chain is approximately 62 square miles, and the land beyond the immediate shoreline has low human development, dominated by forest and wetland land cover. Furthermore, the lake chain is a popular destination for recreation and anglers as it is a Class A muskellunge lake. Six Ojibwe tribal bands, along with sport anglers, utilize the lake for fishing. The trophic status of the three lakes range from mesotrophic to eutrophic; trophic status is an integrated measurement that incorporates the physical, chemical, and biological state of a freshwater lake. Lake Namekagon is classified as a deep drainage lake with low nutrients and algae abundance (i.e., mesotrophic), while Garden Lake and Jackson Lake are classified as shallow drainage lakes with higher nutrient concentrations and algal abundance (i.e., more eutrophic). The water quality for Lake Namekagon and Garden Lake are considered excellent for fish and aquatic life and good for recreation. Due to high total phosphorus, Jackson Lake is listed as impaired and classified as poor for fish and aquatic life and recreation. The public access around the Lake Namekagon chain includes three boat launches, two swimming beaches, a recreation area, a U.S. Forest Service campground, two walk/carry-in access points, and several private resorts.

The Burke Center and Northland College developed an interactive, user-friendly website to display real-time water quality data from our research buoys on the Lake Namekagon chain. Our outreach and education campaign funded through the Wisconsin Department of Natural Resources (DNR) Surface Water Grant program allowed us to broadcast our interactive website to local residents and the broader public alike, connecting a large audience to the water quality of the lakes. The data that were available for real-time viewing included water temperature, dissolved oxygen, and algal abundance, among others. Local residents, business owners, and visitors to the area had the opportunity to utilize the data to inform fishing, swimming, and boating conditions. The website also provided a tool for landowners and natural resource managers to monitor the lake for rapid changes in water quality, such as algal blooms. Our outreach and education campaign sought to widely share the website address and content as well as provide regular updates interpreting and translating the data via multiple means, including signage at boat landings, in-person meetings, regular social media updates, and informational pamphlets distributed around the Cable, WI, area.

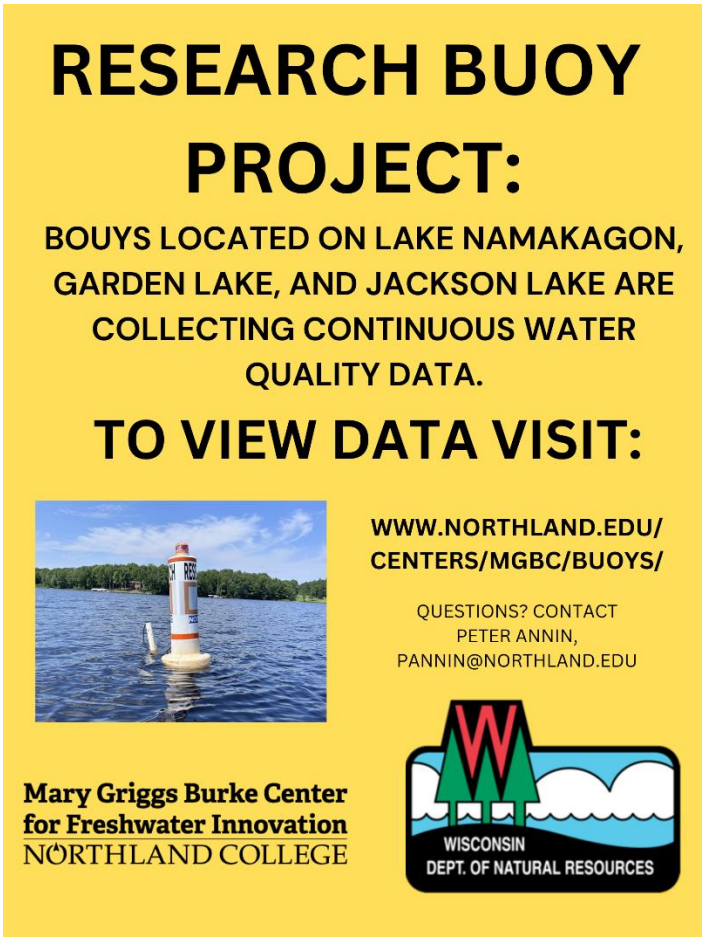
The DNR Surface Water Grant (#LPL188524) enabled us to initiate our public outreach and education campaign in Spring 2024. The deliverables provided in our report were partially or fully completed between April and September. However, not all deliverables were completed due to staffing changes at the Burke Center. The buoys were removed from the Lake Namekagon chain in September and the related research is currently on hiatus. The grant activities and deliverables included the following:

**Activities**: 1) Create informational signage 2) Social media posts about data website 3) Burke Center electronic newsletters 4) Present at Namakagon Lake Association meetings 5) Distribute pamphlets.

**Deliverables**: 1) Photos of displayed signage 2) Summary of social media posts and provide overview of data website including url 3) Copies of newsletters and distribution list 4) Meeting minutes from Namakagon Lake Association meetings 5) Copy of pamphlet including quantity and locations distributed.

Below, we describe the five deliverables and highlight the many actions taken to achieve the outcomes of the grant.

## 1.) Informational Signage

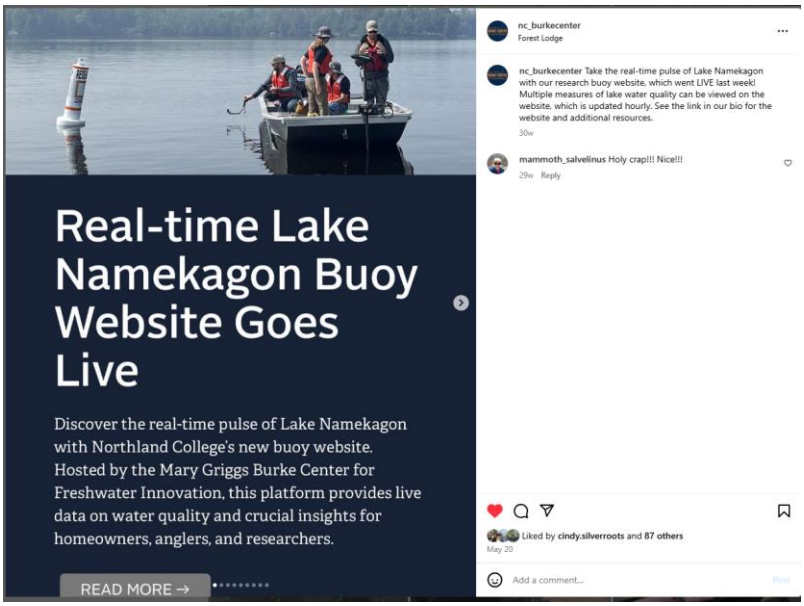



An informational sign developed to share the interactive buoy website. Physical signs were not deployed due to staffing changes.

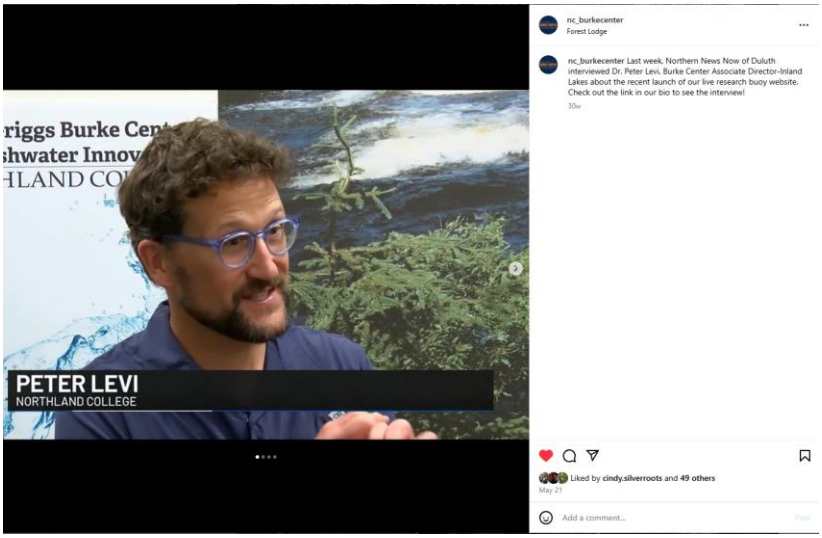
## 2.) Buoy Website Promotion and Social Media Posts

In mid May 2024, the website for the Namekagon buoy project was launched. The website contained pages ("dashboards") for each of the three buoys present on the Lake Namekagon chain: Lake Namekagon, Garden Lake, and Jackson Lake. Each buoy dashboard displays live water quality data from that location. Water quality data includes water temperature, dissolved oxygen, oxygen saturation, chlorophyll, dissolved organic matter, and specific conductivity. Via informational paragraphs, website users can learn about each measure of water quality. Users can view the data over different time frames, allowing them to see seasonal changes in the lake, such as lake turnover. The Burke Center shared the news of the website launch via social media. After the website went live, Northern News Now, of Duluth, Minnesota, visited Northland to interview Peter Levi about the buoy project. Levi provided details of the project and website in the interview, which was aired on May 19th. The Burke Center then made a social media post about the interview.

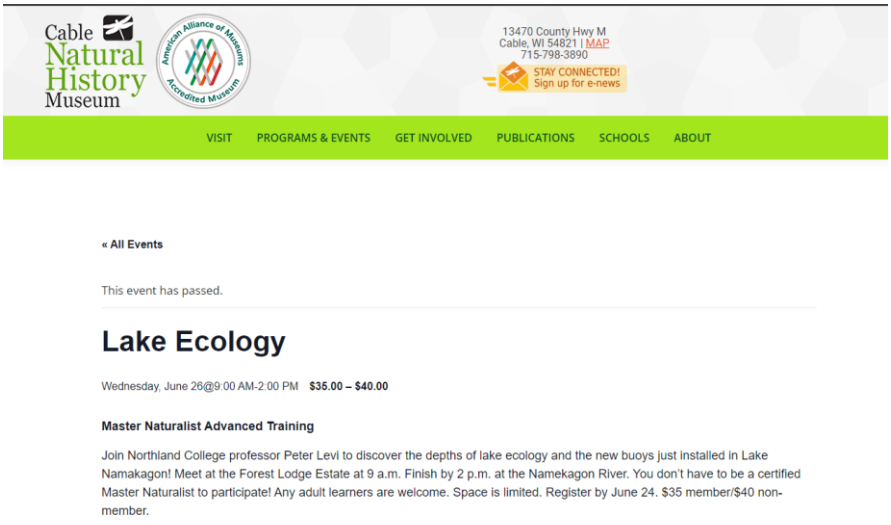
On June 26, 2024, at an event facilitated by the Cable Natural History Museum, Peter Levi presented on the Namekagon buoy project and lake ecology to a group of Wisconsin Master Naturalists. Participants in the training learned about the different measures of water quality monitored by the buoys, the applications associated with long-term lake monitoring datasets, and general lake ecology. A snippet of Peter Levi's instruction was then posted by the Cable Natural History Museum, as well as a series of photos documenting the event. Additional buoy project and website promotion occurred via a presentation by Peter Levi at the Northwest Wisconsin Lakes Conference in June, where he gave a presentation titled "Listening to Lakes: Using High-Frequency Measurements to Assess Lake Health and Function." In July, the Burke Center made an informational social media post about the Namekagon buoy project. The post explained the project and promoted the buoy website as a means to observing real-time water quality data of the Namekagon chain.



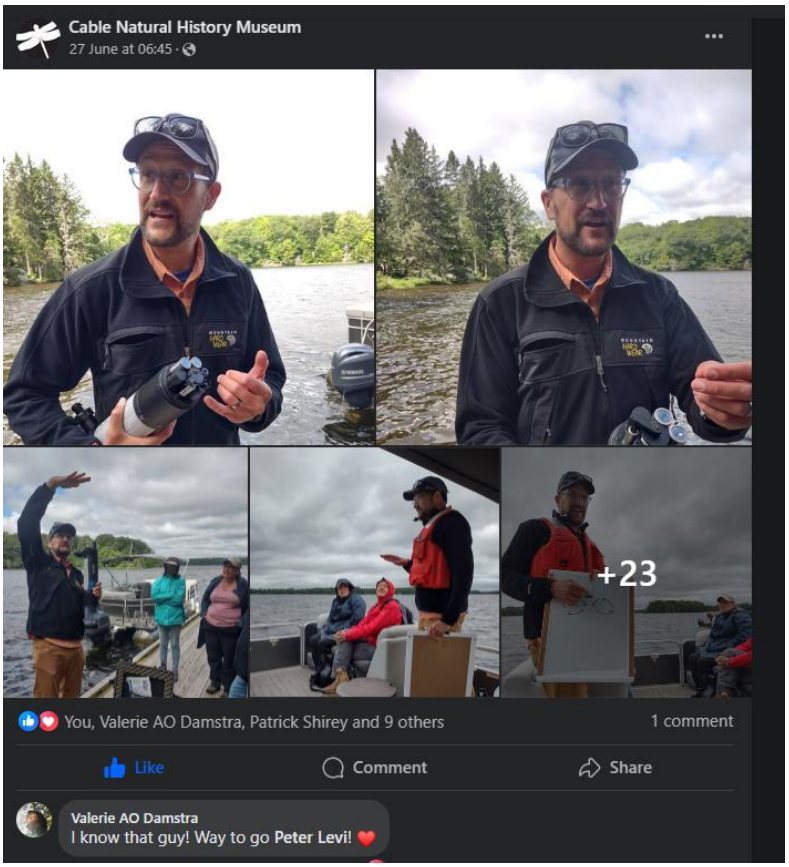
Launch of the buoy website promoted via Burke Center social media.



Burke Center social media post promoting the Northern News Now interview.




Post on Cable Natural History Museum's website regarding Wisconsin Master Naturalist Training.




Cable Natural History Museum social media post about Wisconsin Master Naturalist training.

## 2024 Conference Agenda

NW Wisconsin Lakes Conference

### WELCOME SESSION

**Youth Speaker: Zoie Babcock**, "Climate Change in Wisconsin"

**Keynote Address: Tom Fitz, *Northland College***, "Geologic History and Setting of Lakes in Northwest Wisconsin

### SESSION 1 (10:30-11:30)

- "Our Lakeshore Connection" – **Lynn Markham, *Extension Center for Land Use Education* and Cheryl Clemens, *Deer Lake Conservancy***
- "Applied Limnology: Lake Health Diagnoses and Prescriptions" – **Andy Goyke, *Northland College***
- "Fisheries & Habitat Trends in Northwest Wisconsin" – **Craig Roberts, *WI Dept. of Natural Resources***

### SESSION 2 (12:15-1:15)

- "Macroinvertebrates in Lake Superior's Rivers: How Aquatic Bugs Tell a Story About Our Waters" – **Alex Faber & Emma Holtan, *Superior Rivers Watershed Association***
- "APM Lake Surveys" – **Tyler Mesalk, *WI Dept. of Natural Resources***
- "WDNR Surface Water Grant Program" – **Laura MacFarland, *WI Dept. of Natural Resources***

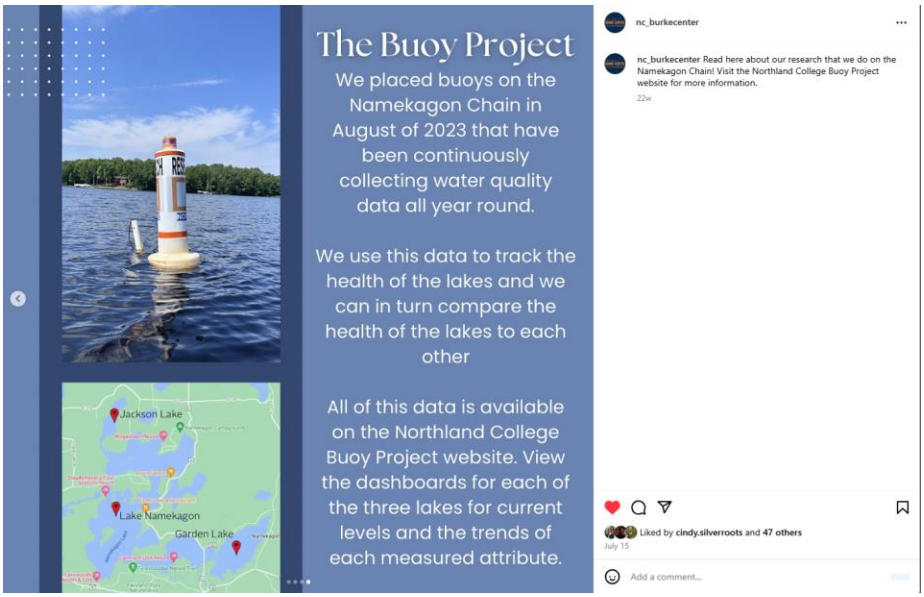
### SESSION 3 (1:30-2:30)

- "Listening to Lakes: Using High-Frequency Measurements to Assess Lake Health and Function" – **Peter Levi, *Burke Center of Northland College***
- "The Economic Value of Lake Water Quality" – **Dan Phaneuf, *UW-Madison***
- "Putting More Strategy Into Your Communications" – **Ryan Bower, *WI Dept. of Natural Resources***

### SESSION 4 (2:45-3:45)

- "Hidden Lake Creatures: Part 2" – **Emily Heald, *UW-Madison Division of Extension***
- "Making Waves: A Debrief of Enhanced Wake Science & Regulation in 2023. What Happened and what's ahead?" – **Mike Engleson, *Wisconsin Lakes*, and John Richter, *Wisconsin Lakes and Last Wilderness Alliance***

Northwest Wisconsin Lakes Conference Agenda.



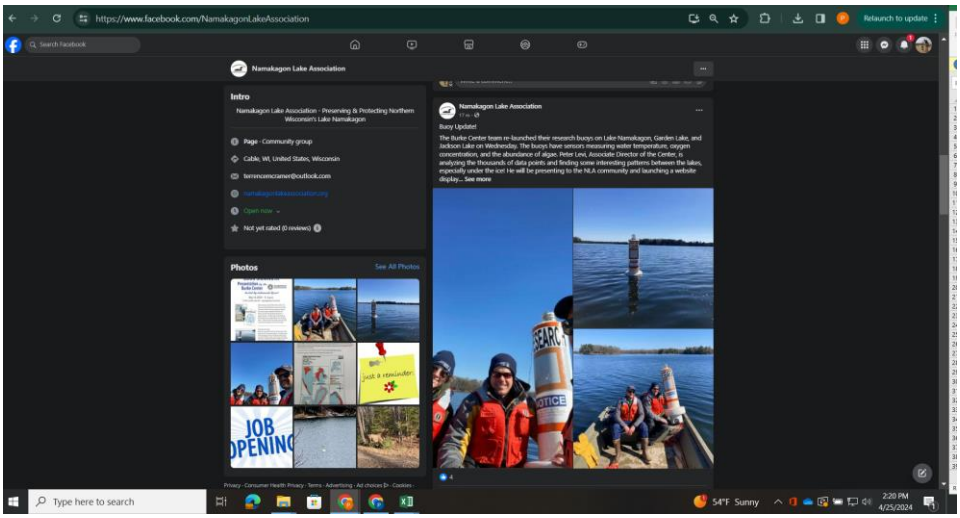
Burke Center July Instagram post about Namekagon research.

## 3.) Copy of Newsletters and Distribution List

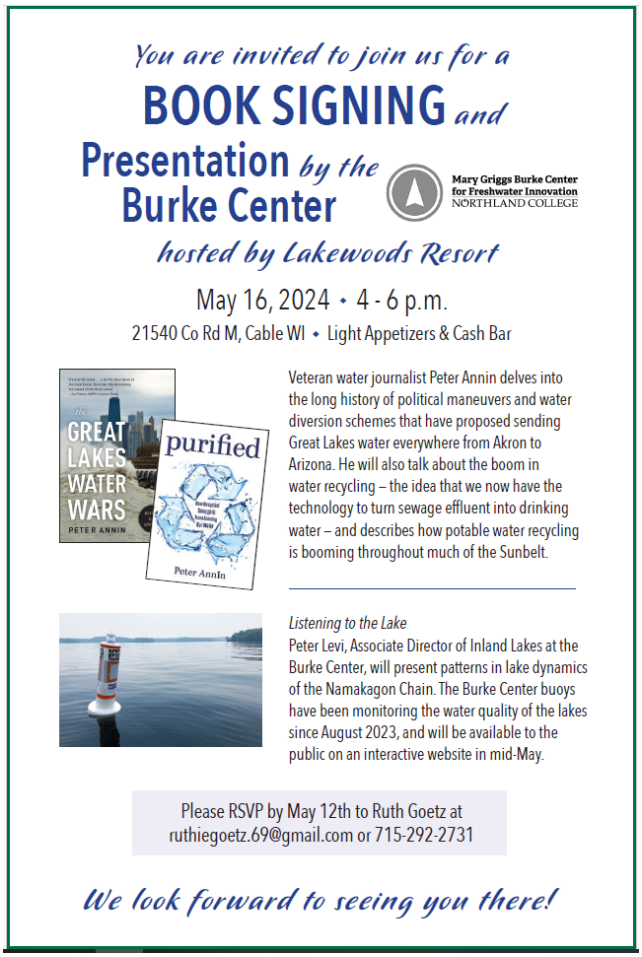
Due to staffing changes at the Burke Center, a newsletter was not sent.

## 4.) Namekagon Lake Association and Local Involvement

In April, the Namekagon Lake Association (NLA) shared a post on social media announcing that the Burke Center had redeployed the Namekagon chain buoys for the year. The post also promoted the plan of an upcoming presentation by Peter Levi to the association about the project. A meeting with the NLA did not occur due to scheduling conflicts in the summer months. Peter Levi corresponded with the NLA in an effort to schedule a presentation, but was unsuccessful. Peter Levi was also set to present on the buoy project at Lakewoods Resort, located on Lake Namekagon. Low RSVP numbers to the event lead to its cancellation, so the presentation did not occur.



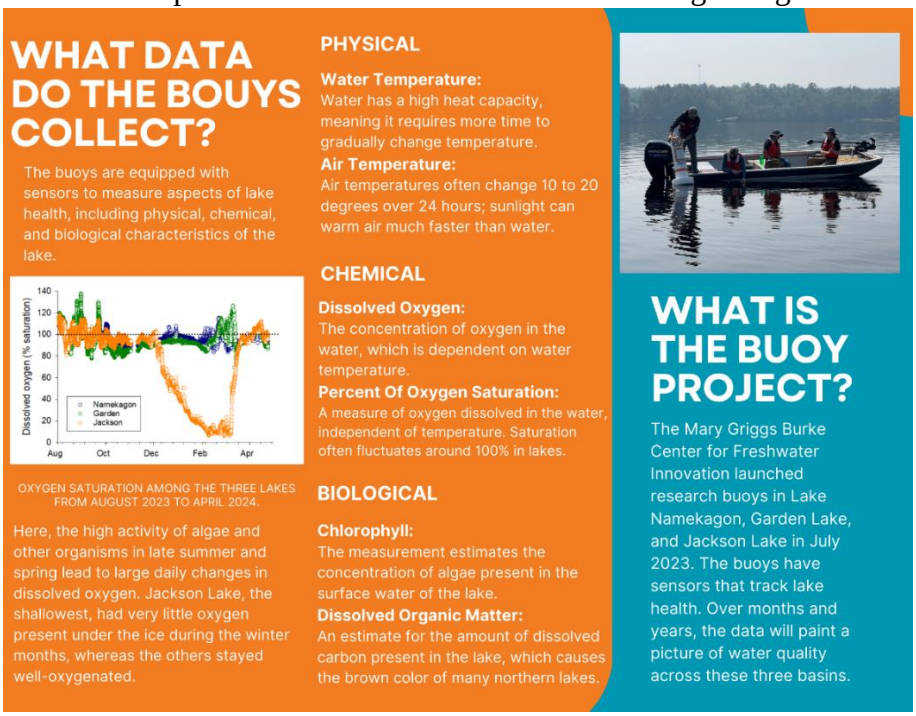

Namekagon Lake Association social media post promoting 2024 buoy deployment.



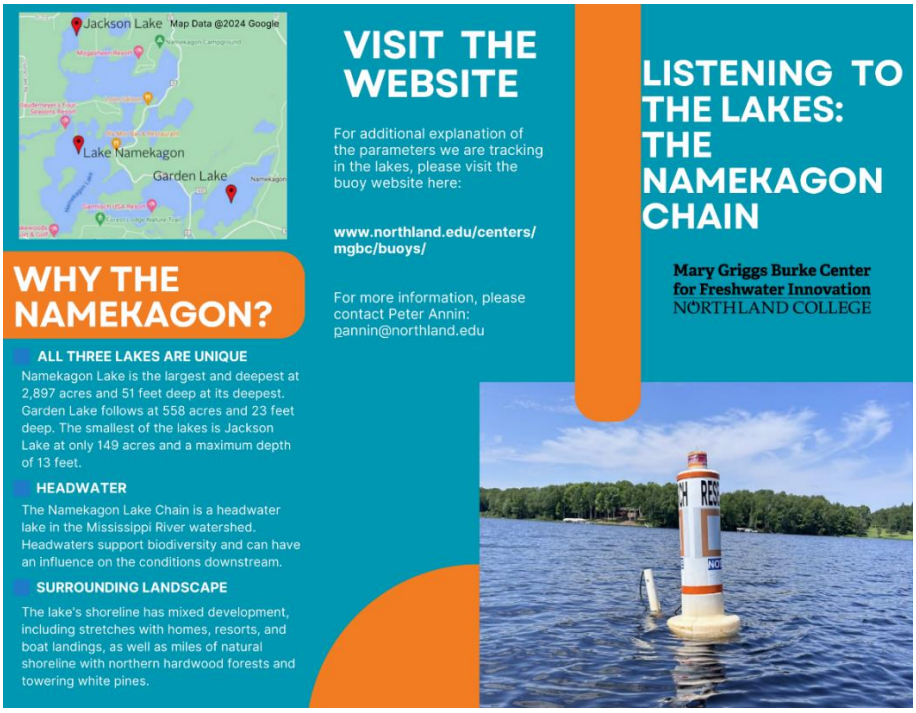

Flyer for Burke Center event at Lakewood Resort.

## 5.) BUOY PAMPHLET

An informational pamphlet was developed by Burke Center staff. The pamphlet reviewed the measures of water quality data collected by the buoys, the project itself, and promoted the website. Pamphlets were not distributed due to staffing changes.




Inner page of the informational pamphlet.




Outer page of the informational pamphlet.