

# YOUR LAKE, YOUR STORY

*Winona Lake*



LILLY CENTER FOR  
**LAKES  
& STREAMS**

GRACE  
COLLEGE

# Winona Lake has always been a gathering place.

It has seen a wide variety of cultural shifts, due in part to landmarks like the Billy Sunday home, Grace College & Seminary, and the nearby orthopedic industry. Lakeside attractions are touristy and laid-back now, but in its earlier years, the town was a hotspot for youth, and for revival.

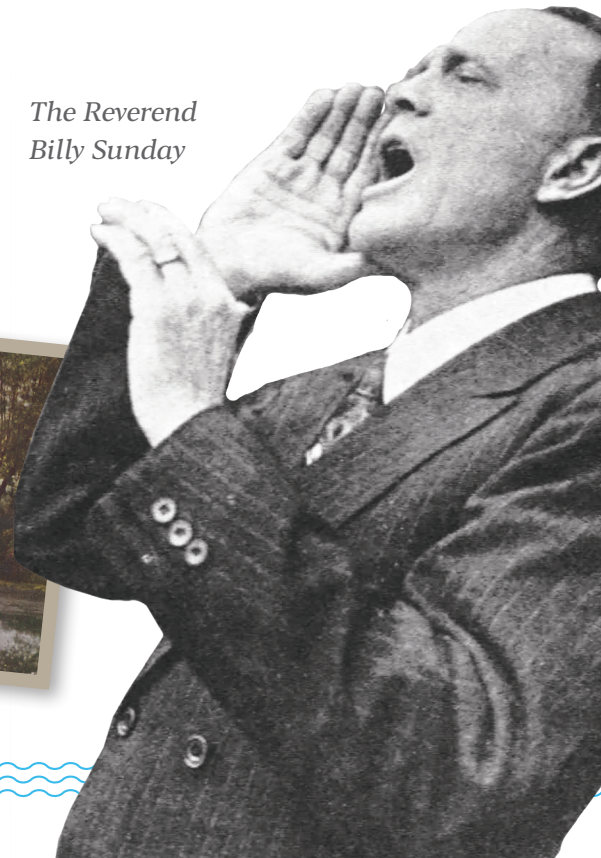
The water itself has managed the changes relatively well, even if the depth and clarity have decreased. Although its shores are no longer as wooded and quiet as they once were, Winona Lake offers culture, fine dining and recreation for those who live nearby and those who come to visit.



*Postcards from  
Winona's Early Days*



*The Reverend  
Billy Sunday*



# ***Your Lake, Your Story***

Your Lake, Your Story is an original Lilly Center for Lakes & Streams publication. (Learn more about us, starting on page 27!) The Lilly Center conducts research on 14 lakes throughout Kosciusko County, including Winona Lake. While ongoing research is invaluable to the health of the lake, Winona is truly about the people who live around it. You might know the families in this book; you might be about to make new friends. Either way, our hope is that you identify with their stories and learn something new about Winona Lake (both its past and present) along the way.

*Historical and current data (specifically taken during open water sampling, above the deepest point in your lake) was gathered by the Lilly Center's research team. Additional historical data was collected from government and university sources such as the Indiana University Indiana Clean Lakes Program.*

# Dave & Cynthia Illingworth

*In 1920, Dave Illingworth's grandparents, Reverend Ralph and Isabel Illingworth, visited Winona Lake for the first time. The lake immediately captured their attention and their imagination, and they built a cottage on 15th Street in 1926. Throughout his childhood, Dave and his brothers visited every summer.*

*Even though they did not have a property on the shoreline, Dave's experience on the water was still a rich one.*

“After they moved here, my grandmother bought three cottages around her home and rented them to the visitors who came in the summer,” Dave said. Those homes anchored their family to the area. 2021 marks the 100th year the Illingworths have been on the lake. “I would come here on vacation with my family

in the summer, but it wasn't until I retired that we lived here full-time,” Dave said. Dave and his wife Cynthia built a home on the canal in 2001. They later moved to their current home on the eastern shore of the lake. “After we moved here full time, we opened a car dealership, Toyota of Warsaw. We believe in and

wanted to invest in the community,” Dave added. It was the best decision they could make, not just for themselves, but for their family and friends.

The Illingworths' history on Winona Lake spans a wide range of cultural shifts. When Dave was young, Winona Lake's beach was closer to the





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## *Did you know?*

In the 1920s, Winona Lake was widely known and frequently visited. The Winona Chautauqua (an event typically sponsored by religious groups, featuring various forms of entertainment and instruction) still drew crowds. In its heyday, Winona Lake had a roller coaster, parade grounds, fish ponds and a racetrack, among other activities.

Throughout its existence, the Winona Chautauqua hosted well-known performers like Will Rogers, Lawrence Tibbitt, Giovanni Martinelli, William Jennings Bryan, and James Whitcomb Riley. After the Chautauqua ended, Winona Lake became a prominent hub for Bible conferences. It was billed as the world's greatest Bible conference center, and many respected speakers visited over the years, from Harry Ironside to Mel Trotter.

area now dominated by the Boat House Restaurant. From that area, visitors and residents could board the Winona Queen, a paddle wheeler that toured the lake. It was one of Dave's favorite childhood activities. "We would go about once a summer. It would launch out by where the Boat House Restaurant is now, and tour the lake in the evening," Dave said. At the time, there was a miniature golf course across the street from the dock that they would visit occasionally.

Dave also remembers when Billy Graham came to town during a summer Bible Conference. "The place would be packed," he said. The traveling pastor would preach from a pulpit in the Tabernacle, and people would come for miles to listen. Dave remembers walking past





**Discover more about Winona Lake History** at the Winona History Center located at 105 9th Street in Winona Lake.

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*Dave also remembers when Billy Graham came to town during a summer Bible Conference.*

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lines of cars, looking at the license plates from numerous far-away states. “We never were able to get close enough to see him, it would be so packed,” he added. “It was a big deal.”

## **101 Years on Winona Lake**

The Illingworths have passed on more than memories; they have given a lifestyle to their children and grandchildren. For a number of years, Dave and Cynthia lived in California and clearly saw the contrast between their life on the coast and their life in Winona. The biggest difference, Dave says, is the atmosphere. “It’s much more relaxed

here,” he said. The air, traffic and quality of life, he added, are simply better at Winona Lake. “Here on the lake, we get a lot of birds and water fowl, or a deer or a red fox will wander into our yard. That’s a nice addition we wouldn’t get in California,” Dave said. He added that sunsets at Winona Lake are also special. From their home on the eastern shore, they enjoy memorable views nearly every night.



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*Another favorite pastime is fishing, which is especially enjoyed by Dave's sons and grandsons.*

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Dave and Cynthia's eight grandchildren, the oldest of which is nine years old, are just beginning to get

out on the water. "In the next few years, I suspect they'll learn how to water-ski," said Dave. "They love watersports." Another favorite pastime is fishing, which is especially enjoyed by Dave's sons and grandsons. They do not do a fish fry (barbecue is preferred), but they enjoy the sport of fishing, anyway. "The biggest tradition we have is Fourth of July," Dave said. Their whole family comes to watch fireworks and enjoy the live concerts in the Village at Winona.

## **The Centerpiece To Fishing, Recreation & Beauty**

Over the years, Dave has noticed a few changes, the more prominent one being the Town of Winona Lake. Thanks to the financial support of the Dane & Mary Louise Miller Foundation, Winona Lake and the Village have drastically improved since the town's downturn in the mid-to-late 1900s. "And

**Dave clearly remembers the Chicago Boys Club.** "It was a secluded area, but we knew it was there," he said. The Chicago Boys Club was a camp for inner city youths. A bus of students would arrive and stay for about two weeks at a time during the summers, and make themselves at home in the cabins and other buildings built throughout the woods. The camp offered fresh air and a variety of outdoor recreation, far from the bustle of the city. After about 80 years, the camp was closed and sold. The wooded trails and crumbling remains of the buildings still exist, though, as a part of the Winona Lake Trails.



Postcard of  
Chicago Boys Club



that has, in turn, helped the lake and taught the people to care more about the water,” Dave said. “It’s been spectacular to watch.” Dave and Cynthia have a number of friends who come from California. “They drive down Highway 30 and wonder why anyone would want to live here,” Dave said. But when they pull into Winona Lake, they discover the reason. The pleasant change in scenery and environment is welcomed by their visitors and children and grandchildren alike.

For decades, Winona Lake has contributed to this region’s rich history and primed it for a fruitful future. Part of that success is due to

scientific study; in fact, Winona Lake has been monitored to varying degrees since 1875. More recently, the Lilly Center has conducted research on the lake to track its changes and offer data-backed action steps.

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*We’re supporting the Lilly Center because we care about how the lake looks, and about the people who live and work here.*

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A few years ago, Dave and Cynthia were invited to a Lilly Center event on Winona Lake. “We’re supporting the Lilly Center because we care about how the lake looks, and about the people

who live and work here,” Dave said. Five generations of Illingworths have found rest on Winona Lake; their family has a vested interest in keeping the lake healthy. And to protect the health of the local economy, they know that protecting the health of the lake is vital.

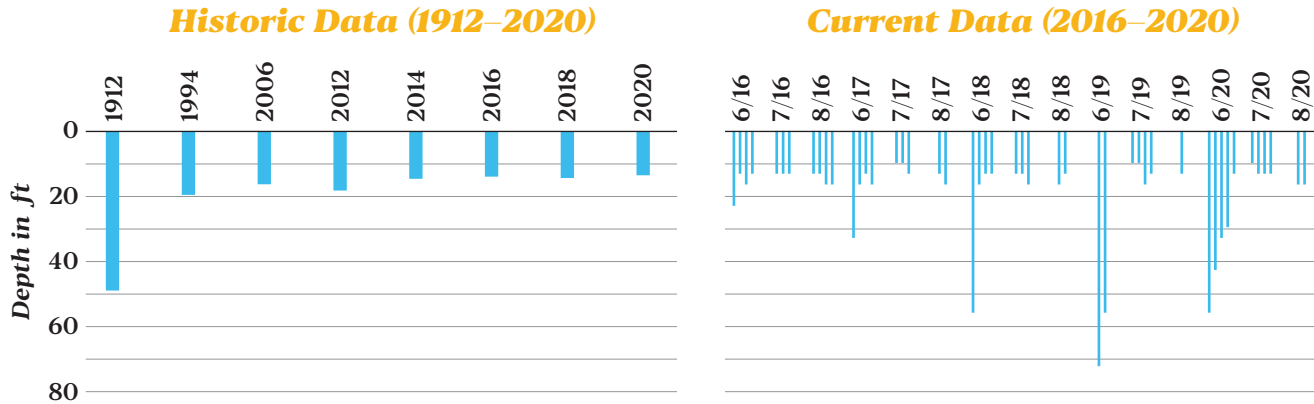
“We hope that our children and grandchildren will continue to come to Winona Lake,” Dave said. “The Illingworths have had a connection to the lake for the last 100 years, and we hope that will continue for another 100 years. The lake is the centerpiece to everything we enjoy here: the fishing, recreation, relaxation, and beauty.”

*Lilly Center  
Lake Research*



## Dissolved Oxygen Layer

Aquatic organisms, like fish, rely on dissolved oxygen to breathe underwater.



Note: Winona Lake has a total water depth of 79 ft

The oxygen layer depth in Winona Lake has been decreasing substantially over the last 100 years during July and August. This increasingly limits the space in which fish can live and forces them to move to the warmer surface waters. Some fish cannot survive in warmer water such that certain fish may no longer be able to survive in Winona Lake though they may have historically.

Recently, Winona Lake's oxygen layer was often thinnest in the middle of the summer, squeezing fish into a smaller space and forcing them into warmer water.

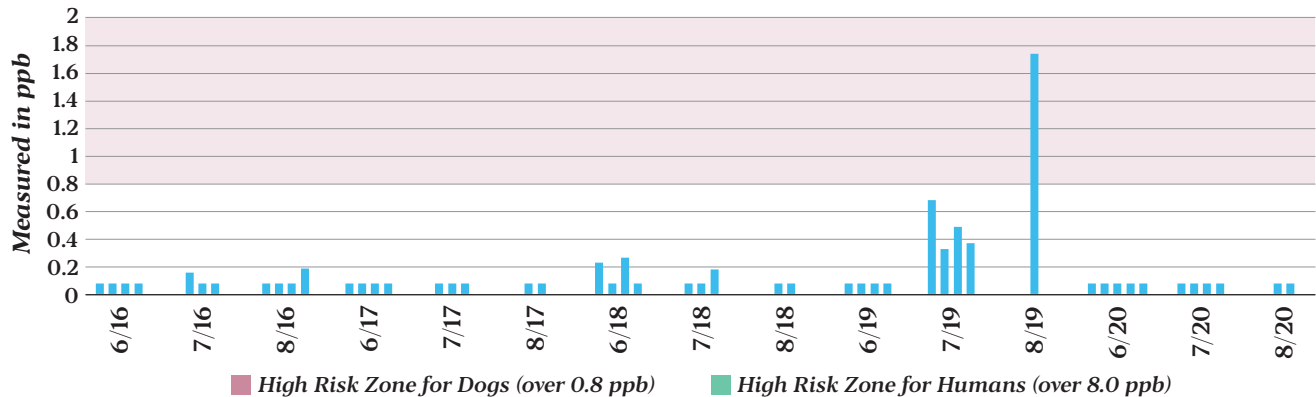
### How You Can Help:

Dissolved oxygen is essential for underwater life. By limiting the amount of material decomposing at the bottom of your lake, you can slow the use of dissolved oxygen and help make a better habitat for fish and other aquatic critters! Make sure to properly dispose of lawn waste, and reach out to the aquatic weed experts before applying chemicals to your lake.

# Microcystin Toxins

Microcystin is a toxin produced by blue-green algae. It is particularly harmful to pets, but can cause skin, eye and throat irritation (and even liver damage) in humans, as well.

Current Data (2016–2020)



While Winona Lake microcystin toxin levels were highly variable over the last five years, levels were only above the dog exposure threshold once and never above the human exposure threshold. Despite this good news, there is still potential risk for high microcystin levels under the right conditions in the future. The Lilly Center will continue to monitor the toxin to help keep you and your family safe.

## How You Can Help:

Spot a blue-green algae bloom? It could contain microcystin, a toxin that is harmful to people and pets, so keep people and animals away from the water. We encourage you to let the Lilly Center know about the bloom by sending a picture, and the date, time and location to [lakes@grace.edu](mailto:lakes@grace.edu).

## THEIR STORY

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# The Williams Family

*Nancy Morgan Williams, a young teenager in 1955, remembers standing on the east side of Winona Lake, listening to Billy Graham preach from a podium on a large platform overlooking the water. She also remembers the restrictions placed on the town. “On Sundays, there was no swimming,” Nancy said. “You couldn’t go down to the beach anywhere along the east shore.” (But swimming was allowed on the west side of the lake. To this day, the east shore is managed by the Town of Winona Lake while the west shore is managed by the City of Warsaw.)*

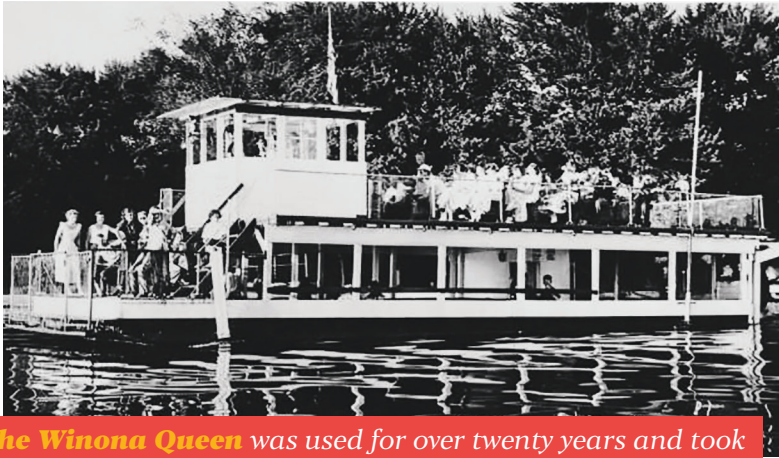
“I was born in Fort Wayne,” Nancy said. “But when I was five years old, my grandfather asked my dad to move to Warsaw.” After World War II ended, Robert and Betty Morgan moved their family to the area so Robert could take a job under his father-in-

law, Justin O. Zimmer. Justin Zimmer, the namesake of and entrepreneur who launched Zimmer Manufacturing Company, established the orthopedic giant in 1926. Their aluminum splints debuted at the American Medical Association

in 1927, and the products became an immediate leader in the field of orthopedics. Zimmer Biomet was and has remained among the best in the industry.

Zimmer Biomet,  
Warsaw





*The Winona Queen was used for over twenty years and took tens of thousands of passengers on a tour around the lake.*

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*The Winona Queen paddleboat was a favorite activity for residents and visitors.*

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Nancy spent many summers at her grandparents' home on Lake Tippecanoe and even spent part of her childhood visiting Center Lake in Warsaw. As she grew up, she frequently visited Winona Lake, too. Her parents finally bought a lot on Winona in 1953, and finished

their family home in 1955 when Nancy was 15. Today, Nancy's son, Chandler, and daughter-in-law, Erin, own property on Winona, some of which has been in the family for multiple generations.

There were just a handful of homes around the lake in the 1950s, but it was a growing community. Unlike other local lakes, Winona Lake is surrounded by the City of Warsaw and the Town of Winona Lake, causing it to be a highly residential and active area. For those who

call the lake their own, this creates a sense of community that is enjoyed year-round. This was true for Nancy and her family, who found recreation and relaxation at the lake as often as they visited. Many of Nancy's friends lived on or near the shore, and she spent summers traveling between Florida and Indiana, enjoying water wherever she went. "We just had a great time," Nancy remembers.

The Winona Queen paddleboat was a favorite activity for residents and visitors, including Nancy and her friends. She remembers going on tours of the lake. The guide would announce the west shore with a bit of disdain in his voice. "That was the side of the lake that was allowed to drink alcohol," Nancy explained. "Winona

Lake, on the other hand, was a hub for evangelistic preachers like Billy Graham,” she added.

Nancy moved to California in her early adult life and still owns a home there. “It’s beautiful here,

but it’s not Winona Lake,” she said. “The salty water just can’t compare to the freshwater of a lake. And the sand is much softer and easier to walk on,” Nancy added, also stating that the sunsets over Winona Lake are

something to behold. When she visits the lake, she stays in her childhood home (now owned by George and Mary Clemens) and enjoys slow summer days with her family and neighbors.

## *Winona Lake Health*



Winona Lake is close to 80 feet deep. In the early 1900s, more than 40 feet had enough dissolved oxygen to sustain fish species. But the oxygen layer depth in Winona Lake has been decreasing over the last 100 years during July and August. This increasingly limits the space in which fish can live and forces them to move to the warmer surface waters. Some fish cannot survive in warmer water such that certain fish might now be unable to survive in Winona Lake though they may have historically.

Dissolved oxygen levels in water determine where fish and other organisms can thrive. When enough dissolved oxygen is present, a lake can support a wide variety of aquatic critters. Bacteria, however, are known to mastermind ways to diminish dissolved oxygen at the lake bottom. At the surface, algae like to take advantage of still, warm water—especially water that has received an influx of phosphorous. Lakes naturally fill in over time, but our actions can speed up or slow down the process..



## **Four Generations on Winona Lake**

Four generations of Nancy's family have lived on Winona Lake. Her son, Chandler, currently lives on the west side of the lake and owns the family home that was once the Winona Lake clubhouse. In the early 1900s, the Williams' properties backed up to an eight-hole golf course, but the green has been long-since replaced by residential properties and the WRSW radio station built by the Williams' in the 50s.

Chandler grew up in California, but visited Winona Lake every summer and eventually moved back to the area. He went to Indiana University with Erin (as had his father, mother and grandmother.) "One of our favorite memories

on Winona was taking the boat out with the boys to fly kites, usually in the fall," Chandler said. No wind was required; they would simply tie or hold the kites from the back of the pontoon (named Noah's Ark after their oldest son) and motor across the lake, letting the kites catch the breeze like small, brightly colored sails as seagulls circled overhead, enamored by the kites. Noah and

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*One of our favorite memories on Winona was taking the boat out with the boys to fly kites.*

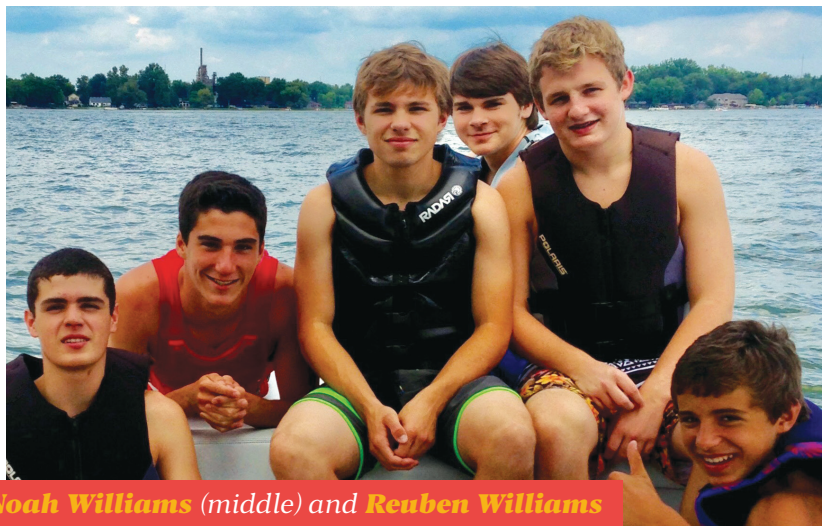
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Reuben, the Williams' boys, tossed bread and crackers up to the birds for them to eat.

"We did that when they were little," Chandler smiled. "But that's one of our favorite family

memories." Very sadly, Noah passed away in 2017 at the age of 20. He loved Winona Lake, long-boarding to the Village, and especially loved the 'hood's Fourth of July celebration. Reuben currently attends Indiana University, taking after his parents, grandparents and great-grandmother.





**Noah Williams** (middle) and **Reuben Williams** (far right) pose with the “Crispy Crew.”

When they want to spend an afternoon on the lake, the Williams’ are quick to choose tubing. In his youth, Chandler loved to tube; his sons and their friends have enjoyed it, too. Williams Wet & Wild (a family tradition, featuring fast whipping and big waves) is often shouted out by the tubers. The family also enjoys skiing and wakesurfing, but not necessarily on a typical wakeboard. One summer afternoon, Reuben and his friends tried surf-

ing on unconventional objects, like a table. “That was an interesting day,” Reuben said. “That same afternoon, we fit four

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*When they want to spend an afternoon on the lake, the Williams’ are quick to choose tubing.*

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people on a paddle board, too.” Sometimes, in the wintertime when the ice is thick, they venture out onto the lake. Chandler, Reuben and his friends take their snowmobile with sled in tow out and

whip up and down the lake. Zoomer, Reuben’s dog, chases close behind.

Fourth of July holds a special place in the Williams’ lives. “It’s almost a three-day event,” Chandler said. “We have a neighborhood parade that’s been going on for 40-plus years, rain or shine.” The whole neighborhood participates, celebrating from dawn until fireworks by decorating their vehicles, cooking out, boating, and zipping around on golf carts. Throughout his childhood, Reuben

particularly enjoyed tubing over the choppy waves. “So many boats are out,” he said. “It’s just a grand time!” At the end of the day, Chandler added, everyone is exhausted. “But in a good way.”



In the next 100 years, Chandler's vision for the lake is clear. "We want the lake to be as clean or cleaner than it is today," he said. "It's already much improved. The work of groups like the Lilly Center and the Winona Lake Preservation Association help with that." He also hopes the lake will remain a homey, community-oriented lake that people enjoy year-round.

Multiple generations of the Williams family support the Lilly Center, from Reuben to Nancy. Nancy's mother, Betty Morgan, funded a large portion of the construction of the Morgan Library on Grace College's campus (which recently celebrated its 50th anniversary.) Much of the historical lake data in this publication has come from the archives of the Morgan

Library. Additionally, the family has given of their time volunteering with Lilly Center research and education efforts as well as giving insights and assistance with marketing and communication efforts. Reuben aspires to other projects, as well, like even-

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*Reuben hopes to leave a legacy on Winona lake, too. "And that can be as simple as being a good person and having a positive impact day-to-day."*

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tually building a new country club on the lake, and is currently working on ideas for more permanent piers on Winona.

On some summer nights, when the lake is calm and most people are at home, the Williams family and friends savor the stillness

by taking the boat out for a slow ride in the moonlight. "We love to watch the moon rise over the lake," he said. "It's like nothing else. So peaceful." Like his family before him, Reuben hopes to leave a legacy on Winona Lake, too. "And that can be as simple as being a good person and having a positive impact day-to-day," he said.

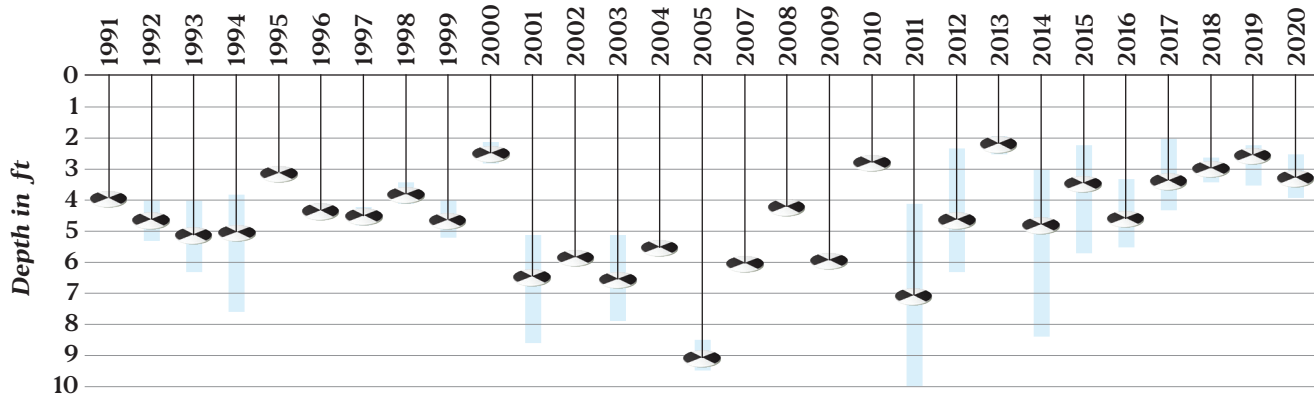


**Noah Williams** hikes across snow-covered Winona Lake.

# Water Clarity

These data show how far down light reaches through the water in your lake.

Historic Data (1991–2020)

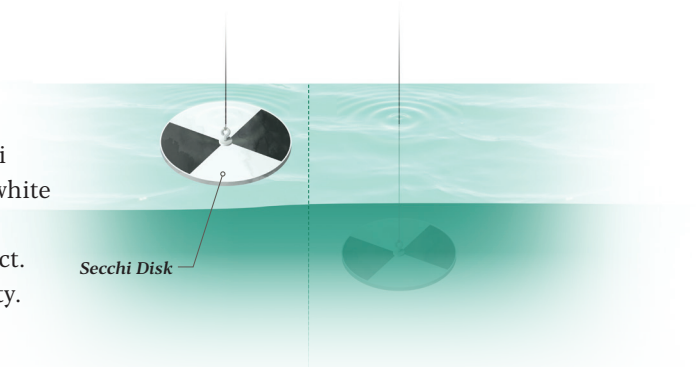


Water clarity for July and August in Winona Lake shows much variability over the last 30 years but appears overall to have increased for about 20 years and then decreased for the last

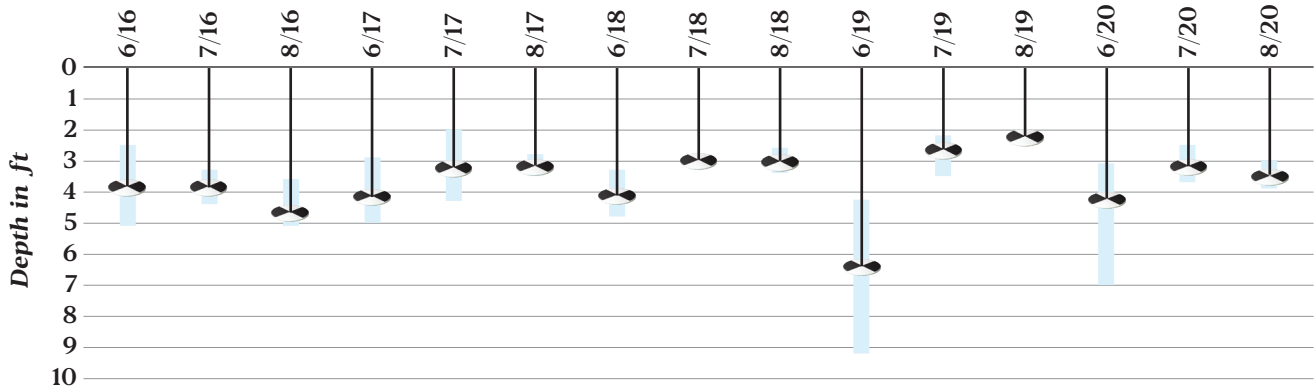
10 years. Lower water clarity during certain years is likely due to more algae growth as a result of higher nutrient (phosphorus and nitrogen) levels.

## How water clarity is measured:

Water clarity is measured with a tool called a Secchi disk. A Secchi disk is a frisbee-sized metal disk that is painted with a black and white pattern. The disk is attached to a string and lowered into the lake water until the black and white pattern is no longer visually distinct. The depth of the disk is recorded as a measure of the water's clarity.



### Current Data (2016–2020)



Winona Lake’s water clarity measurements varied most during June across these five summers (2.5 ft to 9.2 ft). Decreased clarity is likely due to generally higher nutrient (nitrogen and phosphorus) levels causing more algae to grow.

#### How You Can Help:

From past research, we know that boating can have an impact on the health of local lakes. When boating, use parts of the lake that are at least 10 feet deep for any boating activities that create a wake and stir up nutrient-rich sediment. That helps limit nutrients which would otherwise become available for algae and weeds!

# Nick & Jeannie Stouder

*Jeannie Stouder grew up visiting a lake cottage in Michigan, and she knew from a young age that she would live most of her life on water. Although Nick did not spend his childhood on a lake, his parents bought a cottage on Winona when he was 19... and the rest is history. “The lake, and everything around it, can be included in Family,” Jeannie described. “For us, it was a no-brainer to move to Winona Lake. We couldn’t even consider any other lake.”*

They did not start there, though. After graduating and getting married, Nick and Jeannie moved to Ohio for work. They scouted lakes in and around Columbus, searching for the feeling they both had when they were at Winona Lake. But it was not to be found. The lakes in Ohio, they agreed, were somehow not as striking as the ones in Kosciusko County. For the next decade, they

and their two children, Gianna and Dylan, visited Winona during the summer and lived in Ohio in the winter.

After years of being on a zipper between the two states, Nick and Jeannie began to ask themselves where they wanted to be and what they truly wanted to do. They moved into a cottage next door to Nick’s parents in 2013 and lived there during the

summers, working from their home office. In 2017, they made another pivotal choice. “We decided to tear down the cottage and build our forever home,” Nick said. The lake was not the only draw. “It was the community of Warsaw that we wanted to be a part of – we love the lake, but it’s the whole package,” Nick added.





**The Stouder family**

Since 2019, the Stouders have lived in their dream home. They still live next door to Nick's parents. "It's been wonderful to have that extra family time," Jeannie said. "Even Nick's younger brother bought a home a year ago. We're really creating this multi-generational family atmosphere around Winona Lake." The lake is more than a body of water; it is family, Jeannie added. "All the people around the lake are like-minded, and have an appreciation for nature and the water – we come together and find that we enjoy it together. It's valuable to all of us," Jeannie said.

# Winona Lake Health



In the summer of 2010, Grand Lake St. Marys in Ohio experienced its first widespread toxic blue-green algae bloom. Since then, the blooms have continued to cause issues. Blue-green algae's unpredictable and harmful nature is an urgent problem for the economy and lifestyles around the lake. They have implemented many research studies and programs to counteract and learn about the blooms, similar to the Lilly Center's research on lakes in Kosciusko County.

Blue-green algae goes by two names. The first is "blue-green algae" and the second is the more-proper "cyanobacteria." The name is a little misleading, though, because blue-green algae are not quite plants or algae. We call them algae because they are free-floating and grow in colonies, but in reality, blue-green algae are a form of bacteria that can produce a harmful toxin called microcystin. Cyanobacteria are found all over the world, both on land and in water. They are microscopic but can be seen when they are in a colony, or bloom. Learn how to identify blooms at [lakes.grace.edu/blue-green-algae](https://lakes.grace.edu/blue-green-algae).

## Hand- Me-Down Childhood on the Lake

Gianna and Dylan, Nick and Jeannie's children, are the third generation of Stouders to build family memories on Winona Lake, from water sports to turtle-catching. Jeannie started skiing at age five, and her kids started surfing at age five, as well. Jeannie's parents taught Gianna and Dylan to fish; Dylan still uses Jeannie's step-father's rod and reel. "And we'll catch and observe five or six turtles on any given day," Jeannie laughed.

Gianna and Dylan are proud of Winona Lake. Among other activities, it presents a unique opportunity to show their friends the fish and turtles and other aquatic critters. "We've been sure



*Dylan catches a wave while surfing on Winona Lake.*

to teach them about why the lake needs to be kept clean," Jeannie said. Gianna and Dylan even take what they learn to school. They contribute to their STEM classes in a special way, Jeannie added, because they already understand what lives in local waterways.

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*"...we'll catch and observe five or six turtles on any given day."*

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*Red-Eared  
Slider*



**Throughout their childhood,** Dylan and Gianna have enjoyed camping in their backyard.

Another special activity the family enjoys is yard camping. On pleasant summer nights, the Stouders will pitch tents by the shoreline and spend their evening around a bonfire, grilling hotdogs and warming s'mores, catching fireflies and watching stars blink on. "When night comes, the lake is like glass. You can see the reflection of the moon off the lake," Jeannie described. In the morning, they wake up to birds

chirping and the sound of the first fishers and skiers out on the water. Camping

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*Camping in the yard is an experience from Jeannie's childhood that she now gets to share with her children.*

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Summers are prime lake-time, but the winter holds magic, too. A few memorable visitors include coots, blue heron, bald eagles and deer. "In the spring, when the ice melts, you can hear it crash almost like thunder," Jeannie said. Nick described it as a whistling sound, similar to how a glacier might sound. The ice and snow create a serene landscape, interrupted by passing deer and birds who stay for the winter.

## Lake-Family Potlucks

As with many lake families, food is a high priority for the Stouders. Nick enjoys smoking meat – placing it in the smoker in the morning, leaving it all day, and then serving the barbecue or beef brisket for dinner.

But the Stouders do not just feed themselves. Throughout the summers, especially on Sunday afternoons, they shoot a text to friends and family and host a potluck on their lawn. “Everyone comes in their lake gear,” Jeannie said. “It’s nothing fancy. People just come over and enjoy good food.” They prioritize inviting their family and their kids’ friends and parents, creating a rich, multi-generational atmosphere.

Their love for the lake extends into its future, too. “Both Nick and I are very passionate about keeping our community clean and safe,” Jeannie

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*Throughout the summers, especially on Sunday afternoons...they host a potluck on their lawn.*

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said. She serves as the vice president of the Winona Lake Preservation Association and

Nick is on the board of The Watershed Foundation. They appreciate the proactive work of the Lilly Center and especially value and support the educational components of the center’s mission. “It’s refreshing,” Nick said. Jeannie agreed, adding that if the people around the lake do not keep the water healthy, the lake (and all the value it adds to the community) will go away. Whether its visitors come for one season or stay for every season, Winona Lake is worth protecting.





# Spring Peepers

If you live near or on Winona Lake, you likely hear the season of spring as much as you see it. Frogs and toads make up much of the chorus, and none announce the season more promptly or emphatically as the spring peeper. From March to June, their high-pitched calls echo out from temporary woodland “lakes” called vernal pools where they meet to mate and lay eggs.

These tiny locals fit well into our ecosystem around the lakes. They eat insects of all kinds, controlling the populations of whatever bugs they can fit into their mouths. They are also the prey of other native species, feeding birds, salamanders, snakes, and carnivorous insects that can't fit into their mouths.

The spring peeper is small but mighty: a herald of spring and a champion of the wet, low-lying areas common to lake communities. Lake life affords the unique opportunity to hear and see these tiny amphibian neighbors as we welcome the warmth and color of spring.

**Spring peepers are hard to find but easy to recognize.**

**Here are their most prominent features:**

- Paperclip size or smaller
- Tan, brown, olive, or reddish color which camouflages them against leaves and logs
- Smooth, damp skin
- Dark “X” pattern across their back



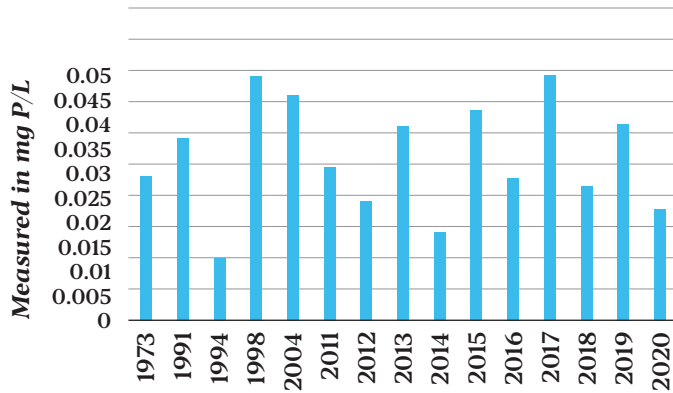
Spring Peeper



## Nutrients

Aquatic plants, like weeds and algae, rely on these essential minerals to grow.

### Historic Total Phosphorus (1973–2020)



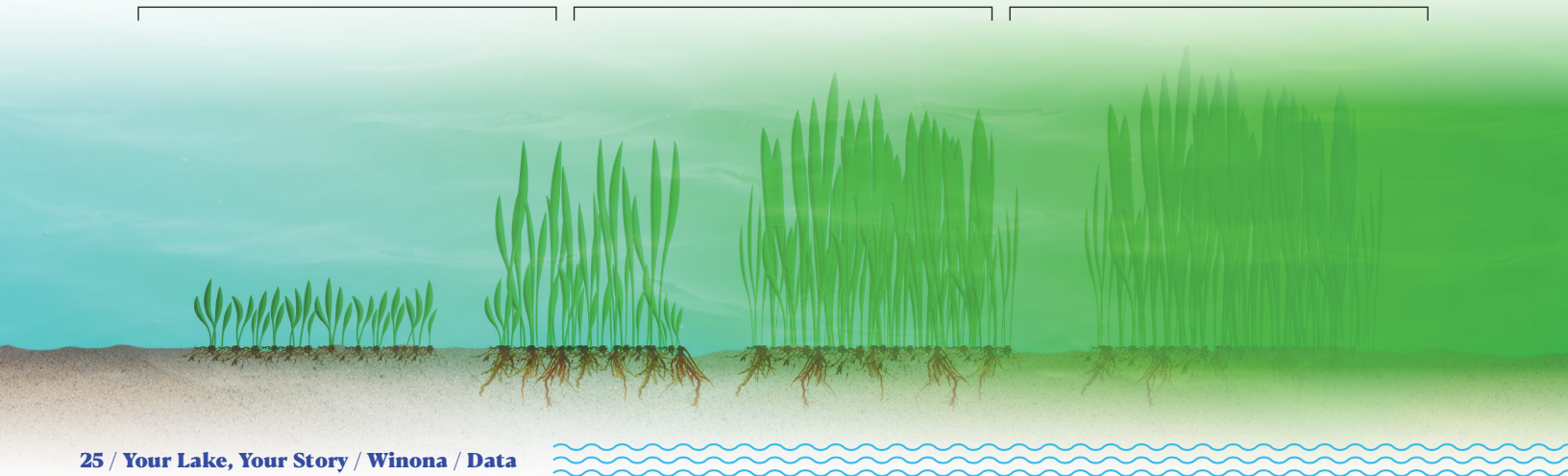
Winona Lake total phosphorus levels in July and August do not show any obvious trends over the past 50 years. Over this time period, surface water phosphorus levels vary from 0.002 to 0.052 mg/L; these levels are almost all above the Environmental Protection Agency recommended guidelines.

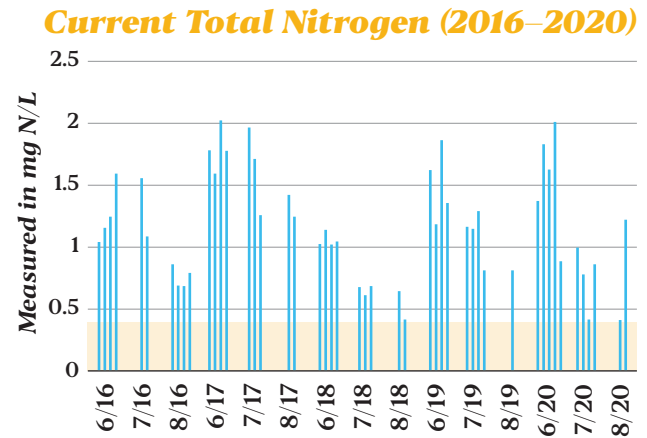
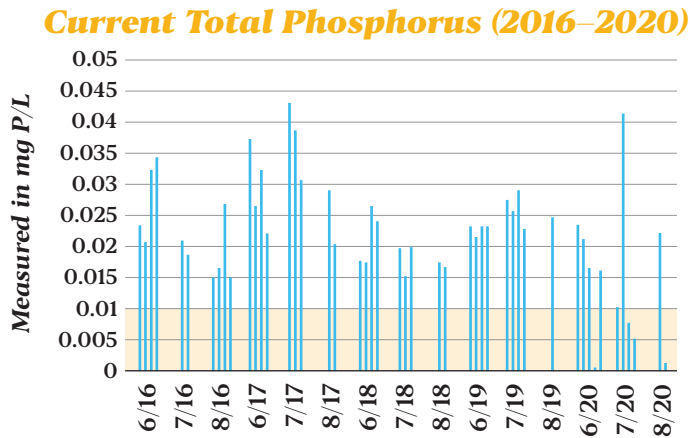
**Nutrients, Plants & Algae:** This figure below illustrates how nutrients affect a lake's plant life.

Few Nutrients

Optimum Nutrient Levels

Nutrient Overload





■ Within recommended EPA guidelines

Both phosphorus and nitrogen levels in Winona Lake varied widely but were consistently above the Environmental Protection Agency recommended guidelines. Overall, the highest phosphorus and nitrogen levels occurred during the middle of the summer.

#### How You Can Help:

Manage your property with your lake in mind. This can include using native plants in your landscaping, applying minimal amounts of fertilizer to your lawn, and avoiding feeding geese and other waterfowl. These actions help keep nutrients like phosphorus and nitrogen at the right levels!

# Meet the Lilly Center

*The Lilly Center for Lakes & Streams conducts research, provides resources, engages and educates residents, and collaborates with local organizations to make the freshwater lakes and streams of Kosciusko County clean, healthy, safe and beautiful.*

We are a team of lake-science and outdoor-education enthusiasts, and we consistently craft standard-exceeding, data-rooted scientific studies and community experiences.

Due to the Lilly Center's diligent, strategic work, the lakes and streams in Kosciusko County are some of the best-studied in the state of Indiana. We have over a decade of valuable data that shows patterns and trends in the health of our lakes, which, in turn, reveal specific action steps. The center also contributes science-based curricula to many local schools. Planned activities and in-house field trips give students and teachers a memorable, tangible way to positively impact the amazing waterways around us. Through community-wide events, we also connect with families and individ-

uals from every corner of the county. The Lilly Center serves, inspires and educates, and creates generational pathways to leadership and environmental stewardship.

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*The Lilly Center serves, inspires and educates, and creates generational pathways to leadership and environmental stewardship.*

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Relentlessly on mission to protect local lakes and streams, we collaborate with many businesses, lake associations and individuals to develop timeless resources. Our partners allow us to connect with a broader audience and unleash innovative solutions throughout the county.





## 3 Take-Aways

1

The **fundamental problem** behind less water clarity, more microcystin and poor fish habitats is too many nutrients. Nutrients ultimately lead to a negative impact on your family's future lake story.

2

But, we know that **variability gives hope**. Water quality measurements change repeatedly for the better and for the worse. We are confident that better water quality is possible for your lake!

3

That means we are looking for **increased quality over time**. The water quality of your lake is critical to your family's story. The good news is that your actions can directly influence the health of the lake long into the future.



# What We'll Be Doing



## Quality Brings Value

Improved water quality brings better lake property values. We are applying new research to your lake to predict how much your property value could change based on improvements in your lake's water clarity.



## Safe & Healthy

At all times, we are working to keep your family safe and healthy: ongoing research; weekly algae toxin updates during the summer; monthly e-newsletters that curate the most

up-to-date lake news; and a series of community and K-12 programs and events. You can join our volunteer list or attend an event, too! Start today: [lakes.grace.edu/ylys](http://lakes.grace.edu/ylys).



## Counting Calories

We know your lake has too many nutrients, so we are quantifying the sources (like counting calories when dieting) of the nutrients to learn how to limit them!

Continuous stream sampling is essential to this goal. We sample 12 inflowing and outflowing streams bi-weekly year-round. We also use stream sensors, which allow us to monitor the highly variable

flow rates of water in the streams every hour.

In partnership with Grace College's new Center for Sustainable Agriculture and others, the Lilly Center is helping develop an agriculture certification program. The certification encourages best-practices that support farmers' hard work and prevent nutrients from entering the lakes.



## Fishy History

Aided by the Indiana Department of Natural Resources, our team is exploring past trends in fish populations as indicators of lake health to develop an even better plan for the future of our lakes.





# What You Can Do

## Immediate Actions:

Scan this **QR code** or visit **[lakes.grace.edu/ylys](https://lakes.grace.edu/ylys)** to take a simple survey that will help us determine how nutrients (which help algae and weeds grow) are entering your lake.



*Scan code  
for survey*

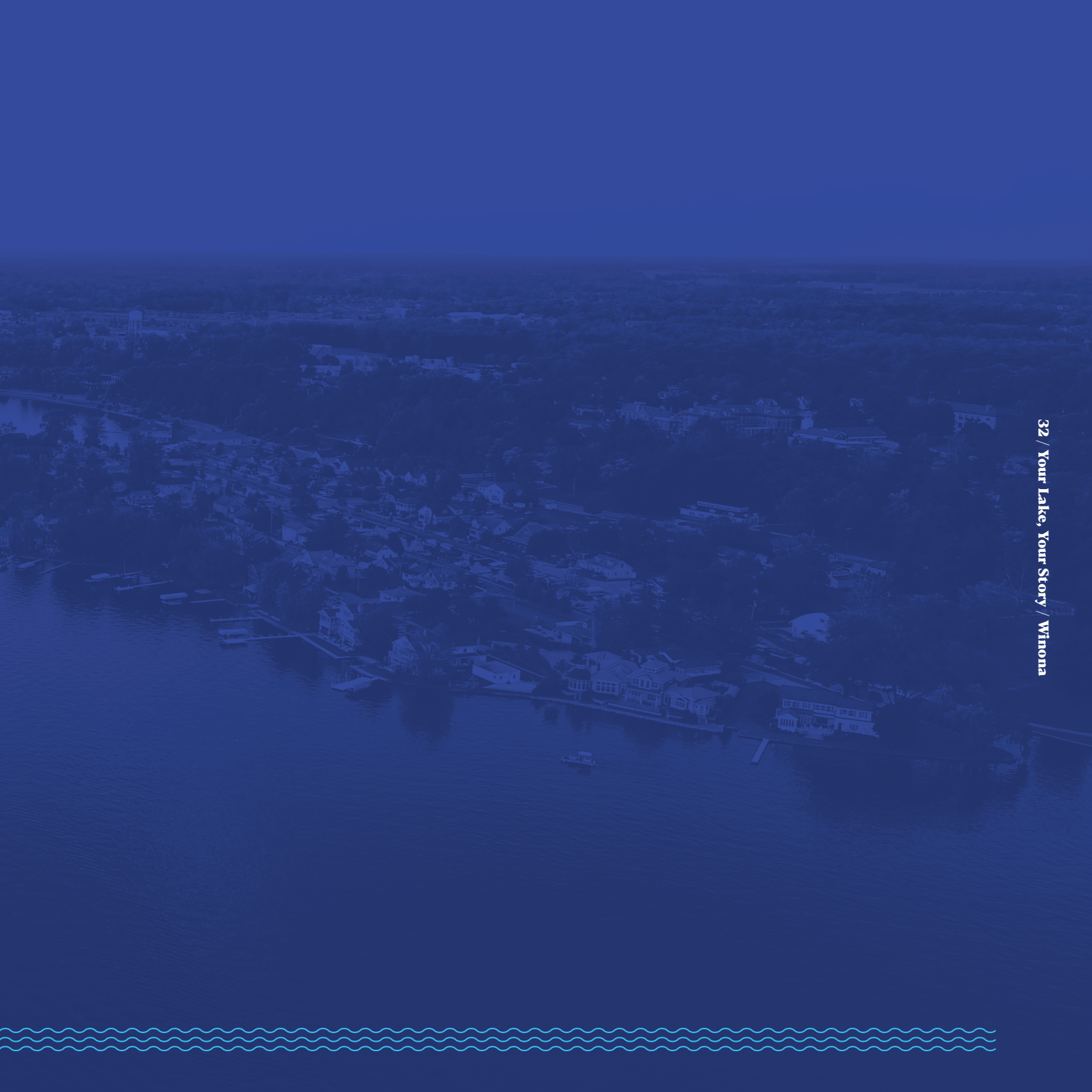


**Financially support** a specific Lilly Center project that aligns with your vision for the lake, like research, K-12 education or community events.

Sign up for Lilly Center communications to stay informed: **[lakes.grace.edu/ylys](https://lakes.grace.edu/ylys)**









LILLY CENTER FOR  
**LAKES**  
& **STREAMS**

GRACE  
COLLEGE

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