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We swim in it, drink it, clean with it and even shower in it, but how much do we really know about it?

Water, the fluid that makes up over half of our bodies and 71 percent of the world, is a resource most people here in the Midwest don’t think twice about having. But alarmingly, the tap water we drink straight from the sink, or even a hose, may not be as safe as one might believe.

Here in Iowa, the quality of our water is changing year by year. There are three main factors that impact the quality of the water we drink. These elements — sediment, nutrients and bacteria — all play a part in the safety and health of our water.

For the average student at Iowa State, these terms may seem familiar, but not exactly understandable. So here’s a breakdown of what these ingredients to the quality of Iowa’s water are, and how students across campus can fix it.

**Sediment**

“Sediment is the biggest problem we have,” said Dan Jaynes, affiliate professor and USDA employee. “When you can’t see through the river or see the bottom because it’s brown, that’s sediment being held up in the water or the river.”

In natural, flowing water, the sediment is the fine soil particles, like dirt, clay or organic matter that fuse into the water. Both animals and people can interact around this water.

**Nutrients**

There are two nutrients in the water around us that can potentially be very toxic to not only the people, but also the environment.

Potentially toxic to people and animals, nitrate, a form of nitrogen, is a growing problem in agriculture.

“Nitrate’s a problem because if you get above 10 mg/liter of nitrate, you can’t drink that water. It can be poisonous to newborns, and most water in Iowa that comes off our fields is above that 10 mg/liter,” Jaynes said. Although, people above six months old are not typically bothered by drinking the nutrient.

Farmers use nitrate for crops, which consume nitrate to grow. But a lot of times crops don’t use all the nitrate they receive.

When the nitrate does not get absorbed, it runs off of the land, into streams, and eventually runs through rivers into the Gulf of Mexico. Today, there is a certain part of the gulf called the ‘Dead Zone.’

“The ‘Dead Zone’ is an accumulation of nitrate, resulting in the nutrient absorbing oxygen. This lack of oxygen kills off fish, shrimp, clams and other ocean creatures, forming an uninhabitable area. Attempts to prevent the ‘Dead Zone’ from growing are happening here in Iowa and across the Midwest.

“It kills everything because there’s not oxygen left,” Jaynes said.

“The states that are in the Mississippi River Basin are trying to set goals to try and reduce their nitrate export down to the Gulf of Mexico,” said Michelle Soupir, researcher and associate professor in agricultural and biosystems engineering.

The second nutrient in local water prior to filtration is phosphorous. Also used as a fertilizer, the nutrient is a more local issue than nitrate, Soupir said.

“It is one of our biggest problems in Iowa, and across the whole country. You get too much phosphorous into fresh water, and it really dries bacterial or algae growth,” Jaynes said.

Phosphorous is a problem that is visually seen. Lakes
The Patagonia effect

Ever since Patagonia signed on as the guest designer in September 2017, committee by committee, the ISU Fashion Show has been influenced by Patagonia, their brand image and the values they hold. It was as if Patagonia’s green thumb touched the Fashion Show and spread across like a wave of green influencing each Fashion Show committee to ‘go green.’

This wouldn’t be possible had The Fashion Show not selected a theme that correlated with Patagonia’s brand aesthetics and values. One reason that happened this year is because Patagonia signed on much sooner than guest designers have in the past, allowing The Fashion Show to choose a theme that would go along with the brand aesthetic of the guest designer.

Patagonia is an active-wear brand that grew from a small business that made rock climbing tools beginning in the 1950s. According to Patagonia’s website, the company has faced many challenges throughout its existence, almost going out of business due to a recession in the 1990s and has now expanded into a brand that sells much more than just outdoor gear. They have developed men’s, women’s and children’s garments of all types and a vast variety of outdoor gear.

Patagonia is also now one of the leading companies in the ethical-fashion industry. They have imposed a 1 percent sales tax on all of their products that is devoted to environmental organizations that work on issues in the areas of climate, land, communities, water, and biodiversity. Another part of Patagonia’s brand mission is their Worn-Wear program. This is a program where customers are able to go online to Patagonia’s website and watch tutorials on how to fix any Patagonia garment that needs fixing, hopefully inspiring customers to not automatically throw things away and to reduce the waste going into our landfills.

In years past the guest designer hasn’t necessarily been completely consistent in the theme, but this year since we got Patagonia so early on we really wanted to take that and run with it because it was such a huge grab for us,” said Jessica Helberg, Fashion Show producer and senior in apparel, merchandising and design. “It was as if Patagonia’s green thumb touched the Fashion Show and spread across like a wave of green influencing each Fashion Show committee to ‘go green.’

“I think it’s such a trend right now to be green. The environmentally conscious aspect of things is very trendy, but it’s becoming more important and prominent in everyone’s lives,” said Jordynn Osterhaus, Fashion Show public relations director and senior in apparel, merchandising and design. “I think that’s why it’s so cool that we have Patagonia because their main focus is keeping that in mind… to bring that into the Fashion Show, since the fashion industry is also needing to take a direction that way. I think it’s just a good step in the right direction… to get the idea and thought process out there of the whole sustainability aspect of things as well.”

Something else that separated Patagonia from past guest designers is its presence on campus. In past years, most students didn’t wear the garments the guest designer produced. This year, many students wear Patagonia around campus.

Emily Clark and Josie Brownmiller, the outreach producers of The Fashion Show and seniors in apparel, merchandising and design, selected Patagonia as their guest designer and reached out to them to be a part of this year’s show. When they began researching guest designers in July 2017, they were both on the same page of wanting a brand that was well known on campus and had a purpose.

“We wanted something that could be, like it has been, incorporated into every aspect of the show and really making it more cohesive and something that would engage students outside the apparel, merchandising and design department,” Brownmiller said.

The first move The Fashion Show made toward ‘going green,’ was when they selected the theme. ‘Resilience,’ was the word selected to represent the fashion show’s theme. The word is parallel with Patagonia’s brand mission and with what the fashion show stands for as well. The aesthetic of this year’s fashion show is a modern, organic theme, which also is similar to Patagonia’s brand.

“It was the partnership with Patagonia that really sprung this word [Resilience]. The thought behind it was just powerful, moving forward, kind of like the rigid, powerful energy – having the growth and the greenery theme of the show and also Patagonia’s statement of ‘inventing the world a better place,’” Helberg said.

‘Resilience’ is a word defined as: the capacity to recover quickly from difficulties; toughness.
Who is Robert Waggoner?

Lucid dreamer, international author and husband

BY MADDIE CASADY
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When asked what a typical day looks like for him, Robert Waggoner answers with the first two things that he does in the morning: he wakes up and has breakfast with his wife, President Wendy Wintersteen.

While Waggoner may or may not be known to students as the husband of the university’s president, his story goes much deeper than the title of the president’s spouse.

Waggoner is an internationally acclaimed author who has written two books about a phenomenon called lucid dreaming.

Lucid dreaming is best described as any dream in which you realize you are dreaming and have become consciously aware within the dream state. Waggoner has had experiences with lucid dreaming since he was a child. At the age of ten, he had a dream that he was in his local public library looking at the books. He suddenly noticed a small tyrannosaurus rex walking through the book stacks and quickly realized something wasn’t right. At this young age, he had the realization that he was simply dreaming.

“I realized within the dream, ‘hey, this is a dream,’ so I didn’t know you could do anything, so I just told myself to wake up and I woke up,” said Waggoner of his first experience with lucid dreaming.

Waggoner’s next major experience with lucid dreaming occurred in 1975 when he was a junior in high school. His experience started after reading a book that referenced lucid dreaming as trying to find your hands in a dream and realizing you are dreaming. Reading this, Waggoner decided to try having a dream like this himself.

“There wasn’t a technique, so I just kind of made a technique. Each night before I’d go to sleep I’d just look at my hands and tell myself ‘tonight in my dreams, I will see my hands and realize I’m dreaming. Tonight in my dreams, I will see my hands and realize I’m dreaming,’” said Waggoner.

After a few nights of trying his technique, he had a successful lucid dream and became hooked on having these dreams. However, because there was no scientific evidence about lucid dreams until 1981, there were not a lot of people who believed the phenomenon that Waggoner was experiencing.

Waggoner graduated from Drake University in 1981 with a degree in psychology. As a student, he faced many of the same challenges students today face, including financial situations after being the fifth child in his family to attend college.

When he was told about his family’s financial situation before his senior year, he spoke with his high school to confirm he had taken enough credit hours and graduated a semester early. He then worked January to mid-August in a grocery store warehouse from 10 p.m. to 7 a.m. to help pay for his college education.

“Just because I’m in the position I am in right now doesn’t mean I don’t understand what it’s like to show up at college and realize that you have financial struggles that you have to look forward to,” Waggoner said. “But I looked at it as a totality. College, of course, is an extraordinary experience and really a wonderful foundation for the rest of your life.”

After graduating, he worked in sales and marketing for 26 years, but in 2007, he decided to write his first book about lucid dreaming.

After the completion and publishing of the book, Waggoner traveled the world talking to and providing workshops for many different people with different backgrounds in lucid dreaming. In 2012, Waggoner wrote his second book on the science and techniques of lucid dreaming.

“There’s a beautiful part of lucid dreaming; [it] is that there’s all this territory of possibilities that people can see,” said Waggoner.

Currently Waggoner is a co-editor of an online lucid dreaming magazine and was formerly president of the International Association for the Study of Dreams. He continues to travel and host workshops on lucid dreaming in the United States and around the world, with events in Prague and Tel Aviv later this spring.

While Waggoner continues working on lucid dreaming, he enjoys his time with President Wintersteen serving as the presidential couple for the university. As the president’s spouse, he spends time aiding in planning events at their home, the Knoll, and on campus as well as being invited as a guest to different events, such as professor mediation ceremonies and being a judge for the upcoming Lip Sync competition with President Wintersteen. In addition to the professional events the couple participates in, they also attend many of the Iowa State sporting events to support the student athletes.

“It’s amazing what student athletes do and how they’re able to juggle being an athlete while being a full-time student,” Waggoner said. “It is really quite an extraordinary achievement.”

Robert Waggoner is the spouse to President Wendy Wintersteen and an internationally acclaimed author on lucid dreaming.
POLICE BLOTTER
3.30.18

Officers assisted another agency with a criminal investigation at 12:16 p.m. at 1001 Arkansas Dr - Ames, IA, was cited for non-payment of Iowa fine and failure to prove security against liability at South Dakota Ave and Mortensen Rd (reported at 2:35 a.m.). An officer initiated a drug related investigation at (reported at 11:58 a.m.).

An officer initiated a drug related investigation at (reported at 12:04 p.m.). An officer initiated a drug related investigation at (reported at 11:16 p.m.). An individual reported to speak about an officer to the United States - an individual reported the theft of a motor vehicle. It was determined the motor vehicle had been towed for a parking violation and not stolen at 119 Stantion Ave (reported at 11:05 p.m.).

3.31.18

Mayo Noelle Hoover, age 26, of 117 Crystal St Unit 106 - Ames, IA, was arrested and charged with public intoxication - 1st offense at Buchanan Hall (reported at 3.47 a.m.). An officer assisted an individual who was experiencing medical difficulties at Helser Hall (reported at 11:06 p.m.).

4.1.18

Zachary Joel Gibson, age 23, of 1001 Pincon Dr Unit 4 - Ames, IA, was arrested and charged with public intoxication at Lincoln Way and Franklin Ave (reported at 1:24 a.m.). Leonardo Tomasi Moreira, age 24, of 110 College Drive - 2nd offense at Buchanan Hall (reported at 3:47 a.m.).

CORRECTIONS

The Iowa State Daily welcomes comments and suggestions or complaints about errors that warrant correction. To submit a correction, please contact our editor at 515-294-6688 or via email at editor@iowastatedaily.com.
The March for Our Lives late last month was estimated to be the single largest protest march ever in Washington, D.C. How could high school students from Parkland, Florida, successfully mobilize so many people and so many resources? The mass shooting at their school was horrific. But sadly, it was not unique.

So why was the response so immediate and so widespread, with marches across the country?

Do these students speak with more privilege, and are they supported by more resources and more powerful connections than other organizers? Probably so. The Parkland Florida website notes their per capita income is $54,337 with a median household income of $128,292. Nationally, per capita income averages $29,829, with median household income of $55,322. So yes, Parkland, Florida is a wealthy town and its articulate and passionate high school students probably have access to more resources than most other high schools.

And people heard them, responded and mobilized in massive numbers around the country. Because of that march in Washington, 11-year-old Naomi Wadler of Virginia had a national forum to address the very high rates of violence black women face.

Other young people, including several students from Chicago, also spoke that day. Trevor Bosley, whose brother died by gunfire, described the daily violence and harm caused by guns in Chicago, a city where 246 children died by gunfire last year. The killing of Stephen Clark, standing in his grandparents’ backyard with a cellphone in his hand is tragic and timely evidence that some young people face violence far more pervasive than the Parkland, Florida, students do. But rather than reject Parkland students because they are more privileged, we welcome their passion and praise them for their message of unity and inclusion of others, whose lives are arguably more threatened and less secure.

Parkland students have motivated people and institutions to question the seemingly invincible NRA. Already, Florida raised the age of legal gun ownership from 18 to 21. Last Friday, the Des Moines Register op-ed page had two pieces urging stricter gun laws, both written by self-identified gun owners. Two airlines have dropped discounted-rate programs for NRA members. Criticizing the Parkland students as entitled is irrelevant. Their message is compelling, timely and long-overdue. They are raising their voices and asking all of us to join them. And we should.

Include bill to remove sales tax on blood testing supplies

BY JACQUELINE EHRLICH
Junior in agricultural biochemistry

A tax reform bill moving through the Iowa Legislature would reduce taxes paid by Iowans by millions of dollars annually.

Surprisingly, however, Iowa’s not-for-profit community blood centers are not included in the Tax Reform bill. Currently, the two not-for-profit community blood centers based in Iowa pay hundreds of thousands of dollars each year in taxes on purchases of supplies that are essential for blood testing. If the blood testing supplies tax bill isn’t passed, these costs will continue for these community blood centers. As a volunteer and avid blood donor with LifeServe Blood Center, which is based in Des Moines, I urge the Iowa House of Representatives to include House File 132, a bill that removes a sales tax on blood testing supplies, in the tax reform bill.

As an ISU student pursuing a career in metabolic research, I am very passionate about the lifesaving mission and the impact this tax bill could make on our local community blood centers. These blood centers provide all of the blood and blood components used in 106 Iowa hospitals. In 2017, they provided hundreds of lifesaving products that impacted the lives of more than 500,000 hospital patients in 99 Iowa counties.

LifeServe Blood Center also partners with ISU researchers in Ames to provide leftover blood donor cells to gain crucial insights into how natural killer cells circulating in the human body differ from those typically studied in the lab. Blood products are transfused every day to Iowans in treatment for cancer, those requiring surgery, trauma patients, for complications related to child birth and for many other reasons. Their 739 Iowa-based employees perform an essential role within our State’s continuum of care.

These blood centers are stewards of the selfless gift freely given by thousands of Iowan blood donors. These donors provide a potentially lifesaving gift, but one that can only be used at the hospital after the blood center staff properly collect, test, process and deliver donations from their collection sites to the hospitals they serve. All of their work is governed by strict regulations for the safety of blood donors and for patients who receive blood transfusions.

Not only is the blood supply testing required by the U.S. Food and Drug Administration (FDA), it is critical for public health and public safety. Iowa is one of only three states that impose sales tax on not-for-profit blood centers. LifeServe Blood Center and Mississippi Valley Regional Blood Center, headquartered in Davenport, Iowa, spend millions of dollars every year to purchase equipment and supplies needed to properly collect blood and perform testing required by the FDA. Taxes on these purchases annually run into hundreds of thousands of dollars for these not-for-profit blood centers.

Their operating expenses are passed through to the hospitals they serve (many of which are themselves not-for-profit hospitals). Their centers are focused on reducing costs associated with providing lifesaving blood for hospital patients throughout Iowa. Because they desire to operate as efficiently as possible for the hospitals they serve, we are urging the State Legislature to create an exemption for Iowa’s not-for-profit community blood centers by including their bill that removes a sales tax on blood testing supplies into the Tax Reform bill.

Thank you for your support of these organizations and their continued ability to serve citizens, hospitals and communities of our great state.
FOOTBALL

Wide receiver core focuses on new era

BY NOAH.ROHLFING
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A new era is on the horizon for the Iowa State receiving corps.

The Cyclones lost three of their top four contributors to graduation, including NFL Draft prospect and record-setter Allen Lazard, senior grad transfer Marcell Murdock, and former walk-on speedster Trever Ryen.

All told, Iowa State lost 53 percent of the 2017 team’s receptions, 54.1 percent of the team’s total receiving yards, and 16 touchdowns. That’s a huge loss from an area where the Cyclones were, at times, dominated last season.

Wide receivers coach Bryan Gasser doesn’t think there’s anything to worry about, though.

“It’s gonna be certainly a new look from what you saw a year ago,” Gasser said. “But with some familiar faces sprinkled in.”

The departures mean that redshirt junior Hakeem Butler will have to step into a leading role this season. Butler finished the 2017 season with 697 yards on 41 receptions, averaging 17 yards per reception.

One of the main questions surrounding Butler is where he’ll line up. For most of the 2017 season, the 6-foot-6 Butler lined up in the slot, with Murdock and Lazard on the outside. Now, with both gone, Butler is the Cyclones’ tallest target (apart from the tight end corps) and it would stand to reason that he’ll get looks on the perimeter.

Gasser said that figuring out Butler’s role will be one of the first things they hash out during spring practices. Butler thinks that wherever he winds up, he’ll make a difference.

“We all saw what I could do from the slot,” Butler said. “You want to see what else you’re good at and venture outside of things.”

Butler’s confidence isn’t unfounded, and it’s echoed by Gasser and teammate Matthew Eaton. Eaton says that Butler has become a leader for the team.

Eaton looks poised to grow his role for the Cyclones as well after catching 21 of his 27 targets in 2017 and scoring four touchdowns. Eaton came to Iowa State out of Pearl River Community College, but his production was limited by the presence of Murdock and Lazard.

Along with staying healthy, Eaton wants to take the next step this season.

“I’m just trying to get in where I fit in,” Eaton said. “I’m just focusing on being more consistent and bringing more energy to every drive.”

Veteran offensive line emerging this spring

BY AARON.MARNER
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Iowa State’s offensive line wasn’t exactly the strongest point of the team a year ago, but the weapons at running back, receiver and quarterback made up for what the line sometimes lacked.

This spring, the focus is on the offensive line. Coach Matt Campbell said the line will determine how far Iowa State goes during the 2018 season, and after Friday practice, members of the line agreed.

“Last year, we couldn’t run the ball in the fourth quarter,” said redshirt junior guard Bryce Meeker. “I think that’s huge in the game plan and I think that’s gonna be our biggest progress this year — running the ball all four quarters, controlling the game.”

The Cyclones often had to let running back David Montgomery improvise. While he’s good at making people miss — Montgomery led all FBS players in missed tackles forced in 2017 — that’s not a skill Iowa State wants him to need behind the line of scrimmage.

The good news for the Cyclones? Iowa State returns a combined 51 career starts on the offensive line between Sean Fotue, Julius Good-Jones, Josh Kujkpfel and Meeker.

While the 51 combined starts shows a lot of experience for members of the offensive line, one of the most exciting things, the players said, is how good the newcomers have been.

“They’re all looking really good,” Good-Jones said. “They’re really coming along nicely. I kinda got thrown into the fire and I don’t know if I was necessarily ready to play as a freshman but I think those guys are up to it and they’ll be ready.”

Meeker and Good-Jones agreed that the current freshmen and redshirt freshmen are much further along than the current upperclassmen were at that age.

New offensive line coach Jeff Myers made it clear that nobody has a spot locked up. With how strong the younger guys have been so far, every spot is open.

Good-Jones, for example, started all 13 games last season at the center spot. In Friday’s practice, the coach slid him over to left guard and gave the center reps to redshirt freshman Colin Newell.

Redshirt freshman Jacob Bolton also got first team reps.

“We’re mixing and matching right now,” Myers said. “We say that we have a left guard position open but in my opinion we have five spots open. Is there a clear cut two? No. Is there a clear cut top seven? Not in my mind.”

Of course, injuries on the offensive line are commonplace. Meeker missed three games due to injury a season ago, and senior Oge Udougbu missed the entire year with an injury.

At the end of the day, depth might be just as important as top-end talent.

“I think we’ve gotten our bearings,” Good-Jones said. “Now we’re focusing on things like details to really help us be successful.”
The importance of recycling electronics

BY FINN HOGGENSEN
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According to the Environmental Protection Agency, U.S. consumers and businesses threw away 2.37 million tons of computer, televisions, cell phones, printers, scanners and fax machines in 2009, with approximately 12.5 percent properly recycled.

With even more electronic waste (e-waste) being thrown away each year, approximately 12.5 percent of it is properly recycled, according to the EPA. The millions of tons of e-waste produced by the university is properly recycled and the environment.

“Having that environmentally considerate and sustainable considerate plan for what happens with electronics at the end of their life is crucial,” said Merry Rankin, the director of sustainability at Iowa State. There are two main places on campus that outdated university-owned electronics will go to ensure they are disposed of safely. They start out at either ISU Surplus or Computer Services at Durham Center. Both places handle university-owned electronics and also the important concern of data security within the hard drive of outdated computers.

At Computer Services, they collect boxes full of electronics brought in by various departments on campus to send them to ISU Surplus for either reuse or recycling. If Computer Services receives a computer, they wipe off all the data and destroy the hard drive. “It is possible that even if you have a dead hard drive or a dead flash drive that you can go into it physically and then get the information off of it,” said Conor Phillips, an IT employee at Computer Services. Phillips thinks most people are not aware of how hard it is to completely erase data from a computer’s hard drive. If hard drives are not properly destroyed and recycled, hackers can steal personal information such as passwords or credit card numbers. Phillips said it is important for people to use the necessary precautions when disposing of computers to ensure data security.

After (hard drives) are all done and even when they are destroyed, we send them to [ISU Surplus] so they can be recycled properly so there is no environmental impact there from that. That sort of eliminates all possibility of even just the smallest piece of data getting out,” said Phillips.

ISU Surplus also does a lot of hard drive wiping and destroying, and they handle the next step to ensure that electronics are properly recycled. “We’ll probably spend one or two days a week just picking up computer items [from campus] and we’ll come back with carts just heaping full,” said Mark Ludwig, supervisor at ISU Surplus.

“When we get computers in here, the first thing we do is we have to make sure that we wipe all the hard drives and get all the pertinent information off of that. We’re the last line of defense of anything that goes out. We need to make sure that all that information is wiped off,” said Ludwig.

Ludwig said their top priority is data security. By rule, they don’t resell computers that contain personal information.

“They put the rest of the computers through tests to determine how much life is left in them. If they are still usable, they offer them for resale. Every Wednesday, ISU Surplus has a storefront that opens to the public to buy used university items. They sell anything ranging from old books to household items to electronics. This keeps items out of the landfill and brings additional money back to Iowa State. Ludwig said they give a portion of the earnings back to the university for every sale over $300.

“We try to be good stewards of the environment and we try keep things out of the landfill. We try to go the extra step to make sure that we use every avenue that we can to dispose of this stuff properly,” said Ludwig.

If ISU Surplus receives a computer that no longer functions, they will harvest it for parts to reuse on other computers in the future, or they will sell spare parts to other vendors. What remains of the computer’s carcass will be sent to contracted e-waste recyclers for proper disposal.

ISU Surplus handles much more than just electronics, and they work to redistribute retired university items to other organizations throughout Iowa.

“The recycling component is not only important from the stand point of keeping those materials out of landfills potentially, but also utilizing the materials that are there and can be used for something else,” said Rankin.

Rankin said it’s important to reuse the refined metals in electronics because continually using energy to mine, extract and smelt those metals is not sustainable. According to the Iowa DNR, it takes two tons of raw materials to make one desktop computer. In addition, the EPA says manufacturing some of these materials creates greenhouse gas emissions.

According to EPA statistics, recycling laptops saves enough energy equivalent to the electricity used by more than 3,500 U.S. homes in a year. And every one million recycled cell phones saves 35,000 pounds of copper, 722 pounds of silver and 75 pounds of gold.

“Eventually we have to consider how much we actually have available to keep extracting,” said Rankin. “These resources are finite.”

Rankin wants people to think about and understand the consequences of their purchasing decisions and to seek out companies that have sustainable practices.

Many companies such as Best Buy, Staples, Dell, LG, Samsung and others offer take-back or recycling options for used electronics. Rankin encourages people to take advantage of those options and to voice their concerns to companies that don’t offer these types of recycling avenues.

“We as consumers have a very powerful voice in the products that we purchase and the considerations that organizations give is not only the production of their products but also the end-of-life options,” said Rankin. “I encourage people to be vigilant and not be afraid to ask companies for that accountability on things that are important to us and things that impact the future that we envision.”
and rivers can appear to be completely green due to an overload of phosphorous in the water. For example, Big Creek Lake, a popular spot for students to visit, contains a lot of phosphorous by the end of the summer.

“Big Creek, which is around here, gets pea green by August, and that’s because of phosphorous,” Jaynes said.

**Bacteria**

Bacteria, although not as harmful to the environment, is prominent in the water and soil of Iowa. Some of this bacteria can make people ill, such as E.coli, which is a bacterial virus that is commonly mistaken for food poisoning.

“That’s probably why you don’t want to drink that water. It’s not the sediment, not the nutrients, it’s the fact that there’s a lot of bacteria in that water,” Jaynes said.

When it comes to water quality, bacteria are the least harmful contributor to the water. Although, problems with bacteria still arise if there is a lack of filtration process.

These three attributes of water quality are problems that can be solved. While it could take centuries to completely ameliorate these issues, there are two strategies currently being practiced to better the quality of Iowa’s water.

**Tile Drainage with Bioreactors**

Across Iowa, tile drainage is visible around the ditches of most country roads. There are pipes that stick out at the bottom of the ditches. These pipes release excess water from fields.

The nitrate that runs through the pipes is filtered through bioreactors. Using wood chips, a bioreactor uses a process called denitrification to covert nitrate into nitrogen gas.

“Denitrification is taking the nitrate that’s in the drainage water and the microbes in this anaerobic (lack of oxygen) condition so it’s completely saturated and they need an oxygen source, so they strip the oxygen and convert the nitrate to nitrogen gas,” Soupir said.

**Wetlands**

Another solution to enhance healthy water quality is the usage of wetlands.

“Wetlands are like the kidneys of a landscape. They take all the junk, all the nutrients, bacteria and sediment, and they use it for good,” said Adam Janke, extension wildlife specialist and assistant professor in natural resource ecology and management.

Wetlands here in Iowa are rare. But centuries ago, they were flourishing. Farmers drained wetlands in order to farm on the land, forming tile drainage. “300 years ago, we had 96 percent more of wetlands than we do now. We have less now because of drainage,” Soupir said.

Today, people do not use current wetlands for farming like they did centuries ago. In fact, wetland restoration is a growing practice.

While tile drainage is a solution to nitrate release, wetlands filter and absorb nitrate before it goes into streams. Adding wetlands to farmland can be a way to reduce nitrate in the water.

But what can the average person do? Everybody plays a role in water quality. Local Iowans can take small and simple steps to improving their own quality of water.

“You can do simple stuff, like picking up after your dog, because that is a bacteria source,” Janke said.

Awareness is also a step to understanding the problem. Students coming to Iowa State are gaining interest in this topic, which will help increase the awareness in the community.

“There’s more talk about water quality now than there was when I first came here,” Soupir said.

Whether it is simply learning about the issue or cleaning up after your pets, the typical person in Iowa can help take a step toward cleaner water.

“Everybody has a role to play in water quality. Even if you live in an apartment in Ames, you can do something for water quality,” Janke said.

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**Birthright**

Birthright is a non-judgmental and supportive atmosphere for women and expectant mothers.

**Birthright Provides:**
- Free pregnancy testing
- 24 hour toll-free hotline
- Maternity and Infant Clothing Items
- Community referrals for: medical, legal, financial, and housing assistance
- Materials and referrals on adoption services

**Birthright is a non-judgmental and supportive atmosphere for women and expectant mothers.**

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**Jethro’s BBQ**

All You Can Eat Graduation Brunch Buffet Saturday May 5th Sunday May 6th 8:30am-3pm

**HAND CARVED PRIME RIB AND PIT HAM**
**CREATE YOUR OWN OMELET BAR**
**Jethro’s Slow Smoked Wings**
**Bubba’s Boneless Wings**
**FRESH ATLANTIC SALMON**
**TEXAS BRISKET**
**PULLED PORK**
**CHICKEN FRIED STEAK**
**BISCUITS AND GRAVY**
**LOADED EGGS**
**CORN BEEF HASH**
**HASHBROWN CASSEROLE**
**French Toast**
**Bacon**
**Sausage**
**Mac & Cheese**
**Green Beans**
**Mashed Potatoes & Gravy**
**Fresh Fruit**
**Bread Pudding**
**Strawberry Shortcake**
**Cheese Cake**
**Brownies**
**Cookies**
**Muffins**
**Toast**
**And Many More Jethro’s Favorites**

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