



# Creek Sign Assessment

Report to Iowa Department of Natural Resources  
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## Acknowledgements

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## Project Background

Just how effective are creek signs in educating Iowans about the local water bodies around them? In alignment with the mission of the Iowa Department of Natural Resources (DNR) to protect water quality in the state's rivers and streams, creek name signs have been installed selectively along key highways, county roads, and recreational trails in an effort to raise awareness of the water bodies that grace the state with wildlife habitat, recreation areas, and beauty.

Several years into the sign installation process, Iowa DNR seeks to understand what impact these signs are having in select watersheds across the state. Iowa State University's Conservation Learning Group team, under the leadership of anthropologist Dr. Jacqueline Comito, was contracted to conduct an assessment of the effectiveness of these creek signs in seven targeted watersheds across the state. The budget for this assessment was \$10,000.

The seven target watersheds in this assessment include six watersheds that have implemented creek signs, and one watershed that has not implemented signs to date. Target watersheds were identified by Steve Hopkins, Nonpoint Source Coordinator, Water Quality Improvement Section of the Iowa DNR, as follows:

### *Target Watersheds with Creek Signs (6)*

- Dry Run Creek
- Easter Lake/Yeader Creek
- Rathbun Lake
- Yellow River Headwaters
- Miller Creek
- Silver Creek

### *Target Watersheds without Creek Signs (1)*

- Black Hawk Lake



## Creek Signs by the Numbers

Watershed	DOT (State, Fed) Creek Signs	Local Road Creek Signs	"Source of Lake" signs	Creek signs on trails	Watershed signs	"Protector" field signs	Special lake signs	Total
Silver Creek	6 (3 bridges)	4 (2 bridges)						10
Dry Run Creek	9	8	10 (5 bridges)	4 (2 bridges)	1			20
Easter Lake (Yeader Creek)	2 (1 bridge)	13 (7 bridges)	13 (7 bridges)					18
Miller Creek	6 (3 bridges)							6
Rathbun Lake	14 (7 bridges)	10 (5 bridges)			10	66	3	91
Yellow River Headwaters		8 (4 bridges)						8
Black Hawk Lake/ Carnavon Creek)		1						1

In order to thoroughly assess the effectiveness of the watershed creek signs, as well as lowans' perceptions and understandings of the local water bodies around them, the project team took a multi-faceted approach in conducting this assessment. Conducted during the months of March – October 2021, this assessment is built upon one-on-one interviews with watershed coordinators in each of the seven target watersheds, in addition to a public survey administered through multiple mechanisms (both at in-person community outreach events in or near the target watersheds, and via mail to garner additional responses). Methodology and findings of this assessment are presented in the pages that follow.

## Interviews with Watershed Coordinators

To help gather baseline data for this assessment, the project team interviewed watershed coordinators in each target watershed to understand from someone close to the creek sign installation project how public awareness of water bodies and water quality has changed over time. One-on-one interviews with the watershed coordinators in each of the seven target watersheds were conducted in April – May 2021. Project team members conducted these interviews virtually, via Zoom, with all interviews recorded and transcribed to aid in analysis.

Key findings from the seven watershed coordinator interviews are summarized below. The project team noted that multiple newer watershed coordinators struggled to answer some of the interview questions as so much of their time in their current positions had been largely shaped by the COVID-19 pandemic.

What indications have you seen that creek signs are raising awareness of local water bodies?

The watershed coordinators found it **difficult to identify concrete indications that the creek signs are directly driving the increased awareness of water quality that they are seeing across their watersheds, but all noted that the creek signs were certainly part of that increased awareness.** Many of them indicated that the impact of these signs was likely limited for local residents who have been around these water bodies for many years, but has been a benefit to area visitors less familiar with the surroundings.

What actions or behaviors have local residents taken since the installation of creek signs that you think could be attributed to an increased awareness of local water bodies?

When asked about behavior changes resulting from the installation of creek signs, the results quickly turned more positive. Watershed coordinators all noted a large uptick in conservation-mindedness among local residents in recent years. In the two predominately urban watersheds, Dry Run Creek and Easter Lake/Yeader Creek, the watershed coordinators reported an increase in projects like rain gardens, stormwater protection, and river clean-up days throughout the community. In the predominately rural watersheds, the watershed coordinators mentioned some increases in conservation practices among landowners but saw the real benefit in wildlife. Trout species have been reintroduced to at least two of the watersheds in this study and the watershed coordinators in both watersheds reported positive community engagement and wildlife improvements as a result. However, much to the point made earlier, multiple watershed coordinators noted that these **improvements cannot be inextricably or exclusively linked to the creek signs.**

How do you think residents' awareness of local creek names impacts the implementation or reception of projects in your watershed?

With regard to watershed improvement projects, watershed coordinators reported a very positive effect from residents' increased awareness of water bodies. The consensus among all watershed coordinators was that **public awareness is essential to the success of watershed improvement projects** because it engages people who live spatially far from a water body and thus feel disconnected from it. Watershed coordinators mentioned waiting lists of farmers who wanted to implement cover crops on their land, an increase in calls from landowners seeking to know what watershed(s) their land is in, and better cooperation from people who live along a body of water and want to participate in watershed improvement projects.

Do you think creek signs that include "source of" messaging increase awareness of the creeks that are tributaries in their watersheds? (For example, a sign might read "Yeader Creek, source of Easter Lake" instead of simply reading "Yeader Creek.") Does your watershed have signs like this?

Although very few of the target watersheds had signage like this already in place, the response from watershed coordinators was unanimously positive. Watershed coordinators mentioned **raising awareness about the interconnectedness of water bodies** and the scale of the impact of a single action in a watershed. Watershed coordinators from large bodies of water often used for recreation, Rathbun Lake and Black Hawk Lake, were particularly supportive of "source of" messaging on the signs.

What impact do you think including both the creek and watershed name on the signage would have? (Show an example of what this would look like)

The response to this idea was even more positive than the previously-described response to "source of" messaging. Watershed coordinators suggested that watershed signs help people associate a geographic land area with water bodies, **reinforcing the connectedness of land and water.** Others noted that, while people's understanding of watersheds is generally poor, seeing the signs become more visible in their area may lead people to do more thorough research and learn about watersheds on their own. Many of the watershed coordinators have been working on installing watershed signs along bike trails and noted that they hope to include watershed signs on highways in the near future.

What value do you see in the creek signs in your watershed?

The watershed coordinators' responses can be summed up in five words: **awareness, education, connectedness, community, and stewardship.** After the signs were installed, people became more aware of their local water bodies and the signs became an important tool for watershed coordinators

to use in education and outreach. Because people were more aware and more educated, they felt more connected to the land and their water body which, in turn, generated a strong conservation-minded community that focused on stewarding the land and protecting local water quality. One watershed coordinator commented, “The passive advertising investment is great and the combination of creek signs and watershed signs works really well.” Another watershed coordinator suggested that the Iowa DNR “keep working on signage programs to help people better understand where they live.”

The signs did have their criticisms from skeptical watershed coordinators who saw little value in the creek signs in their current form, but they were still eager to learn the results of this study and work on potentially more impactful signage in the future. One watershed coordinator suggested that a watershed mapping system for each county would be a great resource of benefit to homeowners, landowners, and educators.

## **In-Person Surveys**

After completing the watershed coordinator interviews, it was time for the project team to take this assessment to the streets and learn directly from Iowans—folks from all backgrounds and walks of life. During the months of April – May 2021, the project team developed a public survey to assess the impact of the creek signs and people’s understanding of local water bodies. This public survey was designed to test the knowledge of survey-takers related to local water bodies and watersheds, while also seeking input on the effectiveness of signage and how the signage could be improved.

The surveys were administered by the project team at in-person community events in or near each watershed in June – July 2021. In close collaboration with the watershed coordinators, the project team identified community events in or near each target watershed to attend with the Conservation Station trailer to provide community education and outreach, as well as to survey the public.

While the Conservation Station’s interactive demonstrations and hands-on activities attracted audiences of all ages, the surveys were exclusively targeted to those 18 years and older. When parents and grandparents visited the trailer with youth, this presented frequent opportunities for the project team to engage in discussion with the adults and invite them to complete the 5-minute voluntary survey while the youth were participating in an activity with other team members.

Survey participation was incentivized with Iowa State University-branded reusable water bottles in exchange for completed surveys.

The project team, with the Conservation Station trailer and surveys in hand, attended the following community events:

- June 10, 2021: Corydon Farmers’ Market (Rathbun Lake)
- June 18, 2021: La Porte City Festival of Trails (Miller Creek)
- June 19, 2021: Cedar Falls Farmers’ Market (Dry Run Creek)
- June 25, 2021: Mighty Howard County Fair (Silver Creek)
- July 2, 2021: Easter Lake Park (Easter Lake/Yeader Creek)
- July 17, 2021: Black Hawk Lake Summer Water Carnival (Black Hawk Lake)
- July 23, 2021: Allamakee County Fair (Yellow River Headwaters)



Surveys were administered in multiple formats. For the first three community events listed above, the surveys were administered exclusively through a digital format (via Qualtrics). Event attendees had the choice of completing the survey on an iPad, provided by the project team, or by scanning a custom QR code and completing the survey on their own mobile device. While digital surveys were more environmentally friendly by minimizing the paper trail, utilizing exclusively digital surveys presented its own set of challenges. The combination of slow and/or unreliable internet connections and perhaps more importantly, reluctance to submit personal information through a digital platform, both contributed to relatively low survey volumes at these first three events.

For the fourth community event, the Mighty Howard County Fair, the project team experimented with offering two different survey options: digital (Qualtrics, completed on iPad) and printed paper surveys. Both surveys were identical in content, but attendees could choose which format they preferred. Offering the hybrid digital/paper survey option was a smashing success, and the project team adopted this approach for all remaining community events moving forward. **A total of 207 in-person surveys were completed at the seven community events.**

One of the most interesting observations made consistently across all seven community events was the number of people who did not know what a watershed is—or if they lived in one. Project team members frequently got asked questions such as:

***“Do I live in a watershed?”***

***“How do I find out if I live in a watershed?”***

***“What is a watershed?”***

***“Would I be able to see a watershed if it was near where I live?”***

***“What watershed do I live in?”***

***“I know I live in a watershed, but which one?”***

When asked these questions, project team members would not answer until folks had finished the survey to avoid introducing bias in the data.

The last two questions from that list led into a larger observation that may have a sizeable impact on the data collected via in-person surveys: the geographic spread of the people surveyed. The survey design was sound in theory. The project team traveled to the watershed of interest and set up shop there to collect data from local residents. What was a more or less uncontrollable factor, however, was how far attendees traveled to get to the event. For instance, at the Black Hawk Lake Summer Water Carnival, traditionally attended by tens of thousands of people, the project team talked to people from Wyoming, Minnesota, Nebraska, Pennsylvania, and seemingly every corner of Iowa.

Further, some of the target watersheds had such a small geographic area that the project team was not able to identify towns in them, much less festivals or events to visit. The Miller Creek Watershed (La Porte City Festival of Trails) is a perfect example. La Porte City is actually not located in Miller

Creek Watershed, but is the closest community with a festival to the watershed. Miller Creek runs about 6 miles north of La Porte City, but Wolf Creek runs through town and the much-larger Cedar River passes a mile east. Most people attending the festival in La Porte City were not even aware of Miller Creek and thus struggled to identify a local watershed on the survey. Similarly, there were multiple creeks or rivers in close proximity of the Mighty Howard County Fair (Silver Creek Watershed) and Cedar Falls Farmers' Market (Dry Run Creek Watershed), resulting in noticeable confusion amongst survey-takers at those events, as well.

Another challenge was multiple water bodies sharing the same name. Beaver Creek, for example, came up several times. One Beaver Creek runs through Boone, Dallas, and Polk counties, ultimately feeding into the Des Moines River. Another runs from near Iowa Falls over to Cedar Falls before connecting to the Cedar River.

Administering surveys in-person clearly yielded unique challenges, from internet connectivity challenges to hesitancy towards the digital format—yet also yielded fruitful opportunities for education and engagement. Being in-person encouraged engagement with Iowans from all walks of life. The project team spoke with more people than who were willing to complete a survey. For instance, at the Cedar Falls Farmers' Market (Dry Run Creek Watershed), team members commented that the audience was very interested and engaged in urban issues, with many visitors asking thoughtful questions about water quality and surface water protection in their area.

Conversations with survey-takers at the Black Hawk Lake Summer Water Carnival (Black Hawk Lake Watershed) demonstrated the benefits of a long-term watershed improvement project in the area, with many fruitful conversations indicating the value of well-funded, ongoing active community outreach in water quality education. Further, the nature of the event, being very lake- and water-focused, readily lent itself to an audience interested in engaging with natural resource issues and water quality improvement.

## Mailed Surveys

In addition to the modest number of surveys completed at the in-person community outreach events in each watershed, a one-time mailing was distributed in mid-September in an effort to gather additional responses. Team members were able to get watershed project mailing lists from four out of the six target watersheds that have implemented creek signs. The in-person event at Black Hawk Lake Watershed yielded an adequate number of completed surveys, thus this target watershed without creek signs was not included in the mailing.

A mailing that included cover letter, paper survey, and business reply envelope was distributed to a randomly-selected portion of residents of the following watersheds:

- Rathbun Lake
- Dry Run Creek
- Silver Creek
- Yellow River Headwaters

Surveys were returned from late September through late October 2021. This one-time mailing yielded an **additional 425 surveys**, for a total of **632 survey responses** between the in-person surveys and mailed surveys.



# Results and Discussion

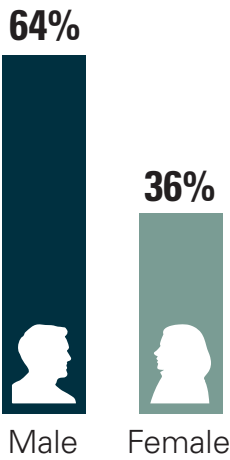
Just how effective are creek signs in educating lowans about the local water bodies around them? A hybrid in-person and mailed survey sought to answer this question and help the project team gain an understanding of what lowans know about watersheds and water quality around them.

Analysis of each survey question is included below, illustrating lowans’ understanding of watersheds and local water quality, as well as their attitudes, perceptions, and preferences for different forms of signage. Note that for many of the questions, the differences between responses from the six target watersheds that have implemented creek signs, and the one target watershed that has not implemented creek signs, were negligible.

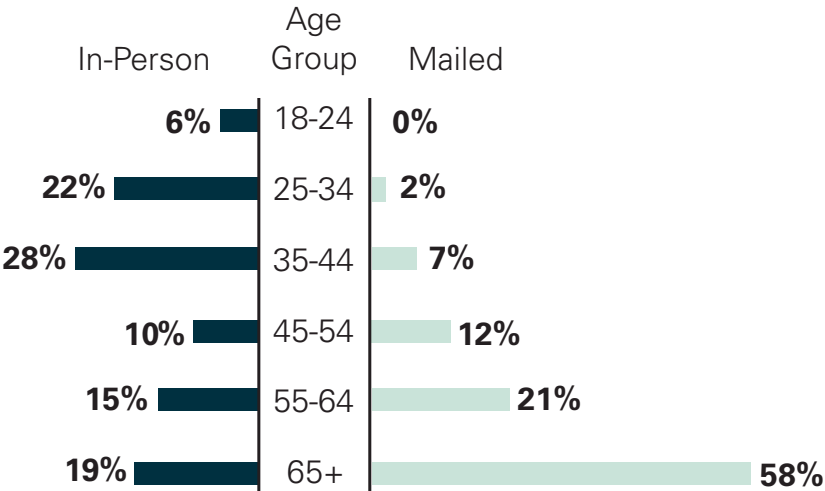
## Demographics

Collective demographics of the 632 survey-takers, across all seven target watersheds, are included below.

**Gender**  
(All watersheds)



**Age Distribution**



Interestingly, there were distinct differences in the demographic makeup of the survey-takers when comparing in-person surveys versus mailed surveys. The in-person surveys were completed much more frequently by females (60% of in-person respondents) compared to the mailed survey (just 24% of mailed survey respondents).

The in-person surveys yielded a much more even age distribution than the mailed survey, particularly younger respondents. For those that completed the survey in-person at a community event, over half of the survey-takers (56%) were between the ages of 18-44. In contrast, over half of the mailed survey respondents (58%) were age 65+.

## Do you live in a watershed?

Anecdotal evidence from project team members participating in the community events suggests a great deal of uncertainty from the public about what a watershed is and if they live in one. Survey-takers frequently asked the project team about this question, as well as discussed with fellow survey-takers. The survey responses reflect that uncertainty.

When comparing responses between the six target watersheds that have implemented creek signs, and the one target watershed that has not, the results are strikingly similar, with 54% and 55% of respondents, respectively, answering YES to the question, “Do you live in a watershed?” The responses to this survey question suggest that the presence (or absence) of creek signs makes little difference in lowans’ understanding of watersheds and whether they live in one.

However, there are distinct differences in responses to this question when comparing in-person surveys versus mailed surveys. Forty-three percent of in-person survey respondents answered YES to the question, “Do you live in a watershed?” while 60% of mailed survey respondents answered YES.

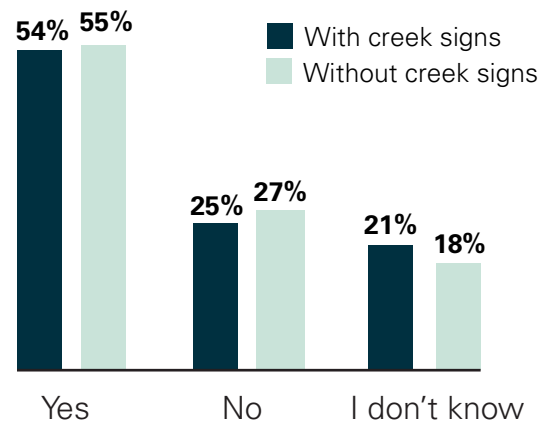
When comparing responses based on gender, 40% of female respondents answered YES to the question, “Do you live in a watershed?” while 63% of male survey respondents answered YES.

Anecdotally, the in-person survey responses were largely spontaneous and opportunistic—completed relatively quickly by a broad cross-section of lowans from all walks of life, and completed by more females than males. Interestingly, many of the in-person survey respondents had the opportunity for firsthand exposure to the concept of a watershed via the educational activities and demonstrations with the Conservation Station trailer—but may or may not have connected those dots in responding to the survey questions.

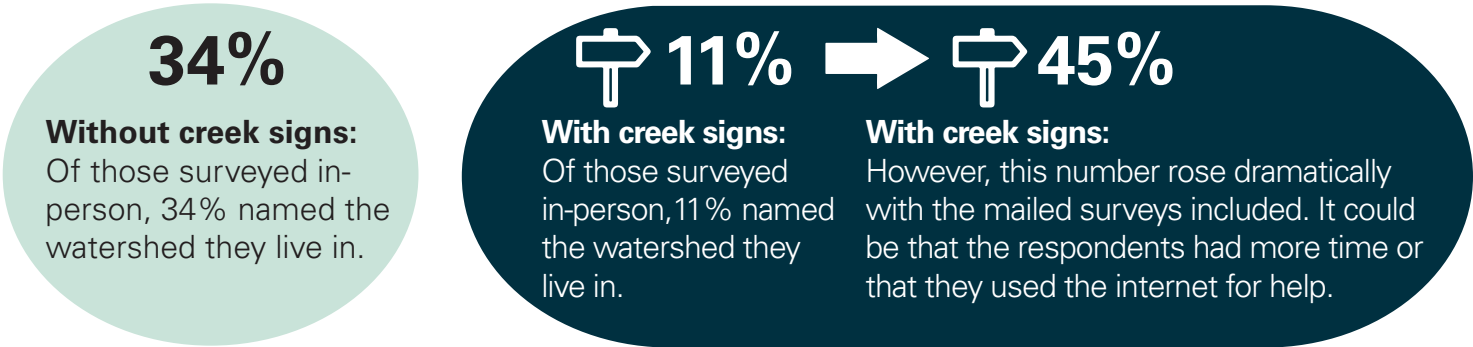
On the flipside, the mailed survey respondents indicated a significantly higher awareness of the fact that they live in a watershed. These respondents represent, on average, an older and much more male population, likely more established and familiar with the local area. Yet, mailed survey respondents also may have looked this information up via smartphone, tablet, or computer—the mailed survey could be compared to an open-book take-home test with no time limit. In this way, the in-person survey responses may provide a more accurate snapshot of the general public’s understanding of watersheds.

There is clearly still a great deal of work to do in the arena of watershed education, with nearly half (45%) of all survey respondents answering NO or I DON’T KNOW when asked if they live in a watershed.

### Do you live in a watershed?



If YES to the above question, what is the name of the watershed where you live?

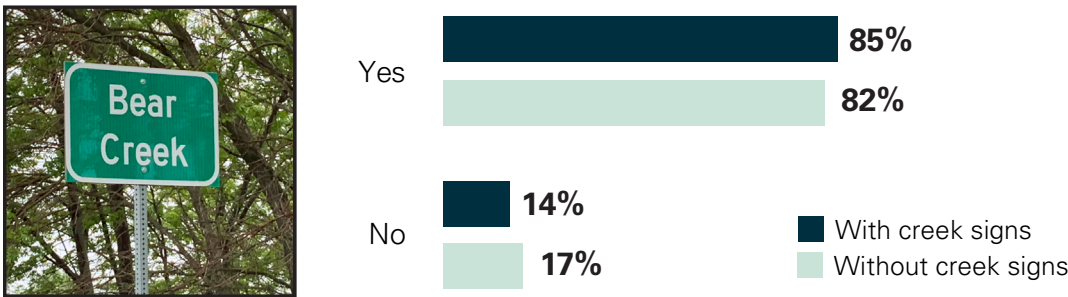


When comparing responses between the six target watersheds that have implemented creek signs, and the one target watershed that has not, there are distinct differences in the in-person survey responses. In the Black Hawk Lake Watershed (the control watershed without creek signs), 34% of in-person survey respondents correctly identified the name of the watershed in which they live, versus just 11% of in-person survey respondents in the target watersheds with creek signs.

While these data initially seem counterintuitive, an unspoken yet key factor at play here is the presence of an active, well-supported watershed improvement project and ongoing community education efforts over the past 10 years in the Black Hawk Lake Watershed. Despite not having creek signs in the area, the in-person survey respondents expressed a high level of awareness regarding the local watershed in which they live. The combination of Black Hawk Lake being an immensely popular recreational lake and the ongoing educational efforts as part of the long-term watershed improvement project, which has seen millions of dollars of funding over the past decade, does seem to be paying off in terms of raising awareness in the local area surrounding Black Hawk Lake.

### Creek Signs: Attitudes and Perceptions

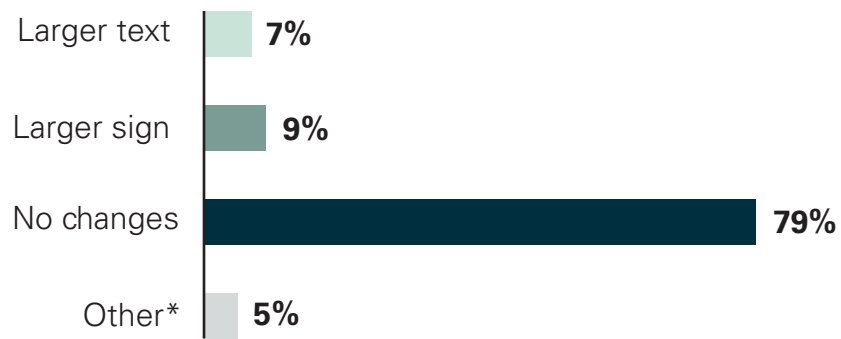
Have you seen a sign that looks like this in your area (with a different creek name)?



The majority of respondents across all watersheds and survey response mechanisms are familiar with the presence of creek signs in their local area, and overwhelmingly agree (97%) that these signs are easy to read. Differences between the responses from the six target watersheds that have implemented creek signs, and the one target watershed that has not, were negligible.

## How could this sign be made easier to read?

(All watersheds)



\*Other included: brighter colors, different colors, fresher/newer signs, glow at night, and information on history.

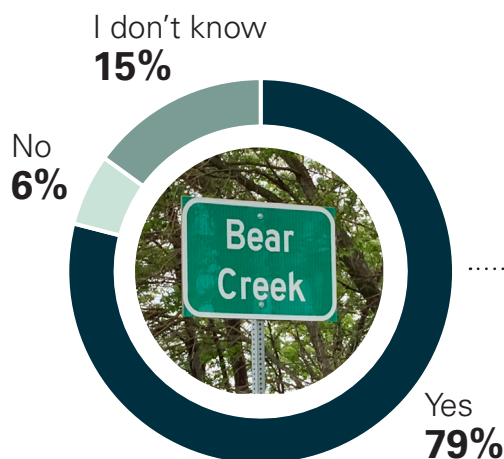
**97%**



of all respondents thought this sign was easy to read.

## Do you think signs like this are an effective educational tool?

(All watersheds)



The majority of respondents agree that creek signs are an effective educational tool.

When asked if creek signs are an effective educational tool, the vast majority of respondents (79%) across all watersheds and survey response mechanisms agree that, YES, these signs are effective. The differences between responses from the six target watersheds that have implemented creek signs, and the one target watershed that has not implemented creek signs, were negligible.



**Do any of these signs show the name of a local water body?  
Choose one.**



None of these  
are local water  
bodies

 **48%**

**With creek signs:**

Of those surveyed, 48%  
could correctly identify  
their local water body.

**27%**

**Without creek signs:**

Of those surveyed, only 27% could correctly  
identify their local water body, much lower than  
those with signs in their watershed.

Survey-takers were shown photographs of four different creek signs, and asked to identify which of the signs showed the name of a local water body (with none of the above also being an option). In the six target watersheds with creek signs, 48% of survey respondents could correctly identify their local water body. This finding supports the trends identified in the interviews with the watershed coordinators, in which they suggested that creek signs are beneficial for fostering greater awareness of local water bodies.

However, these results must also be taken with a grain of salt. Even with the presence of creek signs, less than half of the survey respondents were able to successfully identify water bodies local to them. When administering the in-person surveys at community events in the target watersheds, the project team observed numerous situations in which survey-takers expressed a great deal of uncertainty about how to answer this question, whether it be due to multiple water bodies with the same name, or multiple creeks and rivers in close proximity, or a lack of awareness of any water body names nearby. There clearly remains a great deal of opportunity for watershed education and community outreach across the state.

**Have you seen a sign that looks like this in your local area (with different water body names)?**  
(All watersheds)



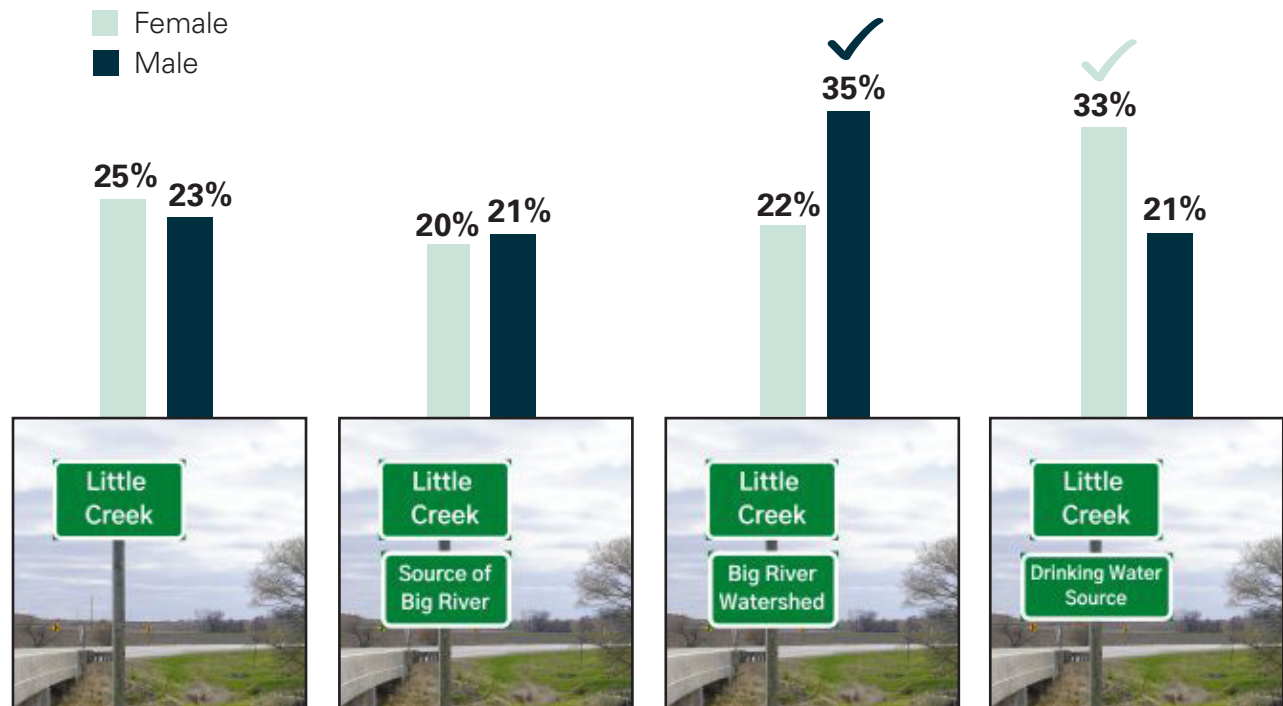
Survey-takers were asked to consider whether they’ve seen a dual-purpose sign like the one shown above in their local area—with the top sign identifying the creek name and the bottom sign identifying the larger water body to which it is a source.

The vast majority of respondents across all watersheds and survey response mechanisms were unfamiliar with signs that feature “source of” messaging, with 85% of respondents having never seen a sign of this sort. However, this style of sign was perceived very positively by watershed coordinators as a way to help raise awareness of the interconnectedness of local water bodies.

**Which of the following signs do you prefer? (select your favorite)**



## Which of the following signs do you prefer? (select your favorite)



Survey-takers were presented with four different styles of creek signs, all identifying the creek name, with some signs also having dual-purpose supporting messages. Respondents were asked to identify their top preference, and two favorites stood out.

The dual-purpose sign that provides the creek name at the top and watershed name below was the top preference of respondents from the six target watersheds that have implemented creek signs, and male respondents from all watersheds. This style of sign was also perceived very positively by the watershed coordinators, emphasizing that this signage can help people associate a geographic land area with water bodies, reinforcing the connectedness of land and water.

The dual-purpose sign that provides the creek name at the top and identifies the water body as a drinking water source below was strongly preferred by respondents from the target watershed that does not currently have creek signs, and was also the top pick among female respondents from all watersheds.



# Water Quality and Use

Survey-takers were presented with a series of questions about water quality, how they use local water bodies, and where their drinking water comes from.

The vast majority of respondents (77%) across all watersheds and survey response mechanisms indicated that they are concerned about local water quality.

Across all target watersheds, male respondents expressed somewhat greater concern about local water quality compared to female respondents (79% versus 72%).

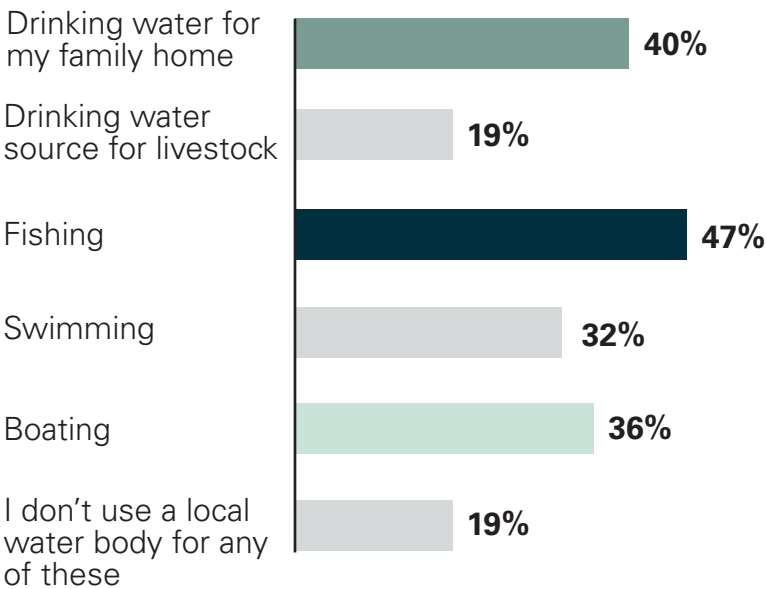
Iowans rely on local water bodies for a multitude of uses, including drinking water and various recreational pursuits. The collective data shown above include respondents across all watersheds and survey response mechanisms.

Responses had little correlation with the presence or absence of creek signs. However, the responses were clearly connected with the types and sizes of water bodies nearby. For example, Black Hawk Lake saw large percentages of survey respondents reporting that they use the local water bodies recreationally, including for swimming (63%), fishing (57%), and boating (54%).

**Are you concerned about local water quality?**  
(All watersheds)



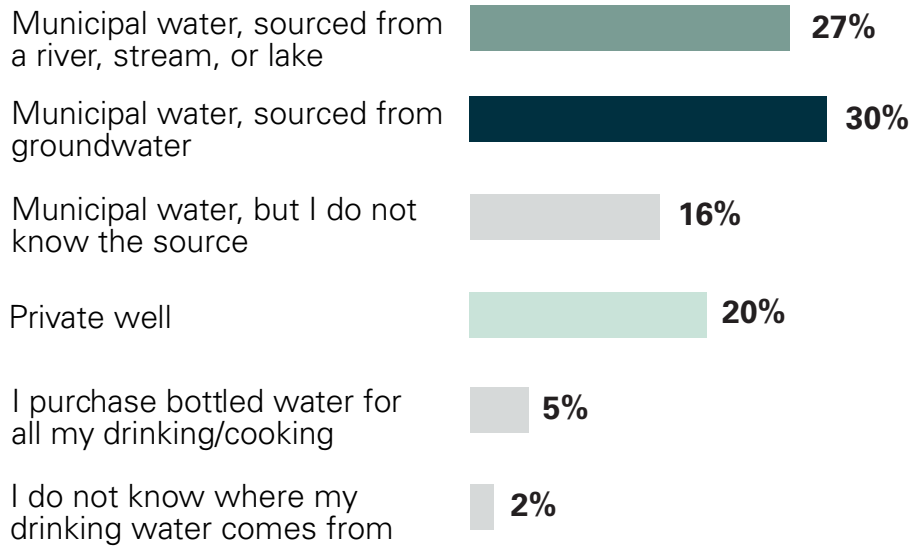
**Do you use a local water body for any of the following? (select all that apply)**  
(All watersheds)





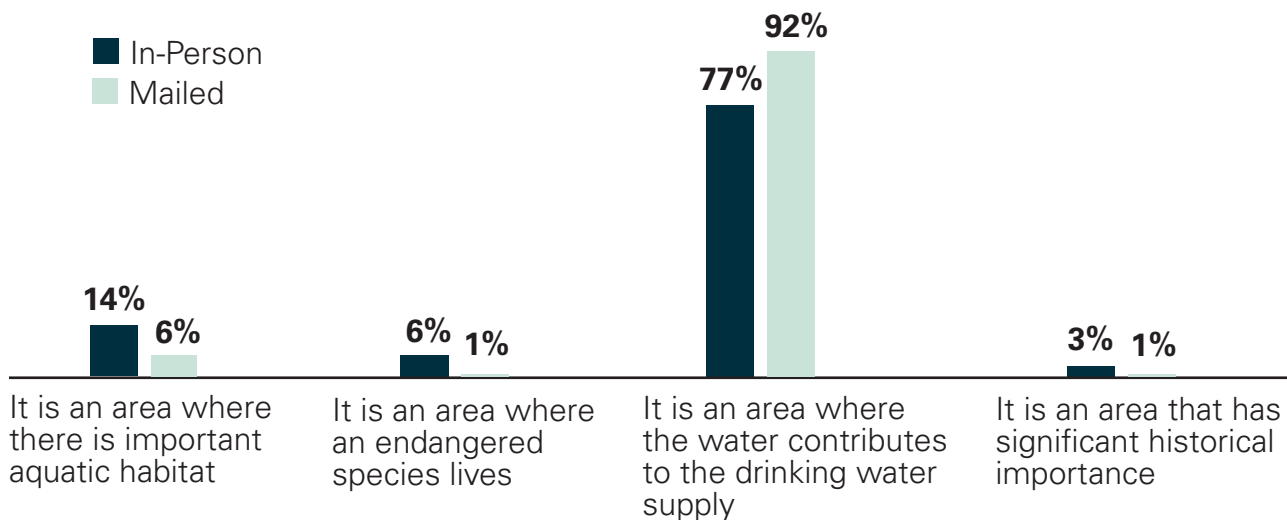
## What is the primary source of drinking water in your home?

(All watersheds)



Survey respondents were asked to identify the primary source of drinking water in their homes. Across all survey responses, 73% reported using a municipal water source and 20% reported using a private well. In addition, 5% of respondents reported using bottled water exclusively, while 2% of respondents did not know where their drinking water came from.

## What is your understanding of the term “source water protection area”?



When asked about their understanding of the term “source water protection area,” the vast majority of respondents (87%) across all watersheds and survey response mechanisms correctly identified this as an area where the water contributes to the drinking water supply.

Interestingly, there was a noticeable difference in responses between surveys completed in-person versus mailed survey. While the majority of respondents did properly identify what a source water protection area is, 77% of in-person respondents answered correctly, compared to 92% of mailed survey respondents. This value from the mailed survey is curiously high for a term that is not typically a part of the common vernacular across the general population.

As discussed earlier, mailed survey respondents may have looked this information up via smartphone, tablet, or computer—the mailed survey could be compared to an open-book take-home test with no time limit. Again, with this question, the in-person survey responses may provide a more accurate snapshot of the general public's actual understanding of source water protection.

## Conclusions

Just how effective are creek signs in educating lowans about the local water bodies around them? This multi-faceted assessment found that while creek signs help to reinforce interest in and guide people in making connections with prior learned knowledge of local water bodies, signs alone cannot be directly tied to increased awareness or action.

While survey respondents largely agree that watershed creek signs are an effective educational tool, and over three-quarters of respondents are concerned about local water quality, the presence of creek signs does not appear to be directly linked to any major advances in lowans' understanding of watersheds nor specific awareness of their local water bodies.



Yet creek signs are still an important piece of the puzzle in watershed education and outreach. Perhaps the conversation around creek signs should be reframed, with these signs viewed as performance support tools. Commonly used in the business and education sectors, performance support tools help employees and students bridge the gap between knowledge acquisition and application of that knowledge (think step-by-step checklists, flash cards, etc.). Creek signs are often taken for granted. Yet, if sign viewers had a previous educational experience where they learned about the water body, seeing a roadside or trailside sign can draw their attention and reconnect them to that prior knowledge, and this is supported anecdotally via the watershed coordinator interviews as well.

The combination of seven watershed coordinator interviews and 632 survey responses do not provide the project team with conclusive evidence that creek signs improve Iowans' awareness of and action towards local water bodies around them. Yet signage is largely viewed in a positive light across the state.

Respondents also expressed preferences towards signage that includes not only the water body name, but also the watershed name, or alternatively, identifies the water body as a drinking water source, when applicable. Interestingly, female respondents preferred the signage that includes "drinking water source" language. Yet female respondents lagged behind male respondents in their concerns about local water quality—there are clearly opportunities for education and outreach here to help folks better make connections between land management practices, quality of local water bodies, and drinking water that comes out of the tap.

While the responses to the effectiveness of signage in raising the bar on watershed awareness are perhaps disappointingly inconclusive, the comprehensive scope of this community assessment study nevertheless paints a representative picture of the work that still needs to be done statewide in watershed education and outreach.

## **Further Studies and Outreach**

This study reveals some differences between male and female respondents when it comes to what they would like to know beyond the name of their creek or river. Male respondents preferred to know the watershed name and female respondents preferred to know if the water body was a source of drinking water. Research is needed to further understand if men and women have different concerns when it comes to water bodies and drinking water quality. This could impact the way that outreach, education and creek signs are designed.

Instead of asking how to better assess the effectiveness of creek signs, maybe a more important question is how to better engage people to care about water quality throughout Iowa. Creek signs are more powerful support tools when accompanied by creative and engaging comprehensive outreach and education.