

STRAIGHT LINES

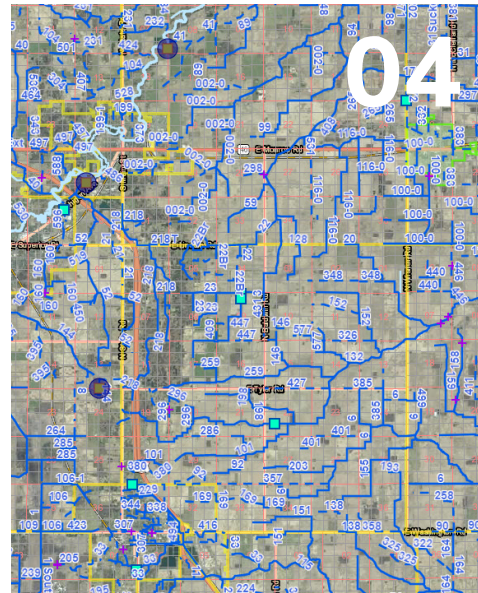
Fall 2021



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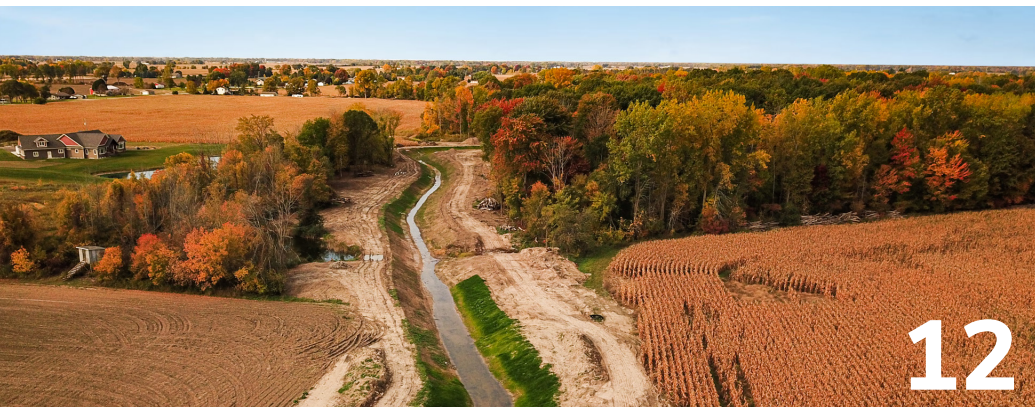
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New Hires at SPICER GROUP

Melissa Anderson: Melissa was recently hired as a Receptionist in our Saginaw Office. She previously worked for SVRC Industries and acquired more than 100 hours of volunteer work with the Saginaw County Protection Council.

Mark Borden: Mark recently joined our Municipal Group as a Senior Client Manager. He previously worked for Carson City as the City Administrator. Mark earned his Bachelor's in Business Administration from Clearwater Christian College and his Masters of Business Administration from Tampa College.

Hugh Dickie, P.E.: Hugh was recently hired as a Project Engineer in our Structural Group. He earned his bachelor's degree in Science and Civil Engineering from the University of Michigan and has more than 40 years of engineering experience.

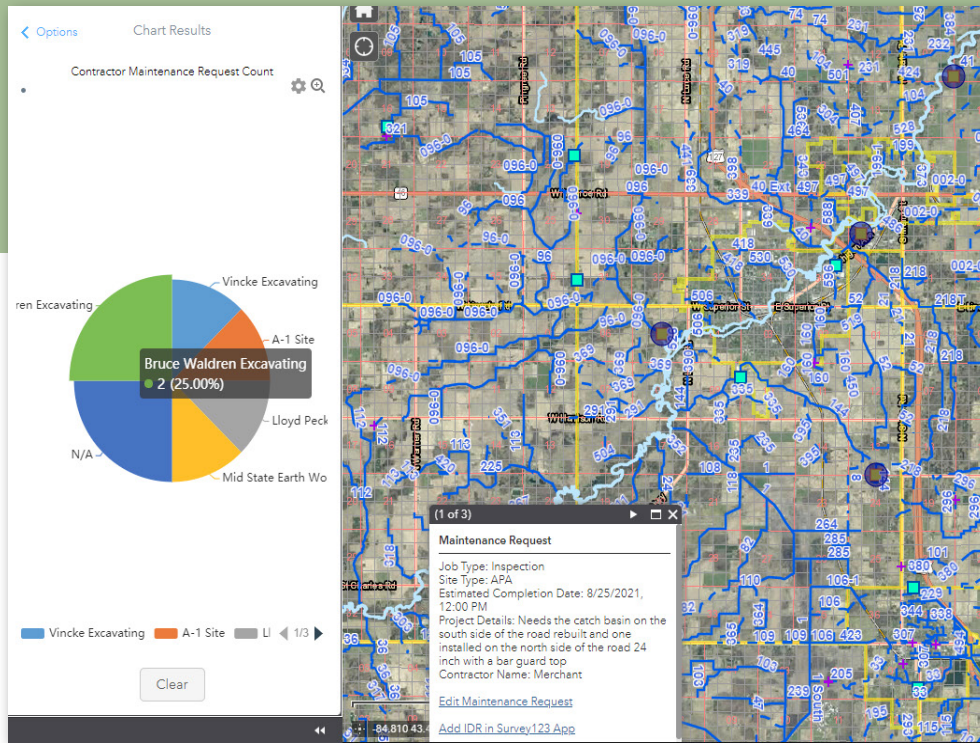
Jeramiah Harrington: Jeramiah recently joined our Survey Group as a CAD and LiDAR Technician. He earned his bachelor's degree in Outdoor Recreation Leadership and Management from Northern Michigan University and his master's degree in Integrated Geospatial Technologies from Michigan Technological University. He also has his graduate certificate in college teaching from Central Michigan University.

Andria Pakkala: Andria recently joined our Construction Services Group as a Construction Services Technician.

Darrin Wilson, Jr.: Darrin recently joined our Survey Group as a Project Surveyor. He is currently in the process of earning his bachelor's degree from the University of Maine.

Harrison Zuchnik: Harrison was recently hired as a Survey Technician in our Survey Group. He earned his bachelor's degree in Fisheries and Wildlife Management and GIS from Lake Superior State University.

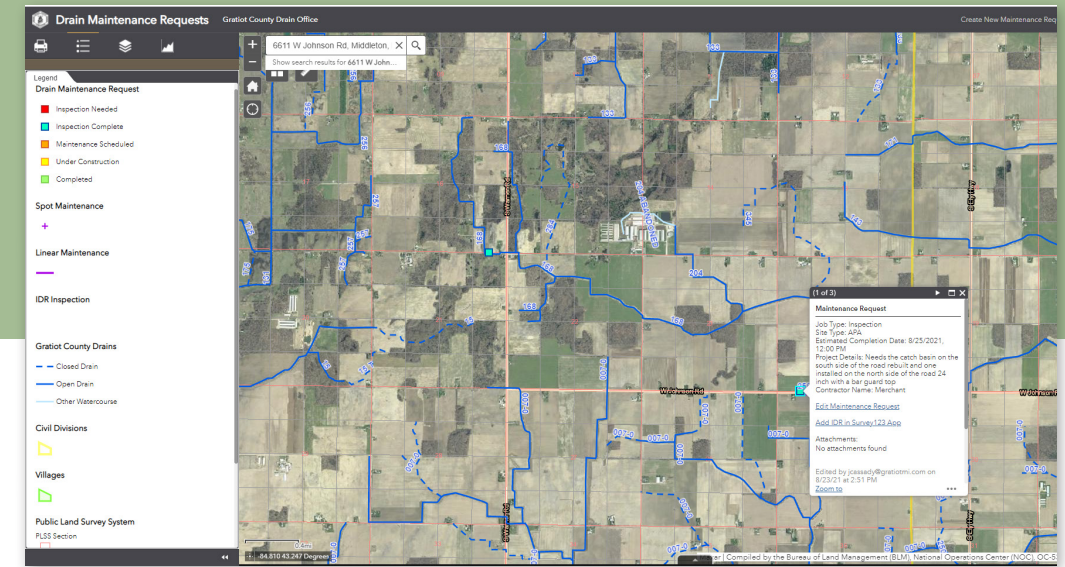




Request Focused Maintenance

After a brief meeting between Barnes and Clever, the following capabilities were identified as crucial to the success of the adoption of the new system:

- Connect all work to a drain number and individual maintenance request
- Document phone calls
- Record field investigations
- Create report to send to contractors to perform work
- Record inspections of construction work
- Create reports of inspections and save to drain files



Subcontracting Maintenance

Previously, one of the most time-consuming tasks in the office was to compile all the documents and photos related to the maintenance request and package it into a document that could be sent to contractors. Now, with Survey 123 reporting the prior phone calls, field investigation can be bundled and exported to either PDF or Word documents and sent to the contractor.

In heavy construction months, the drain office may want to check on which contractors they have currently working on jobs. A simple pie chart shows which contractors are currently under contract.

Construction Inspection

Performing construction inspection was another process that used to take extra time in packaging up photos and notes to form individual IDR reports. Again, using the Survey 123 reporting tool, these inspections are printed to PDF or Word as a final monument of the work that was done on the job.

Forecast – Cloudy

Although Gratiot County had been using ArcGIS desktop for years, the online GIS aspect of the platform had formerly been either too limited or too reliant on accessory server tools to really be an option. It has been nearly 10 years since ArcGIS online was released. Survey 123 as a platform is even newer, having been released in 2015 and the reporting tools in 2019. Creating reports from field-collected GIS information had been something that required ArcGIS Enterprise. At the pace that ESRI keeps adding functionality, it serves drain offices well to stay tuned to what features might come next.

ESRI's Survey123 was identified as the optimal platform to achieve all these objectives as the tool is multiplatform capable, modifying reports is quick, and most importantly it is included with the existing maintenance package for users of ArcGIS Pro, which the drain office already had.

Recording the phone calls, or office visits requesting maintenance is a vital step in supporting the decision to perform work on a drain. Now, using a web app on their desktop, office staff log new phone calls directly to maintenance requests using the Survey 123 webpage. With this map-centric workflow, office staff can decide whether follow-up phone calls and additional conversations can be logged as new maintenance requests or appended to existing requests.

Field Investigations

Once created, new maintenance requests are made available for review in the field using the Survey 123 phone app. Being filtered by a status of "Inspection Needed," this app acts as a live to-do list for field investigations. Also, by utilizing an inbox, Survey 123 can operate completely offline and allow users to upload work later when they have internet.

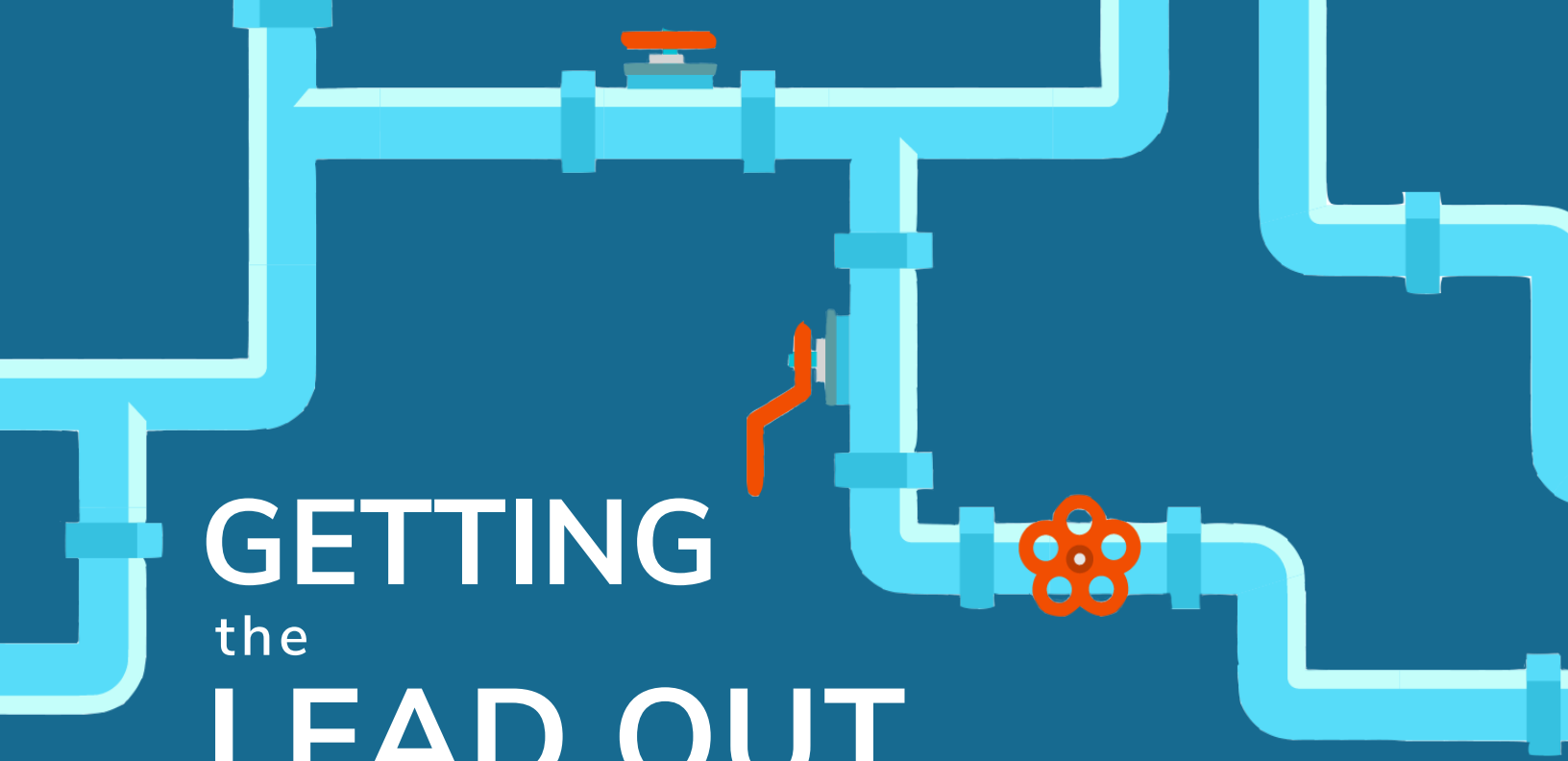
While the maintenance request is a beginning point for the investigation for problems in the field, the actual proposed maintenance is mapped and photographed on related points and lines to specify what work is required to solve the problems in the field. Recording maintenance on a separate layer allows for more comprehensive instructions to be sent to the contractor.

Gratiot County Maintenance Requests: From the Phone to the Field Using ESRI Survey123

In Gratiot County the expanses of corn, soybeans, and sugar beets are underpinned by 1270 miles of county drain. Supporting this network of drains, Drain Commissioner Bernie Barnes oversees a staff of four: Chief Deputy Carol Siggers, Project Manager and Deputy Joe Sherwood, Assessment Clerk and Deputy Jennie Bollinger, and Deputy Emma Hansen. Barnes relies on Joe Sherwood to provide boots-on-the-ground field investigation and inspections.

UNTIL THIS YEAR, keeping track of phone calls, field investigations and subsequent drain maintenance relied heavily on paper reports and phone calls. Hansen and Bollinger used to receive phone calls from landowners then log the call to a paper maintenance request, and Sherwood would have to either retrieve the maintenance request from the office or receive a phone call directing him to urgent problems.

This workflow required hours of driving to and from the drain office located in the city of Ithaca. Field inspections were logged on paper forms while pictures were taken with phones or cameras requiring back-office post processing to prepare finalized inspection reports. The drain office had been using desktop ArcGIS software for years to review drain jurisdiction, right of way, and maintenance history. With COVID-19 necessitating the ability to decentralize from the office, Barnes knew there had to be a better way of utilizing this GIS and managing maintenance requests. He called Max Clever, P.E., P.S., at Spicer Group to provide a solution that utilized his existing ESRI licenses.



GETTING the LEAD OUT

CITY OF SAGINAW - The City was recently awarded \$4.5 million from the state to aid in a long-term project to remove and replace drinking water lead service lines throughout the City.

SPICER GROUP aided the City in applying for this funding, which came from the Michigan Department of Environment, Great Lakes, and Energy (EGLE), through the Drinking Water State Revolving Fund (DWSRF).

Saginaw was one of 37 communities throughout the state to receive \$102 million in combined principal forgiveness loans from EGLE to disadvantaged communities who were undertaking lead service line removal projects. This funding is being given to municipalities in the form of a loan where the principal amount is forgiven.

Since 2019, Saginaw has implemented a program to replace all lead service lines throughout the City's drinking water system. This

was in response to newly enacted laws from the state of Michigan that enhanced drinking water requirements and mandated the removal and replacement of lead service lines in all municipalities.

The City provides drinking water to over 18,000 active water customers', of which 17,100 of these are estimated in need of replacement because of lead service lines. The \$4,500,973 in awarded funding will be used to replace an estimated 1,000 of these lead service lines. The project will be taking place over the next three years.

To pay for the removal and replacement of all the lead service lines in Saginaw, a flat rate fee was added to customers' monthly water bills. Since that time, the City has pursued

additional funding sources – like the EGLE funding – to help pay for lead service line replacements and lessen some of the financial burden placed on the customers.

In October of 2020, when the State announced funds would be available through the Michigan Clean Water Plan, Saginaw immediately began the application process to obtain funding as a disadvantaged community. Spicer Group assisted the City with developing the application and designing the necessary project parameters required by the State to qualify for the money.

Jennifer Garza, P.E., the project manager for Spicer Group, said the comprehensive application required a defined project area, service plan, project plan, construction plan, construction area, population and income information, maps, and other information.

“This funding represents at least a year and a half of effort by the City and Spicer Group,” Paul Reinsch, Director of Water and Wastewater Treatment for the City of Saginaw, said. “It’s rewarding that our efforts have paid off and we will receive this money. We understand the importance of clean safe drinking water for public health, and we want to maximize the benefit our community receives from these funds.”

This funding will not only help lessen the additional fees that appear on customers' bills, but also shorten the amount of time it takes to replace the lead service lines within the City's system.

The City has been replacing lead service lines to active customers as the funding becomes available through the water bill fees internally, and Spicer Group has also assisted the City with incorporating the replacement of lead service lines during any new road construction projects happening within the City.

Construction on the removal and replacement of drinking water lead service lines using the awarded funding from the state is expected to begin in 2022.

“This highlights the commitment of our Water Treatment staff to protect public health and improve the quality of life in Saginaw,” Saginaw Mayor Brenda F. Moore said. “The funding from the Michigan Clean Water Plan will help move the City of Saginaw forward and lay the groundwork for growth and resiliency for generations to come.”



“

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”

-Paul Reinsch, Director of Water and Wastewater Treatment for the City of Saginaw

INGHAM COUNTY WAYFINDING



Near the banks of the Red Cedar River, a brand new bright blue wayfinding sign with bold white letters spelling out “Krueger’s Landing” stands tall. This trailhead sign displays a map, rules, and amenities available on the Lansing River Trail, which runs through Krueger’s Landing Park.

This sign, along with more than 300 others, were recently installed on trails throughout communities within Ingham County as part of the first phase of the Ingham County Parks Trail Wayfinding System project.

Ingham County is home to multiple parks and trail systems that are operated not just by the county, but by other municipalities within the county. Paved and unpaved trail routes circulate along the rivers, roads, and through natural areas around the communities, offering recreation and alternative transportation opportunities to residents. In 2016, voters approved a millage that supports the development of a county-wide regional trails and parks system. The millage was renewed in 2020 and raises an estimated \$4 million per year.

In 2017, Spicer Group was hired by Ingham County Parks to provide professional planning and consulting assistance for the county’s trails and parks system. Part of that job included developing a comprehensive wayfinding plan for trails within the county.

Tim Morgan, the Parks and Recreation Director for Ingham County, said wayfinding and signage was identified as a high priority throughout the regional trail system. Tanya Moore, PLA, the project manager for Spicer Group, said the reason a trail wayfinding system is necessary is to make it easier for users to navigate and have a sense of place along the trails.



“The reason a trail wayfinding system is necessary is to make it easier for users to navigate and have a sense of place along the trails.”

-Tanya Moore, PLA
Spicer Group Project Manager

“Imagine yourself on a highway in Michigan, without having any signs and trying to figure out where you are and where you need to go,” Moore said. “A trail without a wayfinding system is kind of the same thing.”

Working with Ingham County and stakeholders from invested communities, organizations, and individuals around the county, Spicer Group gathered input through a series of meetings where discussions centered on what the wayfinding system’s mission was, what information to include in the system, and how that information would look and be displayed on the signage. After nearly a year of these discussions, with that input in hand, Moore said a plan was developed and approved.

Each community within Ingham County was given the chance to participate in the first phase of the trail wayfinding project. Along with the county, the other communities that chose to participate were Aurelius Township, the City of East Lansing, the City of Lansing, the City of Leslie, Delhi Township, and Meridian Township.

These communities did an initial evaluation to determine the total number of signs they would need, and that number totaled more than 300 signs.



were developed, and each community was responsible for providing their sign information on these forms. Spicer Group collected, deciphered, and compiled all this information.

“There are three main types of signs used within the system,” Moore said. “A trailhead sign, is a bigger sign with a map and rules; a trailblade, is a directional type of sign, showing which way points of interest are located; and a mile marker, showing the length traveled along the trail.”

A fourth type of sign, an on-road sign, was used in Aurelius Township to connect to other community’s trail systems and parks.

While each different type of sign – trailhead, trailblade, and mile marker – has similar colors and layouts used for the entire system, each sign has different information. Once all the information was collected, there were over 300 different signs for the project.

“Imagine yourself on a highway in Michigan, without having any signs and trying to figure out where you are and where you need to go...A trail without a wayfinding system is kind of the same thing.”
 - Tanya Moore, PLA
 Spicer Group Project Manager

“We were excited in the participation level of the first phase,” Nicole Wallace, the Ingham County Trails and Parks Millage Coordinator, said. “We have already had four new communities express interest in participating in the next phase, and we would anticipate even more involvement with other communities as we move along.”

The communities were responsible for deciding which types of signs they needed for their trails, where those signs would be located, and provide the information to be displayed on the signs. Spicer Group and Ingham County worked with each of these communities to ensure consistent information would be received. A form and instructions

“The unique thing about this system is the sheer size of it,” Moore said. “This first phase was over 300 signs. It was massive. It was not just an elephant; it was a herd of elephants.”

Another interesting item included on this project is tying it into Ingham County’s 911 GIS system. Each mile marker along the trails is given a

unique address number. This not only allows a trail user to measure their distance traveled, but also gives better location information for a user in need of emergency services.

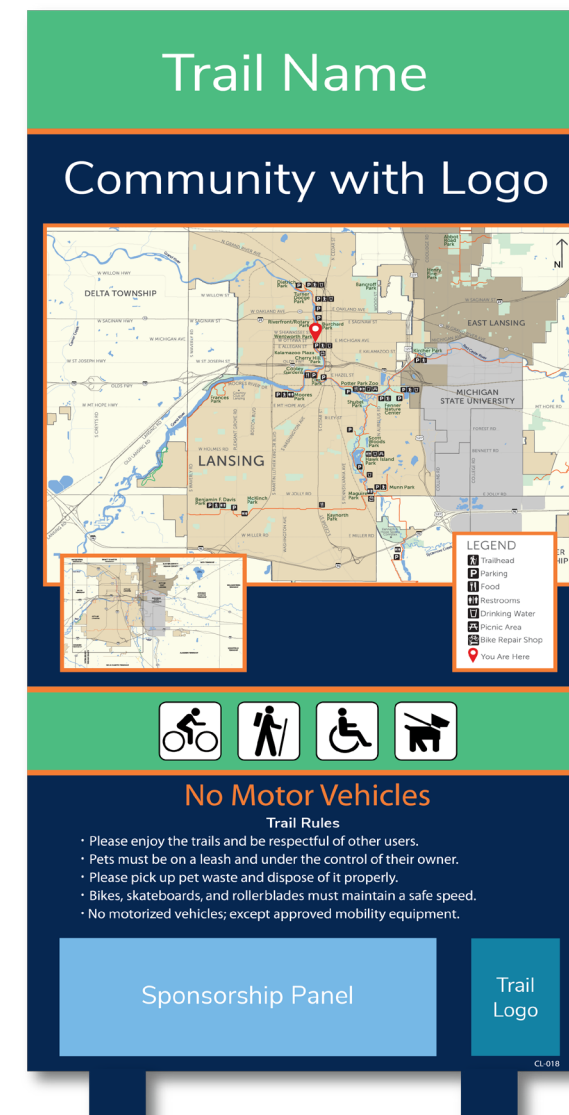
Moore and the team at Spicer Group, along with the county and each community, verified the information on each sign before placing that information within the approved design for that sign type, even using GIS to develop the maps to be displayed on the signs. Morgan said that Spicer Group was diligent about the details.

“That is a must when developing nearly 300 individual signs throughout the wayfinding system in phase one,” Morgan said.

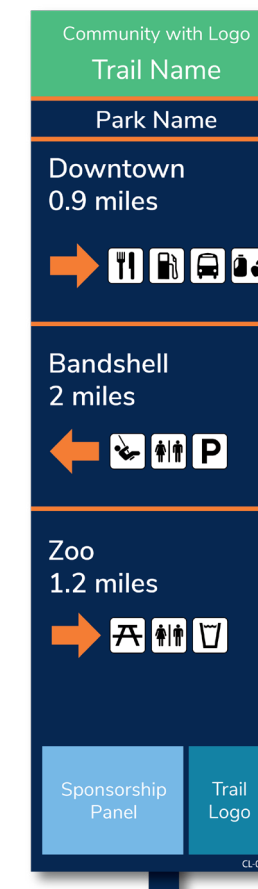
Signs were constructed and installed throughout the spring and summer of 2020. Wallace said the feedback from trail users and the stakeholders involved has “been nothing but positive.”

In August of 2021, Ingham County Parks and Spicer Group were selected to receive a 2021 National Association of County Park and Recreation Officials (NACPRO) Trails & Corridors Class I Award for the Trail Wayfinding System.

“It is nice to be recognized nationally by peers with all the hard work that was put into it by our local entities, our staff at the Ingham County Parks, and Spicer Group,” Morgan said.



TRAILHEAD



TRAIL BLADE



MILE MARKER

An aerial photograph showing a newly constructed drainage ditch in a rural landscape. The ditch is a narrow, straight channel of water, flanked by earthen banks. To the left of the ditch is a large, open field of brown, harvested corn. To the right is a field of standing, golden-brown corn. In the background, there are trees with autumn foliage in shades of orange, yellow, and green. Further back, a residential area with houses and a small pond is visible under a clear blue sky.

Improvements to WALDO DRAIN

IN LATE JUNE OF 2017, while the rest of Michigan was enjoying mild temperatures and cloudy summer weather, the Great Lakes Bay Region was enduring extreme storms. While the frightening thunder, lightning, and wild wind gusts were enough to make the storm memorable, nobody was prepared for the extensive rainfall that left many residents, like the ones in Larkin Township, significantly impacted by the historic flooding and water damage.

Larkin Township is located in the northern part of Midland County and is home to over 5,000 residents. It is one of many communities affected by the large storm events in 2017.

Many properties within Larkin Township experienced extensive flooding. These properties needed drainage improvements to help capture and drain the water, especially in the spring when much of the runoff occurs. This led to a petition being filed by Larkin Charter Township with the Midland County Drain Commissioner in March 2018, for the renovation of the Waldo and Branches Intercounty Drain, which is the backbone of the drainage system collecting the storm water throughout multiple municipalities in both Midland and Bay Counties. The Waldo and Branches Intercounty Drain was in need of maintenance to help prevent community-wide flooding from occurring again and also provide an outlet for future drainage systems.

The Waldo Drain, which was constructed in 1905 for agricultural and residential purposes to help minimize flooding, stretches just over 20 miles from the Kawkawlin River in Beaver Township in Bay County northwest into Larkin Township in Midland County. There are 123 drain crossings throughout the 20 miles of open drain and a watershed area of 26,672 acres. It also serves a total of 2,200 parcels of property with 1,156 of those parcels being in Bay County.



“Waldo Drain starts off as a very large open-channel drain surrounded by agricultural land and as you get closer to Larkin Township, where it is more urbanized, the drain branches off into many smaller open channels that are connected to the main branch.” Spicer Group project manager, Nick Czerwinski, P.E., said.

In May of 2018 a Hearing of Practicality was held which featured testimony of poor drainage and flooding. Many community members were present to voice their concerns about the continuous flooding of their neighborhoods. After the significance of the problem was addressed, it was then determined to move forward with an engineering evaluation of the Waldo and Branches Intercounty Drain.

Spicer Group was hired that same month to perform a condition survey which consisted of inspection of the drain and all of its features. This included identifying elevation of drain channels, and depth of sediment at each drain crossing along with size and material of the culverts. The survey identified areas with heavy sediment build up, log jams, standing water and vegetation obstructions. It was concluded that the drain would need clearing, excavation, and cleanout of the channels, along with erosion control and improvements to drain crossings and road shoulders.

After the topographic survey and preliminary engineering was complete, Spicer Group presented these findings at a Hearing of Necessity on June 17th, 2019. It was concluded that a project was necessary

and construction of the Waldo Drain project would move forward. Spicer Group was hired to perform final engineering, design, and construction administration work for the project.

Spicer Group surveyors conducted a topographical survey which looked at the drain and all elements within 50 feet of it. This was crucial for designers to create the plans for the restorations needed which included the replacement of many culverts and widening of the drainage channel.

The construction work on the drain is being provided by Bilacic Trucking. This includes the installation of concrete box culverts, corrugated metal pipe arches and HP storm pipe.

The project team selected a two-stage channel design as opposed to a more conventional trapezoid shaped channel.

This gives the channel a larger cross-sectional area which helps to prevent flooding and reduce erosion.

SPICER GROUP WAS HIRED TO PERFORM FINAL ENGINEERING, DESIGN, AND CONSTRUCTION ADMINISTRATION WORK FOR THE PROJECT.

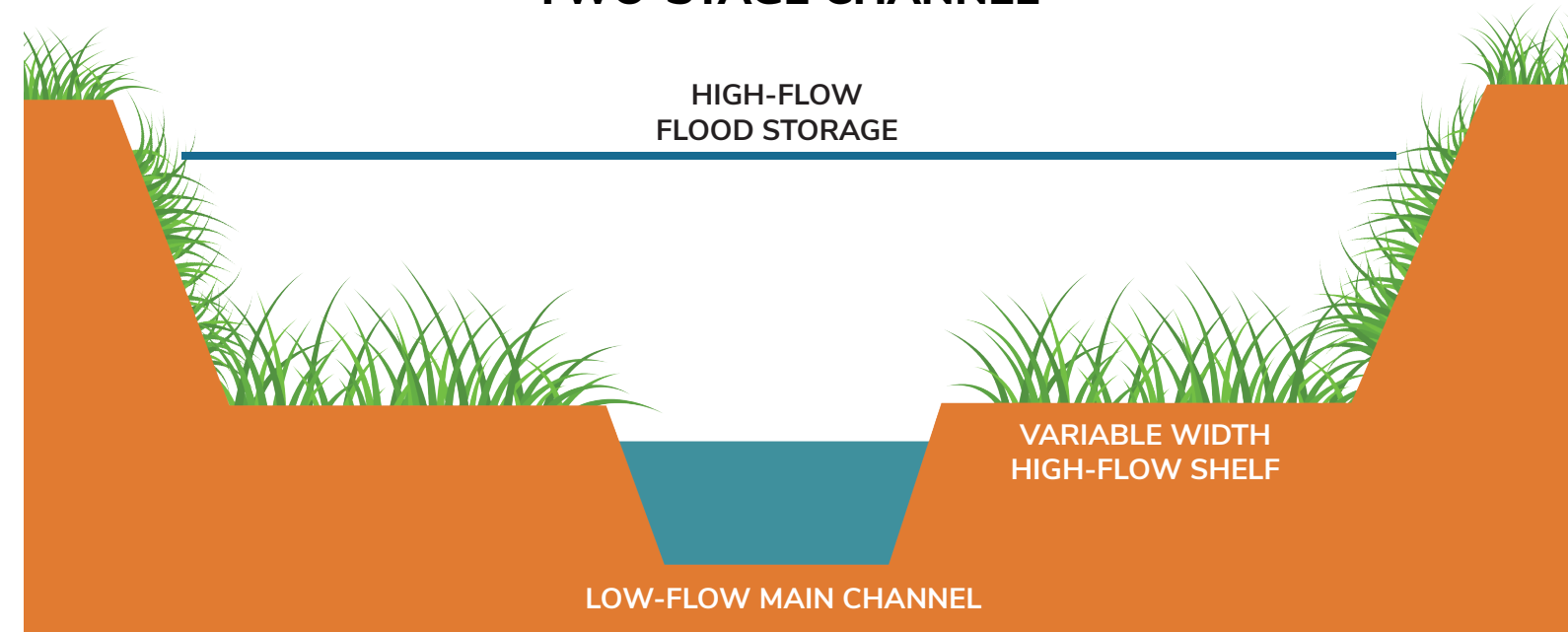
The two-stage channel design relies on a narrow and shallow low-flow channel centered between two “shelves” or “benches”. Day-to-day flows stay concentrated in the low flow channel keeping velocity high enough so that sedimentation in the drain bottom is reduced. During a larger event the water spills out onto the shelves on the second stage which slows the high-flows down to prevent erosion of the channel banks.

The implementing of a two-stage channel is also a great cost saving measure when space is available. It allows for less use of hard armoring in erosion-prone areas due to the design. It also allows for a reduction in maintenance costs due to the reduced rate of sediment accumulation associated with the design.

The project costs totaled roughly \$5.4 million and is expected to be completed in Spring of 2022. As the next storm rolls through the Township residents will be calmer knowing flooding has been mitigated.



TWO-STAGE CHANNEL



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