

CELEBRATING

75

YEARS

STRAIGHT

LINES

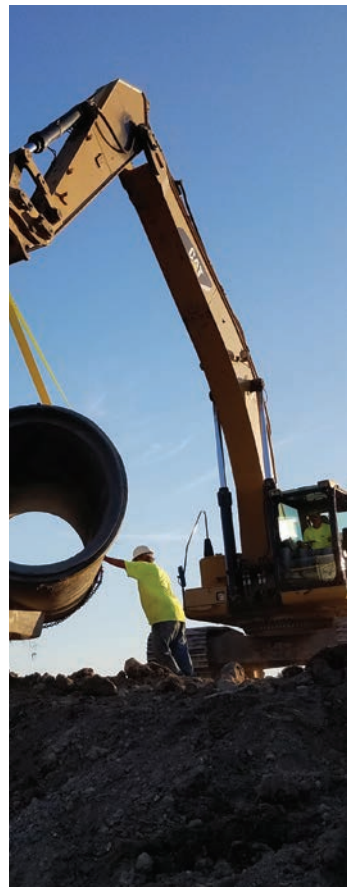
SPRING 2019

75 YEARS
Spicer
group

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JERRY GRIFKA: Jerry joined our Spicer Group team as a Technician for the Municipal Group in our Saginaw office. He comes to us with more than four years of experience in AutoCAD.

RYAN ESTERLINE: Ryan joined our Spicer Group team as a Construction Services Technician in our Saginaw office. He comes to us with two years of experience as an Underground Utility Locator fromUSIC.

JAMIE JOHNSON: Jamie joined our Spicer Group team as a Construction Services Technician in our Saginaw office. He comes to us with 19 years of experience as a locator, trainer, and supervisor fromUSIC.

JOHN ROSIN: John was recently hired in as a Construction Services Technician in our Dundee office. He has his bachelor's degree in Engineering Technology from the University of Toledo and has 24 years of construction experience.

TYLER HILL: Tyler was recently hired in as a Construction Services Technician in our St. Johns office. He has his Construction Management degree from Lansing Community College and has two years of construction experience.

JOHN HEUPEL: John recently joined our Spicer Group team as a Municipal Services Technician in our St. Johns office. He studied at Western Dakota Technical Institute and comes to us with more than six years of experience.

TRAVIS VAN ALST: Travis was recently hired as a Construction Services Technician in our Saginaw office. He is currently attending Delta Community College for Aided Drafting.



Spicer Group Construction Inspector Mark Goss takes a moment to explain to some 8th-grade students how a new water main is installed.

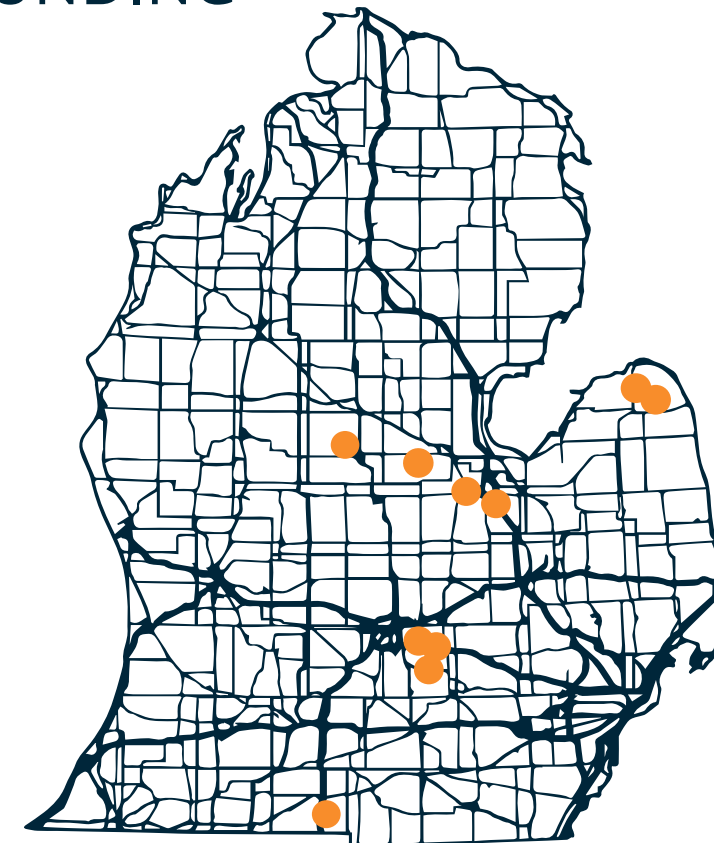
RECREATION GRANT AWARD PROJECTS

2018



SPICER GROUP HELPS COMMUNITIES RECEIVE \$2 MILLION IN GRANT FUNDING

CITY OF BAD AXE - SPLASH PAD	LAND & WATER CONSERVATION FUND	\$139,700
BRANCH COUNTY - MEMORIAL PARK IMPROVEMENTS	LAND & WATER CONSERVATION FUND	\$135,000
JEROME TOWNSHIP - WEST RIVER ROAD PARK	LAND & WATER CONSERVATION FUND	\$146,000
INGHAM COUNTY - BURCHFIELD PARK	LAND & WATER CONSERVATION FUND	\$256,500
INGHAM COUNTY - LAKE LANSING PARK SOUTH	MNRTF DEVELOPMENT GRANT	\$300,000
INGHAM TOWNSHIP - FREER PARK IMPROVEMENTS	LAND & WATER CONSERVATION FUND	\$150,000
KOCHVILLE TOWNSHIP - KOCHVILLE PATH	MNRTF DEVELOPMENT GRANT	\$300,000
TITTABAWASSEE TOWNSHIP - TITTABAWASSEE PATH	MNRTF DEVELOPMENT GRANT	\$300,000
ISABELLA COUNTY - COLDWATER LAKE PARK	RECREATION PASSPORT GRANT PROGRAM	\$150,000
UBLY - VETERAN'S MEMORIAL PARK IMPROVEMENTS	RECREATION PASSPORT GRANT PROGRAM	\$150,000



In 2018, Spicer Group professionals assisted nine communities across Michigan with successfully writing 10 different grant applications, totaling more than \$2 million that will help make recreation projects a reality. The grants were funded through three different Michigan Department of Natural Resources (MDNR) grant programs: the Michigan Natural Resources Trust Fund (MNRTF), the Land and Water Conservation Fund (LWCF), and the Recreation Passport Grant program. Since 2011, Spicer has written more than 70 successful MDNR grant applications.



BAD AXE SPLASH PAD DEVELOPMENT
City of Bad Axe, Huron County

A LWCF Grant of \$139,700 will help develop a splash pad, pathway, parking, and park amenities at the City of Bad Axe's 8-acre Skate Rink Park. The park is eight acres, has an existing in-line skate rink, and a grassy, open play space. The improvements will be universally accessible and include a walking path north of the proposed splash pad that will connect to the Bad Axe Walking Trail.



BURCHFIELD PARK IMPROVEMENTS
Ingham County

A LWCF grant of \$256,500 will help provide accessibility improvements throughout the 540-acre Burchfield Park. The project includes renovating the existing park's walkway and parking areas to connect facilities within the park for people of all abilities. It also includes restroom improvements for accessibility and improvements to an accessible canoe/kayak launch along the Grand River.



KOCHVILLE TWP TRAIL EXTENSION
Kochville Township, Saginaw County

This \$300,000 MNRTF grant will fund a project to extend the existing non-motorized Kochville Township Multi-Use Path 2.1 miles westward to Tittabawassee Township. This trail is part of the Great Lakes Bay Regional Trail that is planned to connect Bay City, Midland, and Saginaw. It will be located within a Consumers Energy easement, where the existing path is located and will be universally accessible.



COLDWATER LAKE FAMILY PARK CAMP-GROUND IMPROVEMENTS
Isabella County

This project was awarded a \$150,000 Recreation Passport grant to help provide campground improvements to Coldwater Lake Family Park. The improvements will include new and reorganized campsites to provide pull-through sites to accommodate campers' rigs. Improvements will also include new gravel drives, electrical upgrades, and new water supplies at the sites.



MEMORIAL PARK IMPROVEMENTS
Branch County

Branch County was awarded a \$135,000 LWCF grant for the construction of a new, universally accessible bathroom building and changing area near the Messenger Lake beach in Memorial Park. With the project, three exterior changing stalls will be added on the outside of the building, along with a combination shower and drinking fountain. A pathway will be constructed to connect the bathroom to other nearby amenities at the park. Benches and shade trees will also



LAKE LANSING PARK SOUTH IMPROVEMENTS
Ingham County

An MNRTF grant in the amount of \$300,000 will be used to improve the dock at Lake Lansing Park South on Lake Lansing. The project will replace the existing floating pier, which is over 20 years old and is the only public fishing dock on Lake Lansing. The new dock will also provide boat slips for boaters to come to the park and surrounding businesses, and boat slips for the pedal boat rentals at the park. The project will provide improved walkways within the park, add solar lighting to the new dock, and provide amenities such as a bench, trash receptacle and an interpretive sign. The improvements will benefit people of all abilities to access the park and lake for fishing, viewing, and boating.



FREELAND-KOCHVILLE PATH EXTENSION
Tittabawassee Township, Saginaw County

This \$300,00 MNRTF grant will fund the extension of the existing multi-use path in Freeland that is part of the Great Lakes Bay Regional Trail. The 2.4-mile extension begins at the pavilion in the rear of the Sports Zone property and travels eastward to Garfield Road, heads south, then crosses into a Consumers Energy easement, heading eastward to connect to the Kochville Township portion of the path. The trail will be 10-foot-wide and include a bike rack and interpretive sign at the trailhead.



VETERAN'S PARK IMPROVEMENTS
Village of Ubly, Huron County

The Village of Ubly was awarded a \$150,000 Recreation Passport grant to help renovate the existing pavilion at the park and develop a walking path through the park and the adjacent property. The pavilion renovation will include ADA-accessible restrooms, new structural elements, an updated exterior, and a universally-accessible pathway to connect the pavilion to the existing parking lot. The new park pathway will be universally accessible, follow the edge of the park property, and cross the Cass River to connect into the adjacent property.



WEST RIVER PARK DEVELOPMENT
Jerome Township, Midland County

Jerome Township was awarded \$146,600 in LWCF grant funds for a project to develop the West River Road Park to include a multi-use path and tennis/pickleball courts. This will be the Township's first public park, and other amenities will include benches, trash cans, and an informational sign. The universally accessible path will allow for a walk through the woods with minimal disturbance to the wetlands in the area.



FREER PARK IMPROVEMENTS
Ingham Township, Ingham County

This LWCF grant for \$150,000 will help develop new soccer fields, a ballfield, a walking path, and parking lot at the recently-acquired land in Ingham Township called Freer Park. This is a 15-acre piece of land that was acquired by the Township for their first park.

The Michigan Natural Resources Trust Fund projects provide for natural resource protection and outdoor recreation. In 2018, the MNRTF awarded more than \$18 million in grants and since beginning in 1976, it has awarded more than \$1.1 billion.

The Land and Water Conservation Fund provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities. In 2018, the LWCF awarded more than \$3.2 million in grant funding.

The Recreation Passport Grant program provides funding to local units for the development of public recreation facilities. This includes the development of new facilities and the renovation of old facilities. Since 2011, the program has awarded more than \$8 million in funding.

LIGHTHOUSE CREEK DRAIN

EXCELLENCE THROUGH *INNOVATION*

CITY OF NEW BUFFALO—The Lighthouse Creek Drain project recently received special recognition from the State of Michigan after winning the Michigan Association of County Drain Commissioner's Innovation and Excellence Award for efforts to eliminate flooding in the City of New Buffalo and protect the local environment.

Signed by State Senator Kim LaSanta, Congressman Fred Upton, State Representative Brad Paquette, and State Representative Pauline Wendzel, the special tribute highlighted Berrien County Drain Commissioner Christopher Quattrin's efforts of ensuring the survivability of natural resources while dealing with flooding issues.

"The efforts displayed by Christopher J. Quattrin exemplify his dedication to the well-being of those in the City of New Buffalo. Not only was the project effective, but it also included thoughtfulness in regard to the surrounding environment. The securing of a natural watercourse as a county drain is the definition of what his award describes: Excellence through innovation," the special tribute said.

One of the most important environmental benefits this project achieved was the reduction of flooding at the City's water treatment plant. The problem was drastic enough that the MDEQ addressed the issue with the City, noting that flood water could

potentially contaminate their water system making it unusable. The efforts incorporated by the design team alleviated this problem by reducing the 100-year flood elevation by nearly eight feet thereby preserving the quality of drinking water for the City.

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"The project team of Spicer Group, Inc., Fahey Schultz Burzych and Rhodes, and the Berrien County Drain Commissioner's office approached the project by looking at the entire watershed to identify areas that could be improved to alleviate the downstream flooding," project manager Al Garibay said. "After completing a hydraulic model of the entire watershed, the project team discovered that a large wetland complex downstream of the water treatment plant could play a major role in reducing the flooding."



Coordinated with MDNR Fisheries Division to restore fish passage and habitat for native species.

850 tons of boulders installed to protect the outlet.



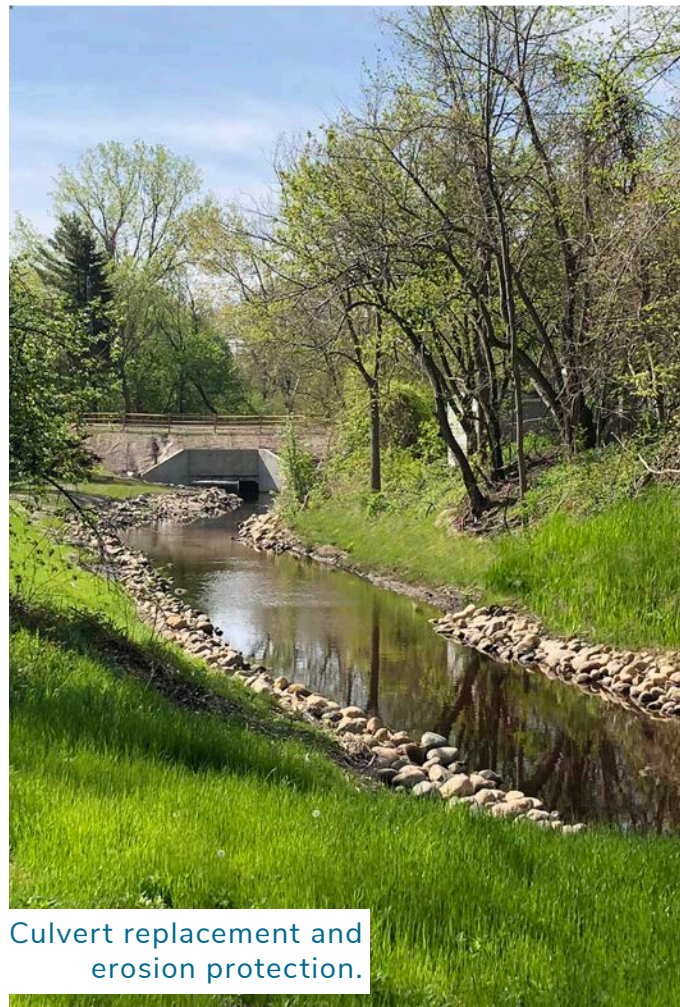
The team also found that water was moving downstream too fast, and there was a major constriction at the culvert area under Water Street. Additionally, the creek's channel downstream from the culvert was eroding severely and impeding the flow of the creek.

"Based on the project team's findings, the City agreed to move forward with establishing a drainage district, and the Berrien County Drain Commissioner held a Board of Determination Meeting where information was presented to the public about the results of the project team's recommended solutions," Garibay said. "These solutions included replacing an undersized culvert under Water Street, stabilizing the channel along the creek, and construction of an earthen berm to protect the water treatment plant."

The project was deemed necessary by the Board of Determination and Spicer Group was commissioned to move forward with providing the final design and construction administration. However, some unique design challenges had to be overcome before the project could be deemed a success.

The Lighthouse Creek Drain flows through a high-quality wetland adjacent to the City's water treatment plant, and preservation of this wetland was an important goal of the project. This led to a design challenge of reducing flood flows while maintaining a high enough level of baseflow to keep the wetland areas hydrated.

This was accomplished by installing multiple check dam structures that step down the base flow levels near the lower end of the wetland, the water level in the wetland during normal conditions is maintained at a height that is healthy for the wetland and its inhabitants, yet not too high to cause damage to the nearby water treatment plant during flood events. Additionally, the check dams were designed to allow for fish passage.



Culvert replacement and erosion protection.

Another design obstacle was the outlet of the Lighthouse Creek Drain at Lake Michigan, which is everchanging. The property located immediately at the mouth of the creek on the north side had experienced major erosion over years from damaging wave action, ice dam formation, and storm flows within the creek. The banks were so severely eroded that the homeowner had large steel I-beam pilings installed as a fence all along the bank to hold back what was left of it.

The design team countered this issue by widening this section of the creek and stabilizing the shoreline. To provide an aesthetically pleasing look to the project, the project team incorporated the use of natural quarry stone boulders weighing approximately six to eight tons a piece as bank stabilization. In total, 850 tons of the boulders were installed over a 170-foot stretch of the creek's bank.

"This was a great project for the area," Christopher Quattrin, Berrien County Drain Commissioner said. "The project eliminated a major flood risk to New Buffalo while sustaining the local environment and protecting the City's drinking water resources."



"THE PROJECT ELIMINATED A MAJOR FLOOD RISK TO NEW BUFFALO WHILE SUSTAINING THE LOCAL ENVIRONMENT AND PROTECTING THE CITY'S DRINKING WATER RESOURCES."

Stone steps were installed to accommodate public access to the beach.

SPICER IN THE SKY



NEW UAV SURVEYING TECHNOLOGY ALLOWS FOR MORE DATA, SAFER MEASURING

On an average day, the City of Midland's Sanitary Landfill accepts 550 tons of waste from every corner of Midland County. There is a continuous stream of vehicles at the facility's Ashman Street gate during operating hours, all waiting to haul in their loads of residential, commercial, and industrial non-hazardous solid waste.

Vehicles bring in various types of material including contaminated soil waste, bags of garbage from homes and restaurants, and construction and demolition debris, and deposit it all into lined, regulated ground cells on the 340-acre property where it eventually crushed down to a third of its size by compactors and then stored. The place where most material

things go to end their lifecycle is constantly alive with activity.

High above all the moving machinery, a small unmanned aerial vehicle (UAV) made by DJI called the Phantom 4 Pro buzzes back and forth over the entire operation. It is operated by Trenten Cameron, a licensed pilot and staff survey technician with Spicer Group, who is using the drone to complete a photogrammetric survey of the landfill property.

Cameron has a calculated flight plan for the drone which will send it flying over every inch of the designated survey area at the landfill.



"The drone is collecting 20 megapixel images every two seconds to ensure a proper photograph overlap," Cameron said. "The drone's onboard GPS then geotags each image to a known position which will allow all of the images to be stitched together into one 3D model."

To continue to hold its licensure with regulatory agencies like the EPA and EGLE, the City of Midland's landfill must perform land surveys and volume calculations quarterly, or on an annual basis. Using a drone to do the survey work allows the job to be done faster, more efficiently, and with greater detail than conventional surveying.

"Traditionally, it would take a survey crew on the ground about a week to survey the whole landfill," Jeremy Dancer, P.S., a staff surveyor with Spicer Group said. "With a drone flying over it, we can now complete the task in less than a day, and deliver 3D models of project sites and extract the required survey data from that."

Dancer said for the Midland landfill job, the 3D model was then further constrained to 24 ground control points (GCPs) that have been accurately surveyed by Spicer Group. The GCPs provide statistically verifiable certainty about the 3D accuracy of the resulting data. This is why it is so critical to have licensed surveyors responsible for mapping data collection, regardless of the collection platform. Surveyors are experts in measurement, and provide quantifiable proof of their results. In this case, independent validation points confirmed the resulting elevation model achieved a room mean square error (RMSEz) of 0.14'.

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Scott O’Laughlin, the Landfill Superintendent for the City of Midland, said the landfill began utilizing Spicer’s drone survey services in 2017, a year after Spicer began offering them.

“Our commodity is air space,” O’Laughlin said. “Knowing how much air space remains is vital to our operation, and drone surveys provide that knowledge.”

The software Spicer Group provides along with the survey data allows O’Laughlin to not only measure distances between points with a click of his mouse, but also calculate how much volume has been consumed in the landfill over a period of time.

The landfill has also used the data and 3D model for improvements, and problem-solving issues on the site as well, O’Laughlin said.

“Normally when I would have a walking survey or topography done, I wouldn’t have online access to the image or that real-time link to the data and the image. Both of those are really helpful to have. It is a lot more efficient to see it on the screen and helps visually to talk about things, not just have a flat drawing on the table. Now we have a photo that we can see, zoom in on, and rotate the 3D image,” he said. “It allows you to do different things and see different data visually.”

Spicer’s drone surveying services allow professionals to move safely and quickly through an active work zone, like the landfill, but also onto other project sites that aren’t as readily accessible.

“From the air, we can capture different vantage points of job sites,” Dancer said. “We can use the drone to go into different areas, like flooded-out zones, which aren’t accessible because of high, rapid waters, but need to be checked for falling infrastructure like dams or levees.”

As technology advances, Spicer Group will continue to provide our clients with the highest-level of technical service, whether it is from the air, on the water, or on land.



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