

Our Mississippi

PARTNERING TO KEEP
AMERICA'S RIVER GREAT

SPRING 2020



Racing a Pandemic

TEAMS FROM ACROSS the U.S. Army Corps of Engineers, including its Mississippi Valley Division, have spent the past several weeks transforming buildings from a roadside hotel to a former newspaper production facility into alternative healthcare centers ready as needed to house patients infected with COVID-19.

In some cases, teams contracted by the Federal Emergency Management Agency (FEMA) completed the transformation in as little as 4½ days, while other larger renovations took from 10 days to a month. The key, officials said, was to meet timelines to the exact minute a bed is needed for a hospital overflow patient in selected major cities.

ABOVE: Work crews gather to begin construction of a 200,000 square foot alternative care facility in Milwaukee. Corps teams and partners had only 10 days to complete the transformation for COVID-19 patients.

"I can't think of a more noble calling for an engineer than to be able to build something to take some of the stress out of the hospital shortages," Corps Commanding General Todd Semonite said, noting that even if all the bed space ends up not being needed, "At the end of the day it's a relatively small cost to be able to have the capability to keep people alive."

How the Army Corps engineered a life-saving solution and quickly built thousands of hospital beds

The Corps has engaged in health care solutions in all 50 states and eight territories. All projects started from standard designs created at the Corps' Huntsville, Alabama, Medical Facilities Mandatory Center of Expertise. Blueprints for transformed hotels, stadiums, convention centers, dormitories and more are then being adapted to specific site and regional needs as the Corps works in cooperation with teams from FEMA, cities, states and the departments of defense and health and human services.

In the Corps' Mississippi Valley Division, engineers and planners have worked with the state of Wisconsin to develop three alternate care facilities: 1) a facility to house COVID-19 positive inmates in an unused building on the campus of an existing Milwaukee County correctional facility (currently under design); 2) an alternate care facility in Madison which consists of the conversion of a multi-purpose arena into patient bays (awaiting construction approval); and 3) a 500-plus patient bay alternate



Our Mississippi River Basin

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“The virus is running toward society every single day. We knew that the sooner we got this up and running, the less chance of someone dying as a result of hospitals not having capacity to treat COVID+ patients.” —Brian Schneider

care facility at the Milwaukee State Fair Park Expo Center (currently open to receive patients).

In St. Louis, Corps teams led the transformation of a hotel to health care facility in just 79 hours; and in Memphis, they created a facility just minutes from an existing downtown healthcare complex with some 400 beds with supplied oxygen, water, bathrooms, nurses’ stations and more. That project is housed throughout four floors of a large concrete building where newspaper presses recently churned out copies of Memphis’s *The Commercial Appeal*.

“This will be another off-the-shelf kind of solution we can have ready to go if the Corps encounters another situation like this,” said Jim Pogue, the Memphis District’s chief of public affairs.

As with other projects, the Corps teams remained agile enough to switch gears, as virus trends did, and, on the fly, change room size or isolation requirements. Some cities have leased the buildings as housing overflow sites for a relatively short term, but Memphis leased the building it’s using for 18 months in case of a virus recurrence, Pogue said. “As the chief said, ‘hope for the best and prepare for the worst.’”

State governors called upon Corps districts like St. Paul, Rock Island and New Orleans to scout spaces and prioritize schools, correctional facilities and convention centers as overflow health care center needs arise, and many of the states opted to do their own building. Bradley Drouant, a senior project manager for the Corps’ New Orleans District, was dispatched to the Louisiana governor’s office of homeland security and emergency preparedness.

The state of Louisiana opted to use its own disaster relief expertise to construct the centers, but it turned to the Corps for its scouting expertise and standard designs, Drouant said.

“The state identified locations under consideration,” he said, “and the Corps teams analyzed how many people each site would hold, how the air handling system would be modified and issues like whether they had backup generators.”

Elsewhere, like in the state of Wisconsin, the Corps helped in more urgent situations like the Alternate Care Facility in Milwaukee.

“I spent 10 years in healthcare and was a healthcare construction project manager, so I did exactly what we’re doing, except I never in my life did it this fast,” said Brian Schneider, a Memphis District project manager assigned to the state of Wisconsin. “We took a 200,000-square-foot arena and converted it into this treatment space in 10 days. Roughly 500 patient bays are installed now, with a nurse’s station, showers, restrooms, oxygen storage tanks with inline oxygen to the patient bays ... It’s the most remarkable thing I’ve ever seen.”

Being able to adapt on the fly, as if on a pandemic-inspired version of an extreme makeover show, was a key to success in Milwaukee and elsewhere. When there wasn’t time to install a complete nurse call system, nurses were given pagers as a nod to speed. “The virus is running toward society every single day,” Schneider said. “We knew that the sooner we got this up and running, the less chance of someone dying as a result of hospitals not having capacity to treat COVID+ patients.”

Similar improvising was done on the scene of the St. Louis District’s hotel-to-health care build at a Quality Inn in Florissant, Missouri. Completing the April build in just 79 construction hours required that design and building happened concurrently. They got so close to the wire that contractors had to bring in five cleaning crews so that each could do the final cleaning on a given floor at the same time.

“We were making changes on the fly: ‘Where can we go to find those? Can we get it from Amazon on time?’” said Tony Jones, chief of the construction branch, St. Louis District, and head contracting officer. “We had the end user on speed dial to understand needs.”

And when the need arose for an isolation wall to separate patients with different severity levels, neither the Huntsville standard model nor medical professionals’ suggestion of a plastic zip wall were feasible or available during the time frame. The compromise became the framing and drywalling of actual walls with line of site offered by off-the-shelf doors with glass inside. As this and other projects were completed on time to treat patients as needed, they also offered lessons-learned models for the rest of the nation.

“Ladies and gentlemen, we are not out of the woods; there’s a lot more to do,” Maj. Gen. Mark Toy, Mississippi Valley Division Commanding General, said at the dedication ceremony of the hotel-to-health care build in St. Louis. “This fight is being done all across the country. What you have done is created a blueprint for success for the rest of the nation.

“Everybody’s trying to figure out when they’ll be at peak, how they can get facilities done quickly. You’ve shown you can do a facility, get it up in less than a week ... Again, I am so proud of this team ...

“Our motto is ‘Building Strong and Taking Care of People.’ It’s a reminder that everything we construct has, at the core, the idea that we are taking care of people.” —K.S.

CLOCKWISE FROM RIGHT: Cubicles are divided, awaiting additional supplies, as the Corps helps to prepare the Milwaukee State Fair Park Expo Center for COVID-19 patients; Maj. Gen. Mark Toy gets an update from staff in one of the motel-turning-patient rooms near St. Louis. The Corps and contractor, Tarlton Corporation, worked with a team of electricians, carpenters and carpet cleaners to transform the space in just 79 hours.

Inspired to excellence—from loss

For one St. Louis contractor, constructing an alternate care facility for COVID-19 patients was decidedly personal

The U.S. Army Corps of Engineers selected the Tarlton Corporation, a long-time St. Louis contractor and experienced builder for medical facilities and the Corps, to transform a Quality Inn into a health care facility in which COVID patients treated at St. Louis-area medical centers might recover. The Corps made the award call mid-afternoon on a Tuesday, just a few hours after Tarlton's sibling owners Tracy Hart and Dirk Elsperman had lost their 83-year-old father Bob—the company leader before them—to complications from COVID-19.

The company would have just 79 hours (working 24-hour shifts) to construct a facility their patriarch would be proud of.

"For us it did feel like Bob had a hand in it," said Laura Lusson, the company's marketing and communications director. "Every project is important for us, but there's never been one like this. There was a whole new level of drive and determination to get it done."

Even the strongest determination would be tested as teams found unexpected mold, carpets damaged by cigarette smoke, disrepair on air conditioning units that couldn't be ordered and only replaced by sending one crew member on a road trip to Indiana. But there were wins, too. Hotel beds could be reused, rooms already had sinks and running water, and the single suite on every floor made for an easy transformation to a nurse's station next to existing supply closets.

Mostly, what stood out in this H2HC (hotel to health care center) national model was teamwork, something Bob's son Dirk told the St. Louis Post Dispatch that his father would have loved. As many as 200 people touched the project, all working with the health care community as client: more than 70 from the Corps of Engineers alone; 50 from Tarlton; another 50 from Tarlton design-build partners Ross & Baruzzini Inc., Rock Hill Mechanical Corp. and Guarantee, Electrical Co.; and workers in the trades from a dozen subcontractors.

"The Big Guy loved how the toughest projects brought people together," Elsperman said of his father. "This alternate care facility did just that." —K.S. & S.C.



ABOVE: The Tarlton Corporation lost patriarch Bob Elsperman, who led the company from 1972 to 1999, to COVID-19, just a few hours before receiving a Corps contract to transform a St. Louis area motel into health care facility. The construction was therapeutic, said Executive Vice President John Doerr, offering the chance to "be part of the solution to this terrible crisis."



ABOVE: Memphis District Commander Col. Zachary Miller has his temperature taken as a required precaution at the former Commercial Appeal building.

Dredging at a Social Distance

Keeping the river open while avoiding a contagious virus is a tricky proposition.

As businesses around the country sent employees home to telecommute this spring, the Mississippi River was in the middle of seasonal flooding, the river still needed to be dredged so that barges wouldn't ground, and locks

and dams needed their seasonal maintenance to operate safely.

At the same time, crews from the U.S. Army Corps of Engineers were being called upon to conduct what could be their own version of Extreme Makeover, hospital-style, as Corps crews under contract from the Federal Emergency Management Agency supervised the conversion of hotels, conference centers and old newspaper buildings into alternate care facilities for COVID-19 patients.

All has forced daily innovation, something that fortunately is a hallmark of the U.S. Army Corps of Engineers.

As was the case with most businesses across the country, the Corps sent home workers with the ability to telecommute. Those in positions in which telework was not an option practiced social distancing, wore masks, had temperatures checked at doors and were teamed up in ways that least exposed them to potential risks.

In the Quad Cities, the Corps solved one potential safety problem by turning to a local distillery that had recently converted its operations to produce hand sanitizer.

"Our emergency management shop has been hand-filling honey bottles so folks can take it to the field," said Allen Marshall, corporate communications chief for the Rock Island District. "It's the kind of thing that can be overlooked, but it's a true indication of what people are doing to not only be safe but also make sure that critical work is getting done."

Paul Machajewski, dredged materials manager for the Corps' St. Paul District, found himself scouting potential dredge sites on foot, alone. Because some

surveys of dredging needs on the river required Corps employees to work in pairs, he assigned them buddies so that surveyors would always work with the same colleague rather than risking multiple exposures. While they'd normally carpool to a boat landing, all drove their own vehicles. And once on the boat, they kept as much distance as possible supplemented by "constant hand sanitizing and spraying of Lysol."

And in Memphis, where the Ensley Engineer Yard encompasses specialty workers like machinists, welders, electricians, carpenters and toolmakers who are unable to do their work remotely, the six-foot rule was strictly applied. That meant that a siding job that required use of a two-man basket too small to allow virtually any distance between employees was put on hold. However, piping for the Vicksburg District's Dredge Jadwin did continue, as did repairing a mooring barge and repair of a malfunctioning gate.

"COVID-19 does make our job a little harder to accomplish, but safety in the workplace is a top priority, so we make it work," Memphis District machinist Brandon Almeida said.

Most Corps employees have been able to call in for things like project planning meetings; those who do show up sit many chairs away from the nearest colleague. In some cases, though, dedicated workers took, and continue to take, calculated risks to carry out essential missions that included the construction of alternate care facilities in multiple cities as well as regular seasonal challenges.

"We have been in the middle of an active flood fight," said the Rock Island District's Marshall. "We had flood engineers on sites, the city of Davenport erected HESCO (flood barriers). Corps employees are still doing their jobs despite COVID-19. They're doing it in a safe manner, practicing social distancing, using personal protective equipment and limiting passengers in a car. Things we used to take for granted have to be considered for daily operations, especially when something's as essential to everybody as a flood fight. The bottom line is, COVID-19 or no, public safety is always a priority for the Corps, and that's not going to change." —J.H. & K.S.



THIS LEVEE-ENCIRCLED TOWN of 2,200 sits at the confluence of the Mississippi and Ohio rivers at the southern tip of Illinois. Floods run deep in its 163-year history. Now, Cairo has harnessed partnerships to create a collaboration that increases resident safety in the face of relentless waters.

The need for greater public awareness of Cairo's flood risk surfaced early in 2019 in discussions between U.S. Army Corps of Engineers Memphis District hydraulic engineer Don Davenport and public affairs specialist Ken Williams. They began work with Cairo city officials to understand city needs and public attitudes. Together, they created FloodSmart Cairo, a communication campaign to help citizens better prepare for evacuation, should it be required.

"We decided do a flood risk awareness week. We set some time aside to give the subject some significant attention," Williams said.

Cairo Mayor Thomas Simpson officially designated the week of November 17 as "Cairo Flood Risk Awareness Week." During the kickoff town hall meeting, Simpson emphasized how quickly flood water can spread and the damage it can cause. "We are hoping to prepare ourselves," he told reporters attending the event.

A brochure with evacuation routes and evacuation planning resources was delivered personally to every household by fire truck, thanks to Cairo Emergency Manager John Meyer, who is also the fire chief. The Federal Emergency Management Agency, the Illinois and Alexander County emergency management agencies, and the National Oceanic and Atmospheric Administration also supplied vital information.

"People learned things that they needed to know. We were very pleased," said Cairo City Clerk Lorrie Hesselrode about FloodSmart Cairo.

Cairo's success has provided a model that other communities can use to more effectively communicate flood risk to affected communities. "Communication has the power to get things done. It can galvanize cooperation," said Williams.

Modeling the success of others is working for towns further up the Mississippi too. The Quad Cities Flood Resiliency Alliance began in 2018 as a network of regional people that need to respond, prepare for floods, or clean up afterwards, said Carol Downey, project manager for River Action, a Davenport, Iowa-based nonprofit.

"It's about connecting people and resources and knowing whom to call for information or help," she said.

The QCFRA is modeled after the Illinois Valley Flood Resiliency Alliance, formed in 2013 under the leadership of Illinois State Senator Sue Rezin after severe flooding

affected her district.

This new bi-state, eight-county alliance is already making a difference. Last year, Rapids City, a town north of Moline, Illinois, faced flooding on the Mississippi. As part of the alliance, city officials learned about equipment available from the Corps for flood fighting and how to get it. There, they learned about HESCO barriers, a temporary flood wall that can be put in place and filled with sand much faster than a sandbag barrier. Prior to the alliance, they did not know about such technology, Downey said.

QCFRA is working to expand the region's ability to prepare for flooding. In February 2020, they sponsored a four-day flood plain manager training class taught by FEMA. The 33 participants included partners from within the alliance footprint but also from Champaign-Urbana, Chicago suburbs, and northwest and northeast Iowa.

Having a certified flood plain manager on staff or on call is one of the creditable activities that communities can use to decrease the cost of insurance through the National Flood Insurance Program. As participants in NFIP's Community Rating System, towns can undertake activities to improve their base rating of 10. Other score-improving activities include tightening up flood plain regulations, levee improvement, buyout programs, and public information/education efforts.

The benefits to a community are substantial for enrolling in the Community Rating System, said Anthony Heddlesten, Civil and Environmental Engineering Section Chief for the Corps' Rock Island District. In 2019, Ottawa, Illinois achieved a Class 2 rating, an arduous task but an effort that provides a 40% discount on flood insurance costs. Heddlesten was the Corps' point of contact for the Illinois Valley alliance and introduced the Quad Cities founders to the Illinois alliance as an example of what community collaboration could accomplish.

All of these flood risk management efforts are supported through the Silver Jackets, a network of state-led teams that bring together state, federal, and local agencies with flood and natural disaster responsibilities. Their goal is connecting resources and capabilities with the needs, and the U.S. Army Corps of Engineers supports Silver Jackets teams through its Flood Risk Management Program.

Across the Mississippi River Basin, partnerships are springing up that bolster collective knowledge, shared resources and advance planning that strengthen community resilience. —D.D.

5 P'S OF EVACUATION

DO TAKE: PEOPLE

Evacuate people and, if safely possible, pets and other animals or livestock.

PAPERS

Put papers in waterproof containers. Remember important documents (hard copies and/or electronic copies saved on an external hard drive or portable thumb drives).

PRESCRIPTIONS

Remember medicines (and dosages), medical equipment, batteries or power cords, eyeglasses and hearing aids.

PRICELESS ITEMS

Don't forget pictures, irreplaceable memories and other valuables.

PERSONAL NEEDS

Pack clothes, food, water, first aid kit, cash, phones and chargers and items depended upon by family members with disabilities.

SOURCE: CORPS FLOOD-SMART BROCHURE

Recreate on the river, but best call ahead

When spring peepers call and songbirds serenade, there's a powerful draw to the Mississippi River and the nature abundant along its shore-line campsite, overlooks and trails. The wilderness is also one spot where social distancing is not only possible, it's almost required.

The Corps and other providers of public lands—state natural resources departments, the National Park Service and the Fish and Wildlife Service among them—have for weeks limited activities that draw crowds as a safety measure. Most campgrounds, visitor centers and Corps-run overlooks at locks and dams closed temporarily as a safety measure, while hiking trails, waterways and boat ramps remained open.

"Locked gates and empty campgrounds are not the result of decisions made lightly," says Katelynn Dearth of the Corps' Rivers Project Office. "Remaining informed while seeking recreation has never been more critical. Knowing your risk, knowing the laws and regulations of a specific area, and staying updated is essential. Every situation and park is different, so no one regulation applies to all parks."

Dearth and other officials recommend that you call before visiting and consider following your favorite park on social media, the quickest way to get information when in 24 hours so much can change and different states are likely to reopen at differing paces. Never be afraid to call staff and ask about openings and plans. Don't be afraid to try a new outdoor activity either.

Birdwatching naturally encourages social distancing, she notes, because the smaller the audience, the more you are likely to see. The Riverlands Migratory Bird Sanctuary has for the most part kept all of its land and water trails open for exploring along the Mississippi Flyway. "Did you know," she said, "that two-thirds of all bird species in North America use the flyway during migration?"

If leaving the house isn't an option, you can always set up a bird feeder and watch from the comfort of your own home. Recreation is just like most things right now. It's still possible; it just might look different than before.

"As rangers we love to see our parks filled with people and to provide opportunities for visitors to create memories, destress, and for them to take advantage of all the wonderful services public lands give us. However, public safety is the most critical service we provide."—K.S.



Check these resource sites for the latest on openings:

Army Corps offices for overlooks, visitor centers, trail, boat launch, camping and scheduled programs:

St. Paul District: www.mvp.usace.army.mil

Rock Island District: www.mvr.usace.army.mil

St. Louis District: www.mvs.usace.army.mil

Memphis District: www.mvm.usace.army.mil

Vicksburg District: www.mvk.usace.army.mil

New Orleans District: www.mvn.usace.army.mil

Nationwide updates and distancing recommendations:
www.mvn.usace.army.mil/Coronavirus

National Park Service's National River and Recreation Area, St. Paul: www.nps.gov/miss

Upper Mississippi National Wildlife and Fish Refuge, Illinois, Iowa, Minnesota and Wisconsin:
www.fws.gov/refuge/upper_mississippi_river

Camping: recreation.gov or 877-444-6777

Life on the Mississippi, today

AT AGE 15, RINKER BUCK took off in a plane that he and his 17-year-old brother restored, the two teens navigating on their own through a coast-to-coast flight. His adventures made their way into his memoir, "Flight of Passage," but that was just the start of a life of adventure and storytelling most recently explored on a 2,000-mile journey down the Ohio and Mississippi Rivers on a flatboat he built to the specs of an 1846 model he saw in a painting. Buck, a longtime newspaper journalist, shared with Our Mississippi a bit of what we'll read when his book "Life on the Mississippi" is published by a branch of Simon and Schuster next year.

Clearly, you've been an adventurer since you were a child. What instilled that?

I think had a lot to do my father and who I came to be as a reader, writer and intellectual. Dad grew up in the Depression in the worst place you could possibly be—Scranton, Pennsylvania, America's coal town. My father turned 17 at the height of the Depression and figured he was old enough to learn to fly. For the next three or four years he lived the romantic barnstorming pilot thing all over the country, very similar to Charles Lindbergh's life. He was the guy with the great stories, and he ended up being publisher of Look magazine. This was a man who escaped the horrors of the Depression through flying and travel/adventure.

How does this tie into your current project?

I'm writing about the flatboat era, and that's what they did, escape through adventure. My earlier book, *The Oregon Trail: A New American Journey*, grew out of my lifelong interest in horses and history. While finishing up that experience I learned there was an earlier pioneer experience. The flatboat era built America and inaugurated our first big expansionist urge.

What was it like to put yourself in the middle of it all?

The experience of seeing the country from the channels of the Ohio and Mississippi Rivers was akin to me to that amazing visual, emotional sensation you have the first time you see the country from a railroad car. You think you know what it's like to travel America, then you get on a train and you really see what the country looks like from this perspective that is completely illuminating, educational and



Rinker Buck



The flatboat *Patience*

Storytelling adventurer chronicles the flatboat era by taking a trip of his own

also romantic. That's what this trip was like.

What stands out?

The average American doesn't know what life is like in, say, the middle of Missouri. Agriculture is that life, which you see when you're riding down the Mississippi day after day and 15 to 20 barges pass you loaded with corn and all going down to the third largest port in the world.

You traveled as a journalist. How did that make your trip different from the many paddling the river as pure adventurers?

My book will have sections on the coal industry, broken infrastructure, flooding on rivers. Another theme is that everybody told me not to do it, that I was going to die, that the Mississippi is dangerous. I came to learn there's a reason for that. Everybody who's lived on the river has a family history: a tugboat captain who was drowned, or family forced out of the house when a levee was breached. But that doesn't necessarily mean—particularly in the year I crossed it—that it's as dangerous as people think.

What, did you conclude, is life on the Mississippi?

It's the pulse. I've traveled through the main artery of America.—K.S.



This lock is the gateway to

Take a look at 27, an Art Deco–styled engineering marvel that serves as the last stop on the Mississippi River for barges floating to ports like New Orleans and the Panama Canal with goods headed to points worldwide.

The towboat's propellers churn the waters of the Mississippi River into a coffee-colored foam as it pushes its 15 barges out of Lock 27. It heads south toward St. Louis as a rising sun burns off the gray clouds behind the famed Gateway Arch. This load is headed for Southeast Asia where countries like Indonesia, Vietnam and Thailand are huge and growing markets for these Midwestern soybeans.

Carol Cotter, the lock's shift chief, picks up her marine band radio microphone and gives the captain of the next tow, this one pushing coal, permission to come "on the wall." The tow drifts slowly with the current and nuzzles a corner of the lead barge against the towering concrete wall at the lock entrance then holds in place as the chamber refills to the million cubic feet needed to give the tow a smooth passage into the chamber.

The engineering marvel must empty and fill for each customer, and on the busiest lock on the Mississippi River, there are quite a few. More than 50.4 million tons of commodities, ranging from petroleum products, coal, sand, gravel and metal ores to salt and molasses, "locked through" in 2019. The total included more than 21 million tons of agricultural products, mostly soybeans (8.2 million tons) and corn (7.8 million tons) making this not a fast food stop exactly, but certainly a "far food" one.

"This is not a job for somebody who wants to hurry things," said Cotter, who has been a shift chief here since 2003. This engineering marvel empties and fills for each customer; each lock passage requiring between 20 and 40 minutes as Cotter gazes from her glass-walled control center two stories above the river. An eagle circles for fish, then gives up and flies on.

"I still get excited every morning," she said. "I'm seeing something new every day. That includes a lot of wildlife."

World-bound drive-thru

Lock 27 is hidden from sight by tall levees that block the view from nearby Illinois Route 3. But its low profile belies its importance not just here but to the world. It's just one of the locks (numbered, starting with Lock and Dam 1 at Minneapolis, Minnesota) that help keep the river flowing at a navigable nine feet or more. Here, barge traffic from the Illinois and Missouri Rivers join the commerce parade, and it's the last stop before the open flow of the river to the Gulf—and the last lock this grain will transit before reaching the Panama Canal.

In 2019, the lock's 20 employees served 6,075 commercial tows, 515 recreational

boats and 23 commercial passenger boats. It's part of the 70-mile river region designated Port of St. Louis, which ranked second in total tonnage for 2018 among the nation's inland ports, registering just 1.1 million tons less than the Port of Cincinnati and Northern Kentucky on the Ohio River.

Flooding closed the St. Louis District portion of the Mississippi to shipping for 69 days in 2019, lowering commodity totals. Still, the lock remained a critical link in an international food distribution chain and a barometer for trends in global trade and energy consumption.

Crude oil shipments on the river increased from 1,238.9 kilotons (one million





the world

tons) in 2012 to 3,100 kilotons in 2019. Countering that was a decline in coal demand with 2019's volume about one-third of what passed through in 2012.

What the St. Louis Port is best known for is its agricultural products. Says Lockmaster Jeremy Garzia: "If you look at a map of the watershed of the Mississippi, you also could think of that as our 'grainshed.' All of that grain comes through us."

Bypassing the rocks

Lock 27 is also known as the Chain of Rocks Locks since it was built in 1953 so that barges could bypass the nearby rugged bedrock on the river bottom. Riverboat pilots long feared this rock chain, said Garzia, and would "have to shoot the gaps in the rapids."

The Chain of Rocks formation was not amenable to taming by the typical lock and movable dam, he said. "So they went around it. The Chain of Rocks is a natural dam that does hold pool for us. It has been raised and maintained throughout the years."

The rock dam is 2,500 feet wide and holds a 15.6-mile long pool. Lock 27 consists of two chambers, a 1,200-foot-long main chamber and a 600-foot auxiliary. Both are 110 feet wide. The pool typically stands six to 20 feet higher than the river below the lock. The larger chamber can hold a tow of 15 barges three wide by five long. With each barge hauling up to 1,750 tons, each tow complement can carry as much freight as 216 rail cars (requiring six locomotives) or 1,050 semi-truck/tractor-trailer rigs.

Commerce never stops

Unlike most locks situated in more northern climes that freeze come winter, Lock 27 stays open year-round, locking through a handful of tows even in slower months. An electronic system keeps track of tows as they transit through multiple river locks, and long-range communications enable orderly travel, says Andrew Schimpf, navigation manager for the St. Louis District of the Corps of Engineers.

When captains know they have a few vessels ahead of them, they can nose into the river bank to wait or take care of other business, such as on-loading groceries or changing crews. During the busy harvest season, shipping companies hours away may dispatch tows so they will slip into traffic patterns at the locks, he said. While some unscheduled stoppages on the river are inevitable, Schimpf said, the biggest hurdle is low water that requires dredging. The Corps works as far in advance as possible to schedule and announce closures to industry due to dredging or physical maintenance to the lock.

Deco style, modern technology

This lock is notable for its mid-century architecture. Like many of the schools, hospitals and public works buildings constructed after World War II, its glazed, light brown bricks are shaped into curving walls, doorways and windows. This lock has been improved and enhanced by additional construction and the latest technology through the decades.

As with other locks, it lifts and lower boats and barges by allowing gravity to fill and empty the chamber of water as gates at each end separate the chamber from the pool and tail. When the passages, 14 feet by 15.5 feet, are fully opened the shift chief in the lock tower feels the rumble of the rushing water pulsing through the concrete structures. Towboat captains initiate radio contact with the lockmasters as they approach. The masters, this day shift chief Cotter, monitor river levels of the upper pool, lower tail and locking chambers by computer screen. Video cameras, controlled through a joystick, assure safety as the gates and water valves are moved by enormous electric motors and gears.

As the chamber fills, Cotter rolls her chair from her front window to the computer screen on the left and monitors the rising water level.

"This is the last escalator on the river," Cotter notes. "It is quiet, silent, out of sight and out of mind, but very important."—K.S.

ABOVE: Views of Lock 27 and one of the massive, motorized gears that operates a lift gate. The gates control water levels to float tows between the upstream pool and the downstream tail, which ranges from six to 20 feet lower. FAR LEFT: A southbound tow waits as it is lowered to the river's tail and clear navigation to New Orleans. LEFT: Andrew Schimpf waits beside the main lock as it refills to accept another tow headed south. RIGHT: Shift Chief Carol Cotter watches from her control center as a towboat guides its barges into the lock.



GET A CLOSER LOOK

For a close-up river view, it's hard to beat the Mississippi River's locks and dams, many of which feature viewing platforms that let you observe both river wildlife and the way barge and pleasure crafts "lock through."

Two of the most scenic public observation decks are located at Lock and Dam 2 in Hastings, Minnesota and Lock and Dam 4 on Lake Pepin in Alma, Wisconsin, but several others offer platforms with views, and the Melvin Price Locks and Dam (26) offers both wildlife viewing at the adjacent Riverlands Migratory Bird Sanctuary and lock and dam tours through the on-site National Great Rivers Museum.

Others, including Locks and Dams 11, 13, 15 and 16, offer weekend guided walking tours that cover river history, lock and dam observation and more. TO SCHEDULE: WWW.MVR.USACE.ARMY.MIL/MISSIONS/RECREATION/MISSISSIPPI-RIVER-PROJECT/EDUCATION/LOCK-DAM-TOURS

THE FAT POCKETBOOK *plan*

THE FAT POCKETBOOK MUSSEL

lives in a rather drab shell, ranging from yellow to brown, that averages four inches in length. The mussel, named for the inflated hump on its shell, could easily be overlooked on the silty, sandy, gravelly river bottoms it calls home.

But the fat pocketbook is an important part of the St. Francis River ecosystem in Missouri and Arkansas and is listed as a federally endangered species. The mussel relies upon flowing water and is believed to be extirpated from the upper Mississippi River due to dredging and impoundments undertaken for navigation and flood control.

The fat pocketbook population in the basin of the St. Francis River, one of the larger tributaries of the lower Mississippi River, has been deemed worthy of its own conservation plan. That plan was nominated for the team award in the Natural Resources Conservation category of the 2020 Secretary of the Army Conservation Awards.

“All freshwater mussels feed by filtering water and help keep our water supply clean. The U.S. Army Corps of Engineers is required by law to protect all species designated as federally threatened or endangered,” said Mark R. Smith, chief of the

environmental compliance section of the Memphis District of the U.S. Army Corps of Engineers.

“From a scientific perspective, conserving species helps ensure that the ecosystem continues to function as it evolved. We also discover beneficial medicines from a wide variety of organisms. If we don’t try to protect them we may never know what we’ve lost,” he said.

The Corps provides flood risk management for 8,400 square miles of the St. Francis basin, stretching about 215 miles from southeastern Missouri through northeastern Arkansas, ending at the St. Francis confluence with the Mississippi near Helena, Arkansas. The fat pocketbook plan was developed in coordination with the U.S. Fish and Wildlife Service.

“We’ve been assessing the population of this species

Corps biologists flex some conservation muscle for an endangered critter in a shell

for over 15 years,” Smith said. “The population has remained stable or actually increased, which is one of the factors the Fish and Wildlife Service uses in their determination on proposing down-listing or de-listing a species” from the endangered list.

The plan will enable the Corps to maintain its flood management mission while reducing its Endangered Species Act consultation time by 30 to 45 days and reducing costs for mussel surveys and consultations by 50 to 75 percent.

“The plan took a significant amount of research to develop the data that allowed us to streamline our processes,” Smith said. “This required a coordinated effort between several state and federal organizations. We have an excellent relationship with resource agencies that has developed over the past couple of decades based on respect for each other’s integrity and professionalism.

“The conservation plan is specific to the St. Francis River Basin and the fat pocketbook mussel. My understanding is that these types of plans are fairly uncommon due to the level of information required, but in the long run they benefit both the species and the agencies involved.”—R.S.



My MISSISSIPPI



Greg Miller, operating director, U.S. Army Corps of Engineers Ecosystem Restoration Center of Expertise and winner, Mississippi Valley Division’s Blankenship Award, for being 2019’s top scientist/engineer

“The Corps has planning centers in all of its major mission areas. If anyone is trying to tackle something and they need expert assistance, we find the individuals who can help with their work.

“I grew up in New Orleans, and I always had a fascination with the vastness of wetlands along the coast in Louisiana, the fish and birds and other animals that live around the coast. I worked for the National Marine Fisheries Service for 10 years before joining the Corps. I did a lot of coastal restoration work after Hurricane Katrina and a large ecosystem restoration plan for the whole coast, and then I joined the Mississippi Valley Division.

“Helping teams succeed in completing feasibility studies is our prime focus here. We want to be available as a resource in the work they’re doing to make recommendations ultimately for Congress to authorize. We also connect our field staff at districts with researchers who can find innovative means of investigating ecosystem restoration problems.

“The great thing is that the lessons we’ve learned along the river enable our staff to help teams elsewhere in the country. We’ve had folks help with the Pacific Ocean, Florida Keys and on the Great Lakes system and develop solutions for both river and coastal problems around the country. Everything we’re doing is related one way or another to water.”—K.S.



Maj.Gen. Holland



Maj.Gen. Toy

New general named to head Mississippi Valley Division

Major General Diana Holland made history—and the national press—when the U.S. Army named her as the first woman commandant of cadets at the U.S. Military Academy at West Point, her alma mater.

In 2018, *Atlanta Magazine* named her one of the country’s “Women Making a Mark,” and she continues to do so. At the June 30 change of command ceremony, Maj. Gen. Holland will become the first woman commander of the U.S. Army Corps of Engineers, Mississippi Valley Division in a change-of-command ceremony to be held June 30, 2020, where Maj. Gen. Mark Toy will transfer command. Gen. Toy took over leadership of the Mississippi Valley Division in July and is moving to a new U.S. Army leadership post in Korea.

Since July 2017, Gen. Holland has served as commander of the U.S. Army Corps of Engineers South Atlantic Division, one of nine Corps regions providing engineering and construction services to the nation. In that post, she became intimately familiar with water

resource and disaster relief missions not unlike those she’ll undertake in the Mississippi Valley Division. During her command, Maj. Gen. Holland led the South Atlantic Division’s response to Hurricanes Irma and Maria in 2017 and Hurricanes Florence and Michael in 2018. Prior to that appointment, she served in leadership positions in Iraq, Afghanistan and elsewhere and has been widely decorated.

At the Mississippi Valley Division, the commanding general is responsible for water resources engineering solutions in a 370,000-square-mile area. Serving in that post was an honor, says departing Gen. Toy.

“Thank you to all the military service members and Department of the Army civilians for embracing our motto, ‘Building Strong and Taking Care of People!’” he said. “Given all the challenges in the last year, including floods and COVID-19 response, the MVD team showed the nation that the best way to deliver the program is by taking care of people.”—K.S.

Spot some colorful river life

Each year, one third of the birds in North America—that's more than 300 species—pass through every state along the Mississippi River as they make their journey from neo-tropical wintering grounds to the far north and then back again.

But within the river's 1,366-mile stretch of waterways and lowland habitat are the summer destinations for hundreds of species of waterfowl, shore and land birds. Every state bordering on the mighty Mississippi, from Louisiana to Minnesota, offer up close views in regional recreation areas, National Wildlife Refuges and other state and local lands. For treasures ranging from colorful songbirds to massive white pelicans, here's where to start the hunt.

The river's mouth

Many species start their northward journeys here, but many also stay. Grand Isle State Park in Louisiana's Delta region is a sure spot to hang with **brown pelicans**, while Barataria Preserve near New Orleans boasts 200 species like **herons, egrets, ibis, Prothonotary Warblers** and **Painted Buntings**. And a 660-foot walkway leads birders through the longleaf pine forests at Lake Pontchartrain's Big Branch/ Bayou Savage NWR to see the resident **Red-cockaded Woodpecker**.

In Mississippi, St. Catherine Creek NWR in pretty antebellum Natchez features shallow water impoundments that attract **wood storks, White Ibis, Roseate Spoonbills** as well as two heron and egret rookeries. Wading birds (**egrets, herons, yellow-legs**) and breeding populations of **wood ducks** and other waterfowl are among the 200 species at the Hillside Theodore Roosevelt NWR Complex in Yazoo County, pretty songbirds at Vicksburg's Tara Wildlife.

Missouri, Iowa & Illinois

The confluence of the Missouri and Mississippi Rivers creates a diverse river habitat best experienced at the U.S. Army Corps of Engineer's Riverlands Migratory Bird Sanctuary. Here many of the trails have remained open for spring and early summer birding and paddling. Besides being renowned as a major wintering area for **Trumpeter Swans**, summer activity includes breeding habitat for **Pied-billed Grebes** and **King Rails**.

The pool behind Lock/Dam 19 is part of a 40-mile river section between Iowa and Illinois that can hold more than 13% of the continent's population of **Canvasback ducks** during migration. Look for **white pelicans** near all the lock and dams, including the Upper Mississippi Wildlife and Fish Refuge near Bellevue, Iowa. There are also several designated viewing areas near Lock/Dam 14 in the Quad Cities, but call ahead to be sure they've remained open.

For even beginning birders, colorful warblers are the species to spot. Port Louisa National Wildlife Refuge boasts one of the most significant concentrations of nesting **Prothonotary Warblers** in the upper Midwest, and further north, Yellow River Forest/Effigy Mounds National Monument (a designated Important Bird Area) boasts every species of warbler native to Iowa.

But if it's eagle wings you're wanting to catch, you might spot a **Golden Eagle** feeding on waterfowl at Illinois' Horseshoe Lake Conservation Area or sight a **Pileated Woodpecker** at Mississippi Palisades State Park. Significant numbers of breeding **Common Nighthawks** can be observed at the Lost Mound Unit, Savanna District of the Upper Mississippi River National Wildlife Refuge.

Wisconsin & Minnesota

The confluence of Wisconsin's Black River with the Mississippi is a core habitat for the stunningly blue **Cerulean Warbler**. Wisconsin-Minnesota's Lake Pepin section of the Mississippi features several key birding locations, many best accessed by canoe or kayak. Other birding hot spots include Wisconsin's Wyalusing, Perrot and Merrick state parks.

For big bird spotting, the Vermillion Bottoms-Lower Cannon River features one of four top sites in Minnesota for the highest number of **Red-shouldered Hawks** (and also Cerulean Warblers) in southeast Minnesota. And unexpectedly, several **heron** rookeries are located at North Mississippi Regional Park in the heart of Minneapolis.

Camp Ripley-Pillsbury-Lake Alexander Important Bird Area is home to the state's biggest concentration of **Red-shouldered Hawks**. And the last leg of the river's birdwatching journey ends at the headwaters of the Mississippi at Itasca State Park, supporting over 220 species of birds including **crossbills, thrushes, jays, finches, Black-backed Woodpeckers** and over 20 species of **warblers**. —T.W.

Year-round, the Mississippi River flyway is the place to see your favorite winged species





Meet Ellie THE LOCK DOG

ELLIE, an orphaned Border collie who spent her early life in a shelter, is now one of the most highly decorated members of the U.S. Army Corps of Engineers. She's saved a lot of work (and money) for maintenance crews who used to have to clean the mess left by the avian flocks roosting on spillways, hunting for fish. She's saved the lives of those birds, too.

Ellie spends her winters at the Robert S. Kerr Lock and Dam 15 in Sallisaw, Oklahoma, and she summers at a popular Chicago area lock

that separates the Great Lakes from the Chicago River. But the idea to bring her in to help at all came from the Engineer Research and Development Lab in Vicksburg, Mississippi. That's where Oklahoma crews turned when they couldn't figure out any other way to scare birds away. Not wanting to have to get rid of them by permanent methods, they thought they'd turn to experts in wildlife and innovation for a gentler approach.

Luckily, they connected with research biologist Dena Dickerson of the U.S. Army Engineer Research and Development Center's Environmental Laboratory, Vicksburg. She is a wildlife biologist and a certified dog trainer too.

"I said, 'The only thing I can think of is to possibly use Border collies like the military does on their airfields and some airports to chase birds and geese from in front of planes when they take off.' Border collies come into this world needing to herd something, needing to make something move. They come to you knowing how to do that, and you just harness it.

"Lo and behold, I sent a dog out on a long run after birds, and it was immediate. The birds went away, and the lock operator said, 'I guess we have the answer to our problem.'"

Dickerson took her own pet to Oklahoma for that test run. But the district found Ellie and took her in as their own, housing her at the lock and dam, where she lives a bit like a firehouse Dalmatian as a friend, family member, bird chaser and morale booster.

In Chicago, where Ellie goes on a summer vacation of sorts once the birds have migrated north, she's a bonafide celebrity. Tour boats have added a trip by the locks to greet her, and the city gives her a party on her last day of work each year. She's also highly decorated as a winner of the Corps of Engineers Innovation Project of the Year.

Ellie has a full schedule, but her success prompted the Louisville District to get its own bird chaser, Breeze. Others periodically call guide Dena asking for advice on how to get one of their own.

"She's been great for morale and the people who meet her on the public tour. Guides say, 'This is Ellie, and this is what her job is.' It's been a very big win-win."—K.S.

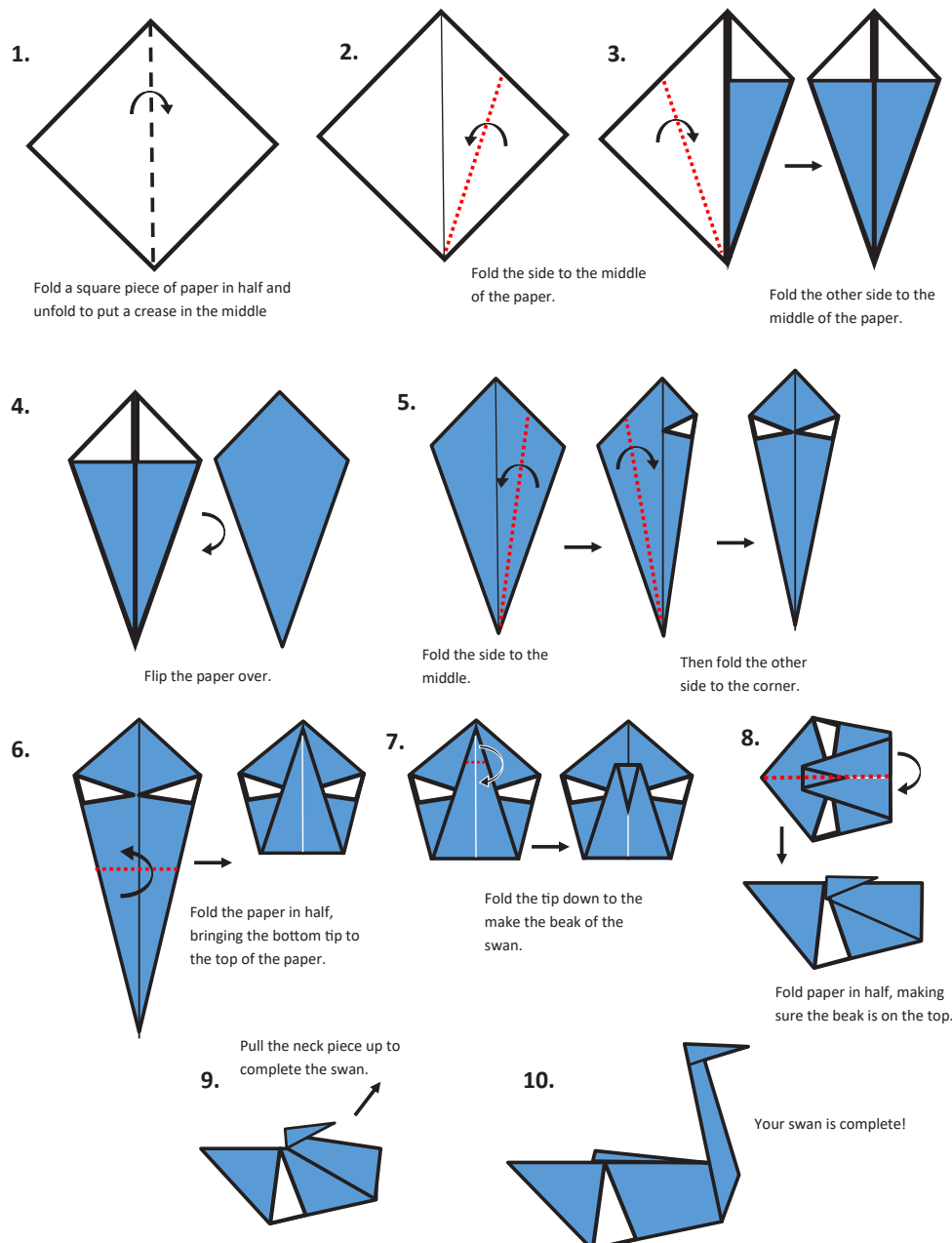
OUR MISSISSIPPI KIDS



Bobber wants you to stay safe in the outdoors! He teamed up with a friend to show you easy ways to gauge your distance from another person to prevent the spread of COVID-19.



Fold an origami swan!



TRAVEL VIRTUALLY *by river cam*

When you get a bit tired of the isolation of COVID-19 quarantining, get out the computer or iPad and pop into the live scene captured by the webcam at Iowa-based Raptor Resource Project. Then have a little chat with the massive eagle that seems to be staring right at you when not tending to a chicks D34, 35 or 36 or tucking a leaf into the nest while winds gust.



explore.org/livecams/raptor-resource-project/mississippi-river-flyway.com

This bald eagle nest is located near a trout hatchery in Decorah, Iowa, and in addition to the chance to watch the eagles raising their fledglings (and maybe ask how they're doing), you can read about the development and how you may be able to watch them grow.

Webcams are great for getting you to places (like eagles' nests) you wouldn't ordinarily see. They can also take you on an instant virtual vacation or help you plan a future one. Go birding from the comfort of your living room through the Flyway Cam located at Brice Prairie, Wisconsin. The cam pans for a macro view of the river flyway and also follows individual birds for a close-up. Be sure your sound is on to capture the cacophony of river life.



explore.org/livecams/raptor-resource-project/mississippi-river-flyway-cam

MORE TO EXPLORE

Start at the beginning: Water trickles over rocks at the Mississippi's origin point in Lake Itasca State Park where this cam faces and lets you enjoy warblers, kingfishers and more: dnr.state.mn.us/state_parks/Itasca/headwaters.html

Go into the wild: The Upper Mississippi River National Wildlife and Fish Refuge hosts several webcams from which you can watch waterfowl migration, eagles and pelicans. fws.gov/refuge/Upper_Mississippi_River/seasons_of_wild-life/webcams.html

Get all shook up: The Graceland Cam, graceland.com/graceland-cam, takes you to the doorway of the King of Rock 'n' Roll.—K.S.



WHERE FOOD IS *culture*

Travel the Mississippi River for the tastiest history lessons you'll ever eat

DINE AT DOE'S EAT PLACE with author Anne Martin, and you'll first place your order for the famed porterhouse steak that covers a whole plate, the one Men's Journal once named "best thing to eat in America." But there's much more. The author of the popular book "Delta Hot Tamales" has brought you here to try the reason for the spices that waft through the front door, the offering covering the side plate, wrapped in parchment paper and tied with twine in gift-like packages of threes.

"On checkered tablecloths and paper plates or on fine silver as hors d'oeuvres, tamales have found their place," she says, "no matter the party."

Follow her example, and you'll be topping your Delta Hot Tamale with homemade chili, onions, mustard and ketchup, placing it on a saltine, and thinking it tastes a lot like a Chicago-style hot dog. Then, you'll be eating what's called here a tamale "mother in law," and you'll also be getting a history lesson in the way the culture of the Delta—indeed the entire Mississippi River—melded its food through travel, hard work, tradition and cultural blending.

You may not expect a traditional Mexican delicacy to have made Greenville, Mississippi, the hot tamale capitol of the world, but this isn't your traditional Mexican variety. When Southern Foodways did an oral history project on the tamale and other river favorites, they surmised that Mexican workers in cotton fields brought this easy-to-tote lunch treat, or that it morphed from a traditional African treat. The Chicago hot dog toppings were apparently added to the party the same way jazz went to Chicago—from northbound migrants seeking a better opportunity and blending their food favorites.

Food melds elsewhere

In Wisconsin, cheese is blending with agricultural heritage in a new popular weekend hangout spot:

the pizza farm. This is farm to "picnic" table cuisine at its best as farmers scatter wood-fired ovens within picking distance of the heirloom tomatoes and basil that join the ubiquitous cheese as toppings. You'll find more than a dozen in Minnesota and Wisconsin open varying hours but on which kids can run, llamas and Icelandic sheep wander and your wicker picnic basket filled with Chianti fits right in.

One of Iowa's most famous taste treats needs no combination—but butter—for pure perfection. Iowa's West Point Sweet Corn Festival in early August is located a short hop from the river, and as many as 25,000 visitors visit to sample some of the 17 tons of sweet corn served; (there's bbq too, garden tractor pulls, parade, more.) And the story behind St. Louis's famed "Goosey Butter Cake" comes from a German baker said to have messed up the proportions while making coffee cake to discover perfection.

Louisiana is a blend of cultures in a pot as you see if you sign up for a hands-on cooking demo at Spuddy's Cajun Foods and Andouille Experience (in Vacherie). This chef and Cajun will give you a hand in making his famed jambalaya and gumbo as you also learn how andouille is made and smoked. You'll stir the roux with the traditional paddle until it evolves to a golden hue, and that—and tasting—is the best part.

"The unique part of us is we have all these different cultures, you know," says Spuddy Fauchux. "The jambalaya and gumbo are both West African dishes. Okra is the African word for gumbo; it was used as a thickener back then. And you have German sausage and French roux. And if you want to add seafood, that comes from the Cajuns, who were fishermen and trappers. If you lived near the river, you put shrimp boxes in when the river was high. We grew up on river shrimp." —K.S.

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USACE

Dredge Hurley has record-breaking season

The Memphis District's Dredge Hurley marked the end of the two most productive dredging seasons in the vessel's history. Memphis District leaders were on hand the morning of Dec. 9, to welcome the crew back after a deployment on the Lower Mississippi River of more than six months. The Hurley dredged more than 12.5 million cubic yards of material from the river this year, in extremely challenging

high water conditions, to ensure safe navigation for commercial traffic. To put that in context, 12.5 million cubic yards is equivalent to the capacity of about 3,788 Olympic-size swimming pools.



WISCONSIN DNR

Habitat protection plan moves forward

The U.S. Army Corps of Engineers, St. Paul District, has started the first phase of the McGregor Lake Habitat Rehabilitation and Enhancement Project to restore habitat within Pool 10 of the Upper Mississippi River. The McGregor Lake project, located near Prairie du Chien, Wisconsin, will restore and protect island habitat protect shoreline from erosion and create overwintering fish habitat. The goal of the project is to provide habitat and food and resting places for river wildlife, such as migratory waterfowl, shorebirds, turtles, frogs and fish. The total project is anticipated to cost approximately \$20 million and was planned and designed as part of a cooperative effort between the Corps of Engineers; the U.S. Fish and Wildlife Service; the Iowa and Wisconsin Departments of Natural Resources; and local interests under the authority of the Upper Mississippi River Restoration Program.

Inspection trip canceled, but public still has voice

The U.S. Army Corps of Engineers' Mississippi River Commission (MRC) canceled its annual High-Water Inspection Trip due to the Center for Disease Control's restrictions on public gatherings because of the COVID-19 pandemic. The high water inspection trip and public hearings were slated for March 29 through April 3 with stops in New Madrid, Missouri; Memphis, Tennessee; Greenville, Mississippi; and New Orleans, Louisiana.

To keep the lines of communication open and allow partners to still have a voice, the commission accepted written testimony by mail and email.

"Taking care of people is and will remain at the forefront of all that we do," said Maj. Gen. Mark Toy, President of the MRC and Commanding General of the of the U.S. Army Corps of Engineers (USACE), Mississippi Valley Division. "My fellow commissioners and I remain engaged with our federal, state and local partners, and communities to continue to prosecute the comprehensive river management system known as the Mississippi River and Tributaries project."

In all, 43 testimonies were received, and the commission has since provided formal written responses to each submission. Prior to the scheduled inspection trip, President Donald Trump appointed Hon. Riley James to replace long-time commissioner Hon. Sam Angel who had served on the commission since 1979.

The purpose of the MRC's inspection trip is to maintain a consistent connection - an exchange of viewpoints and ideas among the public, partners, stakeholders, elected officials, the MRC, USACE and private, state and federal agencies. This process provides a greater voice for those who live and work in the region in shaping federal management and policy of the river.

Send story ideas to editor@ourmississippi.net

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