Designs sought for first sediment diversion project

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It took the Mississippi River thousands of years to build the delta that is south Louisiana. But in less than a century, nearly 2,000 square miles of that land have been lost.

A main culprit, most agree, is the river’s levee system. Those bulwarks protect hundreds of thousands of people from regular inundation, but they also funnel millions of tons of sediment out of the mouth of the river into the Gulf, preventing that sand, clay and organic matter from replenishing coastal lands, which are sinking because of a natural process known as subsidence.

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That sinking, combined with rising sea levels, means that another 2,000 square miles or more could be lost in the next 50 years.

Experts have long said the best way to combat the land loss is to re-employ the same force that created the land in the first place: the river. For obvious reasons, however, flattening the levees and allowing the river to flow where it wants could result in flooding south Louisiana is impossible.

But with an announcement last week, the state’s Coastal Protection and Restoration Authority is a step closer to putting the river back to work replacing what the levees have taken away.

The coastal authority has asked engineering firms to submit their qualifications and interest in designing the first major “controlled sediment diversion” to be built in Louisiana and maybe the world.

The project, south of New Orleans on the west bank of the Mississippi River near Myrtle Grove, is known as the Mid-Barataria Sediment Diversion.

Under current plans, a hole will be cut in the levee there and replaced with a gated structure that could allow as much as 75,000 cubic feet of water per second and its accompanying sediment to flow down a channel and into the Barataria basin. But it wouldn’t have to. The gates would allow operators to control the amount of water that flows into the basin.

The project has long been a part of the state’s coastal master plan, but now, for the first time, it looks like it might become reality.

The project may be novel, but the principles behind it are not. Diversions, like ones at Caernarvon and Davis Pond, have been operating for years. But those are freshwater diversions, designed to help maintain the level of salinity in the marshes. They are not designed — as the Mid-Barataria will be — to funnel a controlled amount of sediment into the marshes to help create land.

The basic design difference is this: Freshwater diversions are typically shallow, diverting fresh water from the top of the river. For sediment diversions, the coastal authority expects to cut much deeper into the river channel — 40 feet in the case of Mid-Barataria — to collect more of the heavier sediment closer to the bottom.

“It restores the natural process,” said Brad Barth, an administrator with the authority.

Dredging vs. diversion

Right now, the main method of capturing and reusing sediment is through dredging, which captures mostly sand, Barth said.

“One of the nearest things about a sediment diversion is it captures the silt and clay-sized particles that come down the river,” he said.

Barth’s confidence in the untested process is based on what he has seen in other diversions, notably Davis Pond and Caernarvon, where new marsh is being created just by the sediment in those top layers of water.

Not everyone is a fan of the idea, however.

George Ricks, a charter boat captain who mainly fishes in the Breton Sound, where another large diversion project is planned, said diversion could lower the salinity of the sound and harm the fisheries.

“They are going to turn our brackish estuaries into fresh-water estuaries,” said Ricks, who heads the Save Louisiana Coalition, which opposes diversions. That could drive out the fish, like redfish and speckled trout, that Ricks depends on for his livelihood. He also worries the diversions would negatively affect oyster beds.

“The whole purpose is to build land and mimic what Mother Nature used to do,” he said. “That took 7,000 years. Instead of building more diversions, Ricks advocates more dredging to create marshes, a process he called proven.

Diversions “don’t make any sense,” he added. “They’re trying to build land by a controlled flood.”

Ricks isn’t the only skeptic. Ed Richards, an LSU law professor who specializes in environmental law, said subsidence and continued sea level rise make land-building through diversions a doomed proposition.

“The new land would be right at sea level and subject to the same destructive forces now plaguing the coast, he said.

“Adding more sea level salt marsh” is not going to save coastal lands, Richards said. “If they could add 50 miles of dense cypress forest, that would be great.” But that’s not in the cards.

True effects unknown

For now at least, Ricks’ and Richards’ views are in the minority. Sediment diversion has the support not just of the public officials pushing it as part of the state’s Coastal Master Plan but of most major environmental groups as well.

“I have no doubt that if we don’t use as much of the Mississippi River as possible, with diversions, then we will not have the coastal system we have today,” said Natalie Peyronnin, director of science policy at the Environmental Defense Fund. “Diversions “are essential” to maintaining the coast for future generations, she added.

Peyronnin admits that questions remain. The true effects of the Mid-Barataria diversion on the area’s ecology are unknown, but she said the key will be how the diversion is operated.

“As the process moves forward, the state will have to define what their operating strategy will be, at least initially, then long term,” she said. The Environmental Defense Fund convened a working group to discuss just that topic, and it came up with some suggestions: a gradual opening of the diversion, perhaps opening more of it for short periods of time and perhaps trying to open it in the winter to minimize effects on fish and plants.

“Our objective was always to maximize the land that we build or sustain but understanding that there has to be this balance between that and what the ecosystem needs are,” Peyronnin said.

Sediment diversions are the key focus in state coastal policy. Gov. John Bel Edwards recently asked President Donald Trump’s administration to fast-track five coastal projects, including the Mid-Barataria and Mid-Breton diversions. The state’s revised coastal master plan is also set to be finalized this month and then presented to the Legislature in April for an up-or-down vote.

Many people agree about the urgency of fighting coastal loss. But even if the two diversions are given priority in the federal permitting and environmental review process, it will be years before either is built and even longer before they are fully operational.

Barth, however, insists that sediment diversions represent the best hope for harnessing the river to help restore the state’s disappearing coast.

“The river provides those sediments every minute of every day,” he said. “It’s not a new process.”

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