WaterMarks

Louisiana Coastal Wetlands Planning, Protection and Restoration News

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Pairing wetland restoration
with navigation and flood protection

Synergy Among Stakeholders Taps the Power of Partnerships

Inside:

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WaterMarks is published three times a year by the Louisiana Coastal Wetlands Conservation and Restoration Task Force to communicate news and issues of interest related to the Coastal Wetlands Planning, Protection and Restoration Act of 1990.
This legislation funds wetlands restoration and enhancement projects nationwide, designating approximately $60 million annually for work in Louisiana. The state contributes 15 percent of total project costs.

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ABOUT THIS ISSUE'S COVER . . .

Industry and nature share the landscape in coastal Louisiana. Partnerships among disparate interests increase the sustainable use of resources and support wetland protection and restoration.

Photo credit: U.S. Army Corps of Engineers

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Cultivating Benefits From Paradoxical Pairings

Louisiana's coastal ecosystem is a geography of paradox. Land emerges from sediment-laden floodwaters; land spared from flooding converts to water. The river nurtures vast deltas; the deltas' size forces the river to abandon them to starvation and subsidence. Environmental management allows people to live in and develop the region; management techniques undermine the region's physical existence.

The natural cycles of ebb and flow, accretion and subsidence, increase and demise alternated undisturbed for about 7,000 years. But new inhabitants arriving on the continent in the 18th century were intent on protecting permanent settlements and improving navigable channels. They began to put their human imprint on the landscape.

So successfully have humans tamed the coastal landscape that in the last century, natural processes that sustained the wetlands for eons evidenced profound disruption. New paradoxes emerged: Levees that prevent overbank flooding to protect property in the delta cause the delta wetlands to starve and decay. Navigation channels that quicken marine transport and commerce speed the flow of fresh water into the Gulf of Mexico, where nutrients and sediment spill useless onto the ocean floor. Oil and pipeline canals that increase the nation's energy security scissor through the fabric of the wetlands, destroying the coast's natural security against storm surge and saltwater intrusion.

But the seeming contradictions of a paradox express a possible truth. Louisiana's coast is a complex natural ecosystem, but it is also an essential economic and social network. Environmental management practices have unintentionally damaged ecological functions, but newly designed practices can introduce remedies. Winner-take-all has too often defined the terms of success in past competitions for resources, but stakeholders willing to relinquish an adversarial stance are teaming up to combat the common peril of disappearing wetlands.

As the interests of navigation, flood protection and restoration work in concert toward shared objectives, compromise is inevitable. One party cannot prevail at the cost of another. But change in the wetlands is also inevitable. The success in shaping change to support social and economic objectives while sustaining the underlying environment will determine the future of coastal Louisiana. WM

S.L. Coogle, Koupal Communications

Louisiana's flourishing indigenous vegetation stabilizes the soil and adds beauty to a canal shoreline reinforced with inert, non-native rock. This pairing exemplifies at a fundamental level how contrasting components can work in tandem to secure and enhance wetland restoration.

Perspectives on Sediment: Too Much, Not Enough

Carried from the continental heartland by the Mississippi River, waterborne sediment has been the basic building block of Louisiana's wetlands for 7,000 years. Now, with levees preventing sediment-laden floodwaters from spreading over the delta, the wetlands are deprived of material to combat the destructive forces of erosion and subsidence.

While indispensable for wetland sustainability, sediment is an encumbrance to shipping, as it settles in the river bed and causes shoaling and channel shifts. Keeping deep channels open for ship traffic requires continuously removing the sediment.

From the perspective of navigation, the issue of sediment is one of too much. From the perspective of wetland ecology, it is one of not enough. Synergy arises from the potential pairing of this excess and need.

Beneficial use of dredged material

From the earliest days of river management, Congress has assigned the responsibility of improving conditions for navigation to the U.S. Army Corps of Engineers. Dredging regularly to maintain shipping channels, the Corps removes sediment from the river with huge pumps and transports it by pipeline or barge to disposal areas.

Regulations require the Corps to dispose of the material in the manner that is least costly, consistent with sound engineering practices and meeting specified environmental standards. Often this has meant piling the dredged material in confined upland disposal sites. When the navigation channel extends into the Gulf of Mexico, disposing of the material in the gulf is far cheaper than pumping it back to shore. But when feasible,

A slurry of water and sediment rushes through a pipe to empty into a marsh creation project area. Using sediment dredged during navigation channel maintenance for coastal restoration can help solve the Corps' problem of finding suitable disposal sites for the material.

US Army Corps of Engineers

Lake Charles Harbor and Terminal District

Left: The 11th largest seaport in the country, the Lake Charles Harbor and Terminal District in Calcasieu Parish accommodates five million tons of cargo annually. The U.S. Army Corps of Engineers maintains a channel depth of 40 feet in the Calcasieu River and Pass for vessels to access the port's terminals. The principal goods moving through the port are rice, flour and other food products; forest products; aluminum; petroleum coke and other petroleum products; woodchips; and barites and rutile.

Below: From the air, the fragility of the marshes is evident. Depending on the proximity of a restoration project to dredging operations for ship channel maintenance, sediment may be pumped directly from the dredge barges through pipes and into open water and deteriorating marshes. The sediment provides bulk to create and nourish marsh and establishes a platform on which vegetation can take hold.

US Army Corps of Engineers

the Corps uses the material for coastal restoration. Not all dredged material is suitable for building marshes — some of it is too fine — but over the decades maintenance dredging has provided precious sediment for creating marsh.

Whenever possible, the Corps partners with other organizations or government agencies that pay shares of the additional cost of transporting the material to wetland restoration sites rather than dumping it in confined disposal sites (CDS). Such cooperation delivers benefits to navigation and restoration simultaneously and reduces competition between two users of river resources.

Case study: Corps, state, parish and port partner to aid marsh

A multi-party partnership is working together to resolve two problems with a single solution. Disposing of unwanted sediment is a problem for the Lake Charles Harbor and Terminal District (LCHTD). Acquiring needed sediment is a problem for the Sabine Refuge Marsh Creation, Cycle 2, a project funded by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA).

Piping sediment dredged from the Calcasieu Ship Channel into the project area via a 3.5-mile-long temporary pipeline is to both parties' advantage, but doing so is more costly to the Corps than transporting the material to a CDS. The state's Office of Coastal Protection and Restoration, with funding from CIAP, and Calcasieu Parish are offering to cover the additional expense, and the LCHTD, in the role of a local sponsor, is coordinating the funding.

"We're acting out of pragmatic altruism," says Channing Hayden, LCHTD's director of navigation and security. "Dredging the ship channel is mandatory if we're to maintain navigation, and the dredged material has to be put somewhere. If we ran

Federal standard, 33 CFR 3357

The Code of Federal Regulations establishes the federal standard for disposing of dredged material as "the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process for ocean dumping criteria."

According to Norwyn Johnson, a senior adviser in the Office of Coastal Protection and Restoration, the question is how to determine the least costly alternative. "Do we calculate it using only a National Economic Development measure of benefit to cost, or should we incorporate values that are difficult to calculate in dollars, such as loss of environmental quality?"

Louisiana, through the Coastal Zone Management Act, requires activities to conform to the state plan for coastal protection and restoration. "With the Corps, we're moving forward on a case-by-case basis," says Johnson. "The Corps has regulatory and budgetary constraints that prevent full compliance with the objective of using all sediment taken out of our rivers, channels and canals to rebuild our coastal marshes."

There is widespread support for revising the federal standard to increase the beneficial use of dredged material. Until that occurs, realizing the synergy between maintaining navigation channels and restoring wetlands will depend largely on funding from other programs and agencies.

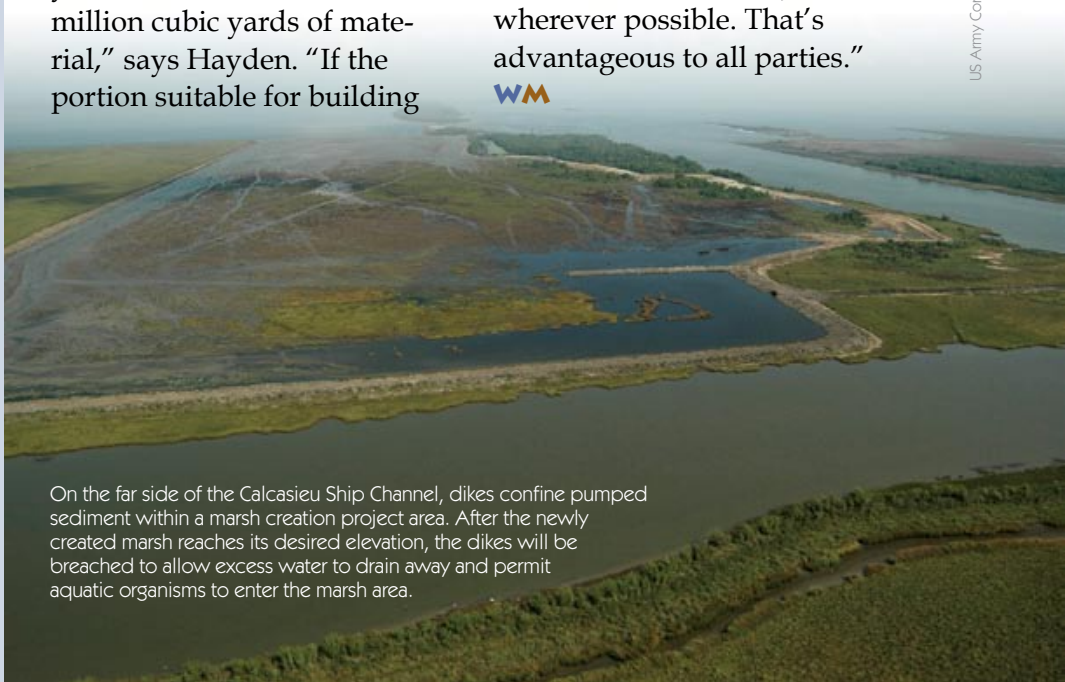
US Army Corps of Engineers

A barge moves dredging equipment close to a marsh creation project area at South Pass. Officials anticipate changes in the federal standard regulating the disposal of dredged material will increase its use for coastal restoration.

out of disposal space, we'd have to shut down the ship channel. But nearby, there's a great environmental need for the sediment. We see this as a win-win for navigation and the environment — it solves our disposal problem and it answers the restoration project's need for land-building material."

Sediment dredged during routine maintenance will create 220 acres in the CWPPRA Sabine project area and 440 acres in Black Lake. "Every year we remove about four million cubic yards of material," says Hayden. "If the portion suitable for building marsh is used, we figure it would create between 6,000 and 10,000 new acres over 20 years."

To expand the use of material from the ship channel, LCHTD and the Corps are working with other federal and state agencies to develop a 20-year management plan. "When the federal standard is revised, we expect beneficial use to be incorporated into budgets for dredging," says Hayden. "We'd like to see the dredged material used in coastal restoration projects wherever possible. That's advantageous to all parties." WM



US Army Corps of Engineers

On the far side of the Calcasieu Ship Channel, dikes confine pumped sediment within a marsh creation project area. After the newly created marsh reaches its desired elevation, the dikes will be breached to allow excess water to drain away and permit aquatic organisms to enter the marsh area.

Renewal Finds Route Into Wetlands

The good news: With levees protecting it from river floods, Louisiana's coastal zone supports an expanding population and flourishing commerce.

The bad news: Levees that restrain floodwaters deprive the wetlands of the nutrients and sediment essential to their survival.

The good news: With the support of canal construction, channel maintenance and seaport development, Louisiana's shipping industry has prospered.

The bad news: Building, modifying and dredging waterways have altered the coastal zone's natural hydrology, degrading Louisiana's wetlands.

The good news: Water flowing through river diversions can rebuild the wetlands and restore the landscape.

The bad news: Such diversions would push fish and shellfish toward the Gulf of Mexico and could affect river sedimentation and marine transport.

How can the seemingly exclusive and antagonistic interests of flood control, navigation and coastal restoration thrive in a shared environment? Two wetland scientists believe that conditions in southwest Louisiana demonstrate that synergy does exist among these competing interests.

Shipping channel diverts benefits into the wetlands

Built to give vessels a protected passageway, the Gulf Intracoastal Waterway (GIWW) runs parallel to Louisiana's coast along the wetland-upland interface. By capturing fresh water from the Atchafalaya River and the Wax Lake Outlet near Morgan City, the waterway interrupts the natural, north-south sheet flow of water through the wetlands, but transports nutrients and sediment into marshes 30 to 50 miles to the east and west. Christopher Swarzenski, a research hydrologist at the United States Geological

Ghostly skeletons of trees mark areas where intruding salt water raised soil salinity levels beyond the tolerance of the vegetation.

Patricia Faulkner, LA Dept. of Wildlife & Fisheries

Survey's Louisiana Water Science Center in Baton Rouge, observes that the waterway functions as the hydrological and ecological equivalent of a fairly large diversion. "The GIWW is passively introducing more river water and suspended sediments into the delta plain marshes than the combined flows of the freshwater diversions constructed at Davis Pond and Caernarvon," he says.

The amount of water flowing through the GIWW is controlled by seasonal differences between water surface elevations of the Atchafalaya River and the surrounding watersheds. When the river rises in springtime, flow in the GIWW increases and pushes fresh water into and beyond the Terrebonne and Cote Blanche areas. The fresh water moderates salinity and replenishes the wetlands with essential nutrients and sediment. "Wetlands adjacent to the GIWW are one of the few areas where inflow of river water has been occurring for several decades or even longer," says Swarzenski. "They afford an excellent opportunity for testing conceptual models and for refining our understanding of how river water nourishes and builds soils."

Scientists expect the duration of the seasonal differences in water surface elevations to gradually increase. Sediment buildup in the bed of the Atchafalaya River would increase hydraulic head differences between the river and adjacent watersheds, and expansion of the Atchafalaya and Wax Lake deltas would slow down the north-south river flow. Both factors would induce more water to flow laterally into the GIWW for longer periods of time, a benefit to the wetland ecosystem.

While maximizing the restorative potential of the GIWW would not affect navigation, it does introduce risks to other interests. Increased volume in the GIWW could cause low-lying communities to become more vulnerable to backwater flooding. And the GIWW connects to north-south routes for fresh water flowing out of the wetlands, which during storms are conduits for salt water pushing into the wetlands.

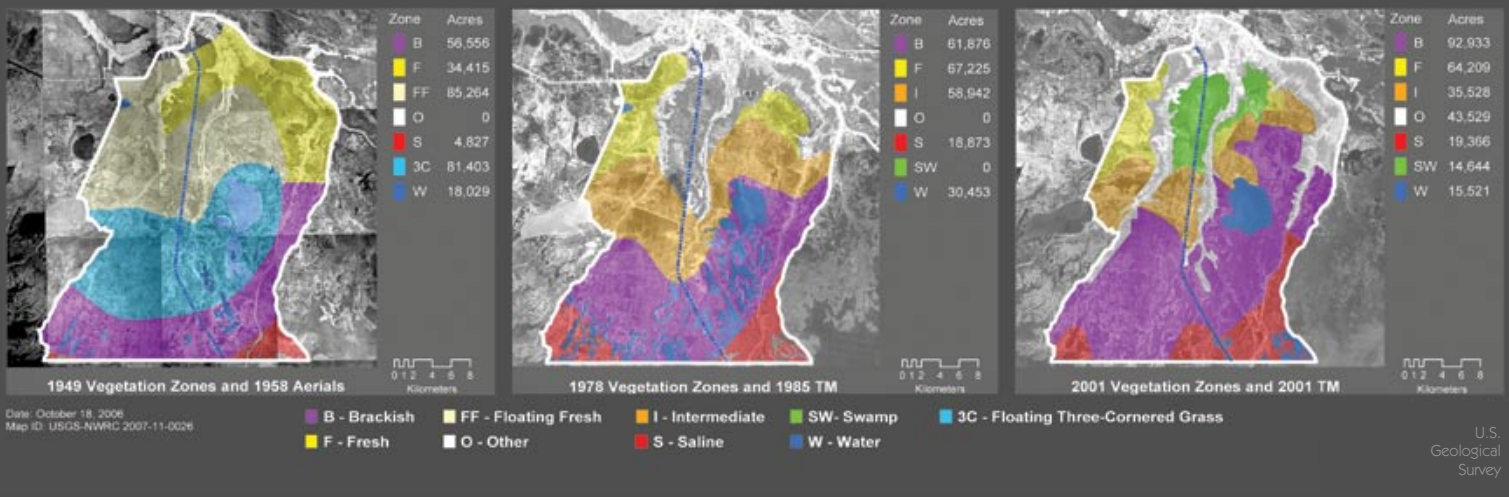
Locking in fresh water, locking out salt

The straight, deep channel of the Houma Navigation Canal (HNC) promotes speedy passage — for ships and salt water alike. According to Ronny Paille, a biologist with the U.S. Fish and Wildlife Service, 70 to 80 percent of the fresh water reaching Houma via the GIWW escapes down the HNC and into the Gulf of Mexico. "Because that canal is so efficient," says Paille, "water shoots into the gulf without dispersing into the adjoining marshes. With little opportunity to dilute salinity levels stressful to the growth and health of vegetation, the benefits of that fresh water are lost."

The canal also makes possible the deleterious flow of water in the opposite direction. In

US Army Corps of Engineers

Locks used for navigation could provide ecological benefits by adapting operations to control freshwater retention and dispersal into adjacent wetlands.

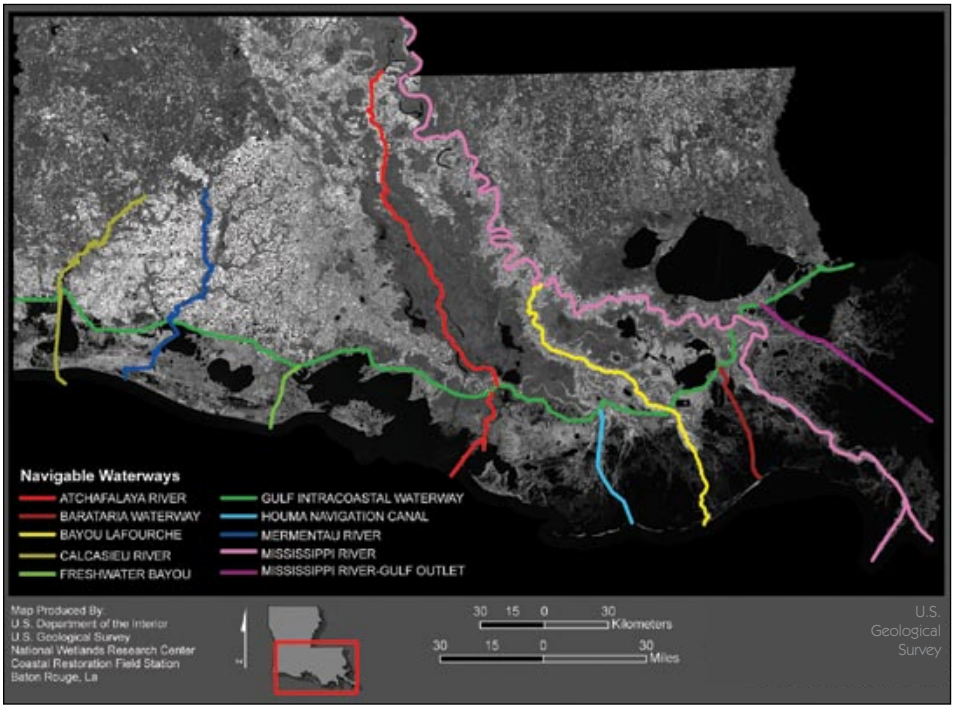


Above: Mapping decades of marsh changes in the Houma Navigation Canal corridor illustrates how saline ecosystems have replaced freshwater and floating marsh habitats since the construction of the 36-mile-long waterway

dry seasons, when discharge from the Atchafalaya River is low, or during storms, salt water and surge can reach up the canal and northward into the wetlands. Often pushed by strong southerly winds, high salinity can infiltrate the GIWW.

The U.S. Army Corps of Engineers proposes that a lock complex be built on the HNC. The lock would close to block salt water and storm surge from entering the canal and would reduce the risk of flooding. Navigation would benefit from the lock's safe harbor during storms, but might experience slowdowns when low Atchafalaya River discharges force ships to "lock through."

The lock complex would produce further ecological benefits by retaining fresh water in the wetlands. "If the lock complex is operated to increase distribution of fresh water into adjacent wetlands," Paille says, "deteriorating marshes outside



The crooks and curves of natural waterways slow ingress and egress not only of economically essential shipping but of storm surge and salt water as well. Scientists estimate that construction of navigation canals and consequent bankline erosion and saltwater intrusion may account for as much as 50 percent of Louisiana's coastal land loss.

the Morganza-to-the-Gulf Hurricane Protection project's proposed levee system could be maintained and restored. By strengthening the region's environmental sustainability, these wetlands would provide additional storm protection to area communities."

The search for synergy

Paille describes the proposal for the HNC lock complex as unique in its potential to deliver advantages to restoration, navigation and flood protection simultaneously. But there is an urgent need to cultivate such opportunities, as Louisiana cannot afford to give priority to one interest at the expense of another. For survival, Louisiana is shifting the language of environmental management from the competitive dichotomy of either-or to the mutually beneficial paradox of both-and. WM

Restoration + Protection = Potential[2]

Water: life-sustaining and life-threatening. Few places know so well the dual nature of this element as does the gulf coast. Without effectively managing the risk of floods, present-day Louisiana could not exist.

Through a system of spillways and levees, the U.S. Army Corps of Engineers has kept the Mississippi River within its banks as it rolls through Louisiana and into the Gulf of Mexico. But successful flood risk management, essential to Louisiana's population and economy, has come at the expense of the environment. Without waterborne nutrients and sediment replenishing the marshes, Louisiana's coastal wetlands are vanishing, and disappearing with them is the critical natural protection against hurricanes and storm-induced flooding that they provide.

Restoration lends a hand to flood protection

Following the 2005 hurricane season of Katrina and Rita, the state of Louisiana recognized that developing effective storm protection was not feasible without restoring the coastal wetlands. Reframing state policy, Louisiana incorporated both objectives in its master plan for the coast.

Healthy wetlands blunt the impact of hurricanes by absorbing wave action and reducing storm surge. When wetlands front structures built to reduce the risk of flooding, they buffer the destructive force of wind and waves and reduce the wear and erosion to which levees are exposed.

Contemporary Louisiana depends on structures as well as on natural landscape features to reduce the risk of storm-induced flooding. Walls such as these give a measure of protection to the state's densely populated coastal areas.

US Army Corps of Engineers

The mission of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) is to protect and restore the coastal wetlands of Louisiana. CWPPRA bears no specific responsibility for reducing flood risk, but inasmuch as healthy wetlands provide a defense against storms, coastal protection is an inherent feature of CWPPRA projects.

Case study: Bayou Dupont

In the Barataria Basin north of Myrtle Grove, a Plaquemines Parish flood protection levee abuts an area of severely degraded marsh and open water. The CWPPRA project Mississippi River Sediment Delivery System — Bayou Dupont (BA-39) proposes to rebuild the marsh with dredged sediment piped to the project area. "Restoring nearly 500 acres of wetlands will reduce the levee's exposure and buffer nearby communities against the full impact of storms," says Tim Landers, a scientist at the Environmental Protection Agency.

Sediment will come from a borrow area in the river. The Corps has worked with project engineers to develop guidelines so that dredging avoids adversely affecting either river navigation or levees designed to reduce the risk of floods.

Landers looks ahead to a possible river diversion providing sediment and nutrients to sustain the rebuilt wetlands. "The two restoration techniques work together," Landers says. "We can create wetlands quickly with dredged sediment delivered via pipeline, then sustain them over the long haul with a diversion."

Restoring barrier islands strengthens the first line of defense against storms blowing in from the Gulf of Mexico. Back marshes help to hold sand blown and washed from the beach within the island system.

Protection gives a boost to restoration

Historically, structures built to reduce the risk of floods provide no environmental benefit, as they disrupt the natural hydrologic functions that create and sustain coastal wetlands. But as the wetlands dwindle, the storm buffer they provide must increasingly be supplemented with structures. "The reality is that for Louisiana's long-term sustainability, we need both protective structures and flourishing wetlands," says Nathan Dayan, a biologist with the environmental planning and compliance branch of the U.S. Army Corps of Engineers. "The challenge is to design a plan where the objective of one mission doesn't harm another."

To build structures without exacerbating environmental damage, the state's master plan avoids further hydrologic disruption whenever possible by aligning new levees along existing roads, banks and ridges. Levees designed for the Morganza-to-the-Gulf project incorporate gates that would close only during storms. In calm weather they would remain open to maintain tidal exchanges and allow water and aquatic organisms to flow in and out of protected marshes. Other water control structures could be used to improve drainage in areas that are presently impounded. "We want to build a system that we can modify and adapt to achieve maximum benefits for the environment as well as for our coastal population," says Jerome Zeringue, the acting executive director of Louisiana's Office of Coastal Protection and Restoration.

"Our present goal is to make our efforts to reduce the risk of storm damage neutral to coastal restoration," says Dayan. "But that involves looking ahead to be sure that where and how we build protection today doesn't limit opportunities for restoration in the future." WM

AS ESSENTIAL AS BODY, BLOOD AND SOUL

Ecology, Economy and Community Equally Vital to Coast's Survival

Louisiana's coastal wetlands have always been an unusually dynamic environment. Forces of nature have constantly reshaped the landscape, pulling the river west and then pushing it east; creating crevasses here and constructing barriers there; building marshes up, then breaking them down. Through this constant rhythm of natural change, the wetlands slowly expanded for eons, gradually extending their reach into the Gulf of Mexico.

Human management of the environment introduced a new force in the landscape that sought to impose stasis and control. Its success in limiting river floods has allowed people to establish a permanent presence in the coastal zone.

But change continues. After a century of intensive human interference in the natural order, Louisiana's coast suffers the consequences of disrupted ecological processes. The present trend is conversion of the wetlands into less fecund, more saline, shallow open water. Human actions can reverse, retard or hasten the conversion, but the wetland ecosystem will inevitably change.

If the current trend of wetland loss is unchecked, the resulting changes will damage every party that derives benefits from the wetlands, such as

- the fishing industry, which will experience a reduction of catch as the vast piscine nursery grounds of the coastal zone are lost
- the oil and gas industries, which will confront exposure of pipelines that previously were safely sheltered within coastal marshes







Top row, left to right: S.L. Coogle, Koupal Communications; Darryl Clark, U.S. Fish and Wildlife Service; USACE; Rex Caffey, LSU; Chris Granger; USACE

- shipping, which will face threats to port infrastructure and to traditional waterways and safe anchorages
- human communities, which, as land disappears, will experience loss of property in the most literal sense. Advancing sea water will threaten essential infrastructure, such as roads, power lines and water supplies. As natural buffers to hurricane winds and storm surges vanish, dependence on expensive, hard-structure storm protection will increase.

But checking the trend of wetland loss could adversely affect every stakeholder as well. For navigation, restoring the coast could mean foregoing the swift routes of straight channels and accepting delays to move through locks. For coastal communities, restoration could cause added expense in building flood levees that permit hydrologic exchange.

Conversely, every interest also has something to gain. Coastal restoration provides

- a natural buffer that absorbs a degree of the destructive forces of storms
- enhanced protection of property and civic and industrial infrastructure
- improved water quality, which sustains municipal uses and reduces hypoxia in the Gulf of Mexico
- preservation of the natural environment upon which activities such as hunting, fishing and eco-tourism depend

Hard choices are inevitable. While planners and decision makers seek to realize synergies among competing interests, compromise will be necessary. All stakeholders face relinquishing some advantage for the sake of coastal restoration, just as they anticipate preserving some value. As difficult as it is to determine a course of action that will profoundly affect so many people over so large a geographic area, inaction spells disaster for the coast, its population and the ecosystem as it has functioned for centuries. WM







Bottom row, all: USACE

WaterMarks Interview with Margaret Reams

Sharing a Vision for Sharing the Coast

Dr. Reams is an associate professor in the Department of Environmental Sciences at Louisiana State University, Baton Rouge. She teaches graduate-level courses in environmental conflict resolution and environmental land-use planning.

WaterMarks: Despite widespread alarm over Louisiana's coastal land loss, there is still no broad agreement on a comprehensive solution. Why is it so difficult to build consensus for a plan of action?

Reams: Any way you look at it — geographically, scientifically, socially or economically — Louisiana's problems are enormous and complex. Any meaningful solution will cause major changes in the coastal landscape. That feels threatening to the many groups who, for numerous cultural, commercial and environmental reasons, have a stake in the wetlands. Each group fears that it will be asked to make inequitable and unreasonable sacrifices if we implement irreversible, landscape-scale changes.

Many of these stakeholders have a history of competing for wetland resources and a tradition of contentious relations. They tend to value the wetlands differently. Some quantify the value in strictly utilitarian terms, counting jobs and profits; others believe the value is more intrinsic and incalculable. Whenever a moral judgment of values is involved, conflict intensifies.

WaterMarks: Who's responsible for Louisiana's plight? Is it reasonable to assign blame?

Reams: We tend to look for the big villain with the hope of making someone else pay. The truth is, there's no single cause for Louisiana's predicament. It's the result of both natural processes and human activities.

There's no better example than the coastal wetlands of a situation where protecting resources would help the economic interests that use them. Everyone derives benefits from healthy wetlands — they are a common-pool resource. And when they vanish, everyone is hurt.

WaterMarks: How can the process of conflict resolution help Louisiana make difficult choices?

Reams: Environmental conflict resolution efforts bring together representatives of every group with a stake in the wetlands. It's tricky to get all stakeholders around one table, but some opportunities develop only if people meet face-to-face. There's a tendency to demonize opponents whom you do not know, but we can learn to talk with our adversaries and build relationships.

Through the process of conflict resolution, diverse parties discover common values and choose matters of possible compromise. If people share a long-term vision for what they want the wetlands to look like, what they want their communities to be like in 20 years, they see what they have to build on and what they might trade to develop agreement on a course of action.

The approach of conflict resolution is different from that of our adversarial-based legal system, which is organized to decide who wins and who loses. Conflict resolution encourages the parties involved to look for ways each can assume some amount of the expense and change some of the things it

does to realize a bigger picture, to preserve the human community and expand economic resiliency.

WaterMarks: Who, ultimately, makes the decisions?

Reams: In our democratic system, elected officials are responsible for public policy. In their decision-making process, they get input from multiple sources. Recommendations from stakeholders involved in conflict resolution are usually a key input. So is science, and so is the voice of economic interests. But no solution to Louisiana's crisis will be successful unless the affected stakeholders buy into it.

WaterMarks: What role should science play in shaping policy?

Reams: In a democracy, science will never have the final word in forming public policy. But it's vitally important that scientific knowledge is available to every party that influences the policy-making process. Without it, stakeholders can't assess the value of the sacrifices that are made to maintain the wetlands. That undermines their ability to resolve conflicts over the environment.

WaterMarks: Does the public grasp the gravity of wetland loss?

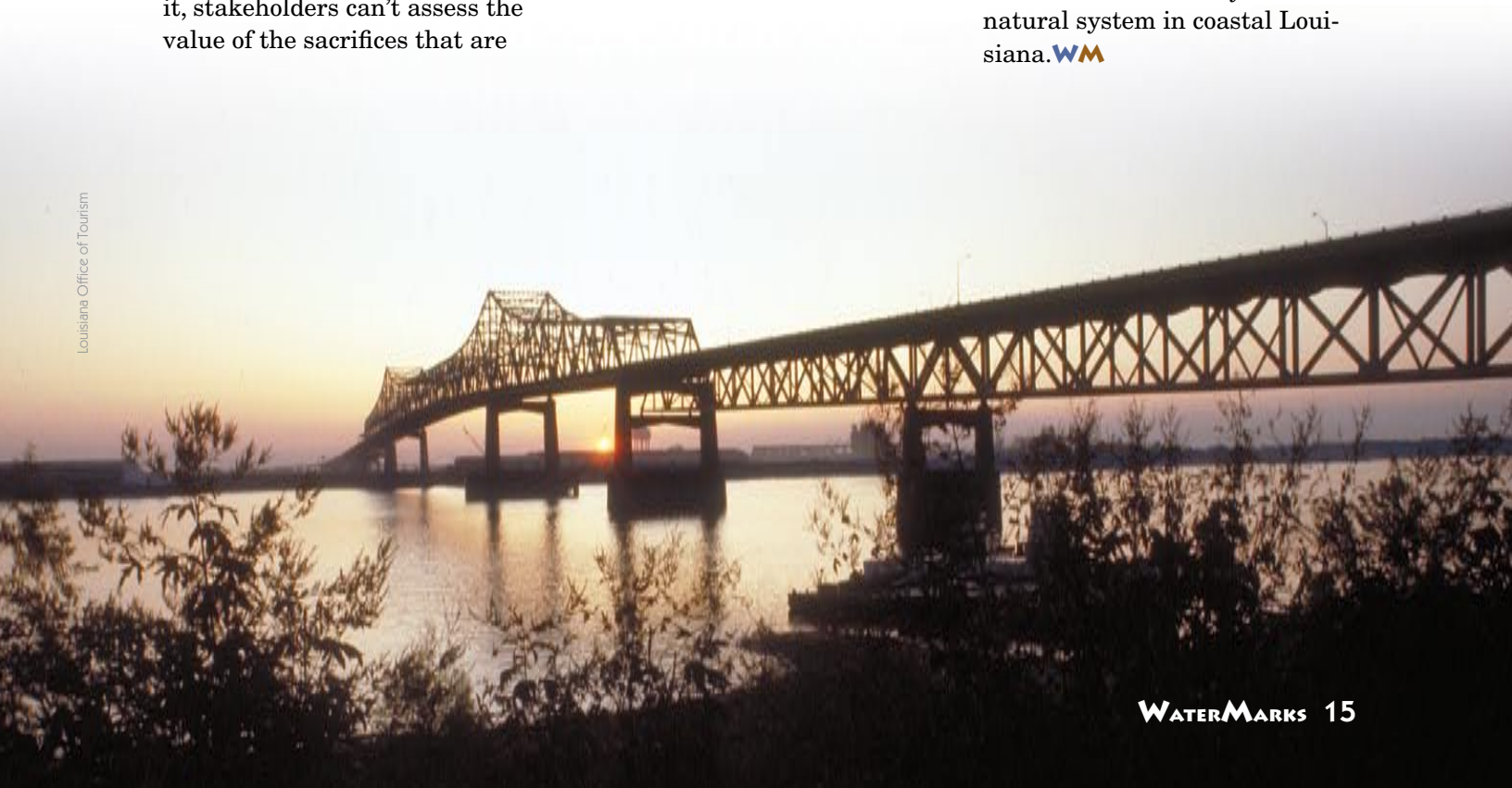
Reams: We have difficulty viewing the wetlands in a holistic manner. Our economic self-interest makes us subjective in how we approach a natural resource; we're likely to favor its use by the enterprise we're employed in. And we tend to operate with a short-term bias, not really thinking about the outcomes of our actions.

We also suffer from a belief that science will provide the solutions, that somehow, magically, we will heal the wetlands without having to change how we use them, and that technology will save us from our unwise land-use decisions.

WaterMarks: What can we learn from CWPPRA about working together to protect and restore the environment?

Reams: CWPPRA is an excellent model of interagency cooperation and for bringing stakeholders together at a community level. Its bottom-up project selection process encourages local constituencies to come to the table, share their historical knowledge of the wetlands and have a say in restoration projects. Involving local people and building on local knowledge increase the community's resilience and sustainability.

The scientific knowledge and practical experience that CWPPRA has fostered over the years help us to understand what our options are for restoring the coast. CWPPRA continually supplies new data about what does and doesn't work. This kind of information is essential in making wise choices — choices that acknowledge the importance of preserving both the human community and the natural system in coastal Louisiana. WM



Louisiana Office of Tourism

Louisiana's future builds on waterborne sediment

To promote settlement and commerce in the early days of the nation, Congress assigned the responsibility of improving navigation on the Mississippi River to the U.S. Army Corps of Engineers in 1824. Today the Mississippi River is the main stem of a 12,350-mile-long network of navigable inland waterways. The Corps regularly dredges the river to maintain a 45-foot shipping channel from the mouth of the Mississippi River to Baton Rouge, and a nine-foot channel from Baton Rouge to Minneapolis, Minnesota.

The river carries an estimated 436,000 tons of sediment to the Gulf of Mexico every day — an average of 159 million tons each year. Using the portion of that sediment that is suitable for rebuilding marshes could result in countering as much as 70 percent of Louisiana's annual land loss.

Present regulations restrict disposing of dredged material to the least costly, environmentally acceptable methods. Because transporting sediment to restoration areas usually increases disposal costs, its use for rebuilding marshes has been limited. As regulations change and partnerships to share expenses expand, coastal scientists and engineers look toward using a larger percentage of the river's bounty to rebuild Louisiana's wetlands, mimicking the age-old natural processes of delta-building. WM

U.S. Army Corps of Engineers

WATERMARKS

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