Prime Hook: Plan will rebuild saltwater system

Photo by: Ron MacArthur A great blue heron takes flight in an area of Prime Hook National Wildlife Refuge that once was a thriving marsh. It's now mostly open water.

Historically, the area that was to become Prime Hook National Wildlife Refuge was saltwater habitat. It wasn't until manmade water-control structures and ditches were constructed in the 1980s that most of the refuge's marshes were converted to freshwater.

Now, U.S. Fish & Wildlife officials have decided the best course of action to rebuild the decimated marshes is to return the refuge to what it once was. During a standing-room only public workshop Nov. 13 at the Milford library, officials presented for the first time the science behind the plan to restore the refuge.

Scientific models show that a sustainable saltwater marsh can be brought back once the breaches north of Primehook Beach are filled in. “We have to let science dictate where we go,” said Al Rizzo, project leader for the Coastal Delaware National Wildlife Refuge Complex.

The breaches – that have opened a 1,500-foot hole in the beachfront – have allowed the flow of tidal saltwater from the Delaware Bay into what were freshwater marshes. Over the past five years, the marshes have been destroyed, trees have been killed and farmland has been affected. In addition, the loss of protective marsh has led to increased flooding in nearby communities, including Primehook Beach.

Wind and waves from last October's Hurricane Sandy doubled the size of the breaches.

“Our primary objective is to restore to the best of our ability habitat that was lost due to Hurricane Sandy,” Rizzo said. “The communities are on our minds, but our focus is on the habitat. If the communities also benefit, that's great.”

Even when the work is completed within the next two to three years, Rizzo said, there is still no guarantee the beach communities are insulated from flooding.

First phase includes beach repair

Rizzo said the plan includes restoration of the beach and dunes in the area of Fowler Beach using as much as 800,000 cubic yards of sand to cut off the free flow of bay water. The first phase of the work – including beach restoration – will be funded with $20 million in Hurricane Sandy relief funding.

As that project is taking place, Rizzo said, work will start to build a 200- to 300-foot wide spartina grass marsh platform directly behind the beach. That area will provide a buffer as the rest of the marsh is reestablished.

The focus of the project is on two of the refuge's four impoundments or units. Unit 2 and Unit 3 have received the most damage from the influx of saltwater. Unit 1 and Unit 4 are saltwater marshes.

Rizzo said the plan will mimic the thriving saltwater marsh in Unit 1, which is north of Fowler Beach Road. He said the restored beach and marsh platform will keep pace with sea-level rise and provide protection against storm damage.

Rizzo said under the proposed plan, Unit 2 would be returned to a salt marsh while Unit

3 would be half salt marsh and half freshwater marsh.

If everything goes as planned, work on Phase I should begin during the fall of 2014, Rizzo said.

By reestablishing saltwater marshes as a long-term solution, better protection is provided because spartina grass, the foundation of the marsh, can withstand an increase in salinity due to an overwash from a storm, Rizzo said.

Freshwater marsh vegetation is sensitive to increased salinity and another breach could set off the same chain reaction that has resulted in the refuge's current problems. “A blow out again into the freshwater marsh and we are done,” Rizzo said.

“We don't want to get locked into a permanent maintenance situation and we don't want to get in the beach renovation business,” Rizzo said.

New channel would provide water flow

Engineer Jeff Tabar of Adkins Global presented modeling data. He said scenarios included allowing one breach to remain open and closing all breaches, which is the preferred alternative. Tabar said models show that with the breaches closed, changes can be made to allow enough water with the proper salinity level to flow into the refuge to sustain a saltwater marsh.

In order to maintain salinity, several projects will be necessary, Tabar said. Those include the construction of a channel running north to south in the refuge from the Mispillion River to Broadkill, removal of the most easterly section of Fowler Beach Road and removal of some of the refuge's water-control structures so the flow of water is not impeded.

“This will get water into the system and provide more circulation and salinity into the system,” Tabar said. “This is the best solution for a sustainable system.”

Tabar said the addition of smaller finger channels from the main would also be required.

Rizzo said the channels would provide adequate flushing for the refuge and also assist with mosquito control and habitat retention.

Rizzo said by removing the water-control structures, the overall water level in the refuge will drop. That could result in less sediment needed to rebuild about 1,200 to 1,800 acres of destroyed marsh in Unit 2. “We need to see how far the water levels drop. We don't want to add sediment unless we need it. We can strategically pick areas to be filled,” Rizzo said. “We can drop the water level instead of bringing the sediment level up.”

Money for that project would come from additional $19.8 million in funding from the U.S. Department of Interior.

Tabar said what is needed in the refuge is a more natural system. “We need a marsh complex behind the beach to make it resilient. If not, a storm will punch another hole in and we'll be back to where we started.”

Most of the trees in the Unit 2 marsh in Primehook Beach have been killed by saltwater intrusion. *(Photo by: Ron MacArthur)*

A large crowd at Milford library listens to a plan to restore Prime Hook National Wildlife Refuge. *(Photo by: Ron MacArthur)*

During a public workshop, Al Rizzo, project leader for the Coastal Delaware National Wildlife Refuge Complex, explains how the plan will help restore Prime Hook Refuge.