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Cape Gazette



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### Beach replenishment brings changes to the shoreline

*Next week: The science and economics behind beach replenishment?*

*By Ron MacArthur  
Cape Gazette staff*

A year after an \$18 million beach replenishment project pumped miles of sand onto the beach, the sand used is under scrutiny.

A thick bed of pebbly stones along the shore, uncovered by recent storms, and an increase in injuries and rescues reported by lifeguards in Rehoboth Beach and Dewey Beach, underline the problem.

Tony Pratt, shoreline management administrator for the Department of Natural Resources and Environmental Control (DNREC), said replenishment can alter the contour of the beach, and the type of sand used plays a major part.

Coarse, gravelly sand used in last year's replenishment of the beach from south of Dewey to north of Rehoboth creates a steeper beach profile than fine sand used in earlier projects, he said.

Pratt said DNREC wants to use finer sand and not the coarse sand when nourishment of additional sand begins along the shore in 2008.

As any lifeguard will tell you, the dangers of swimming in the ocean are unrecognized by most visitors looking for a good time in the sun.

Every day is different as weather, tide and wind combine to form the beach profile, which changes daily. But now another factor has entered into the equation of beach dangers – replenishment.

Beach replenishment is about dollars – the millions that pour into the coastal region each year – and the spinoff in taxes that help to fuel the state's budget.

The protection of the state's coastline is vital to the state's economy, and there is direct correlation to dollars spent on new sand and dollars collected from beach visitors.

Investment in sand is a wise expenditure, said DNREC Secretary John Hughes during a recent tour of the beach area.

#### **Injuries have increased**

Lifeguards are reporting more injuries, and surf-related injuries treated at Beebe Medical Center have increased in the past three years.

At Beebe Medical Center, the number of surf-related injuries increased after the completion of the Rehoboth-Dewey replenishment project in July 2005, but then decreased from 2005 to 2006. Beebe Medical Center has treated six persons for spinal injuries so far in 2006, compared to 11 in 2005 and three in 2004. Medical personnel treated 195 people for other surf-related injuries so far in 2006, compared to 294 in 2005 and 103 in 2004. Information was not available as to on which beaches the injuries occurred.

On one day this year, Aug. 18, emergency room personnel treated five

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people for neck injuries.

A sixth swimmer, Rob Henthorn of Chelsea, Mass., was flown directly for treatment to Christiana Hospital after being injured in the Dewey surf.

There are many unreported injuries such as bruises, cuts and scrapes related to conditions on the beach caused by the cobblestones and sharp shells.

Lifeguards are convinced the replenishment project has reshaped the coastline creating dangerous shore breaks and riptides leading to more injuries. They say the steeper beach formed by the replenishment project leads to more injuries.

Pratt said lifeguards reported to him that there was an increase in surf-related injuries this summer in Fenwick. "They claim it was from a ledge formed along the beach, but there is no replenishment done there," he said.

Pratt said it's hard to summarize from data he has seen that replenishment is the only factor leading to an increase in surf-related injuries. "It's very complicated. We have an increase in population and because the beach is wider and better, we have more people using it. The number of injuries could be misleading when we use it on a per-capita basis."

Even so, Pratt admits the slope and stones were not issues brought up prior to the Rehoboth-Dewey project.

And during planning for replenishment, safety issues relating to a slope created by a new contour on the beach were not discussed by the Corps of Engineers or DNREC, said Pratt.

"Prior to 2005, safety had not been an issue. There had not been a problem and we have been in the replenishment business since 1988. There was no reason for safety to be an issue," said Pratt.

Why? The sand used in other replenishments was finer and contributed to a more shallow beach contour with no steep slope.

Pratt said finer sand would probably be used during the nourishment phase of the project.

"We are not going back to the pebbly matter again," Pratt said. "We'll try to go further east out to sea in an area where we can get higher quality sand that is a little finer. That is the idea we are pursuing.

"There is a lot of gravel and steepness, and we will look for an alternative to remedy that," said Pratt.

The ideal sand used in other replenishments, found in the Hens and Chickens Shoals area off the coast of Rehoboth, was off limits during the recent replenishment, Pratt said.

The possibility of a fishery in the area forced officials to use sand off Indian River Inlet instead.

"Biologists had a concern, undocumented but still a concern, that an important fishery was at that location. We've found out that not much is going out there except some possible shark pupping," Pratt said.

Pratt said replenishment can alter the contour of the beach, and the type of sand used is important. During replenishment in the late 1990s, Rehoboth Beach lifeguards complained because they had to adjust to a completely different beach.

"Before replenishment, people could go out about 50 yards, and after, they could wade out as much as 150 yards," explained Pratt.

### **Shoreline**

The fine sand used for the replenishment in 1998 created a shallow, flat beach. The replenishment project completed in 2005 used much coarser sand, which Pratt said is closer to the natural sand in Rehoboth.

“The coarser sand will create a steeper profile,” Pratt said. “The coarser sand stays on the beach longer and matches the native sand that was here pre-1998.”

### **Lifeguards see change**

Capt. Todd Fritchman of the Dewey Beach Patrol said injuries on the beach have been on the rise for the past 10 years. “And we’ve had a significant increase in cervical-spine injuries over the past decade. That’s because the usage of the beach has increased – we are getting more visitors and more uneducated visitors. There are severe dangers in the Atlantic Ocean that people are not aware of. They come here for a 100 percent stress-free environment to play without thinking about the significant hazards involved.”

After replenishment in 2005, injuries nearly doubled. In 2005, there were 49 major medical response cases on the beach compared to an average of 26 cases dating back to 1997. Patrol members administered first aid to 109 people in 2005 compared to an average of 35 people dating back to 1997.

Fritchman said an increase in minor injuries is related to the replenishment project and the changed profile of the beach. “We have seen a major increase in first-aid-type injuries, lacerations and dislocations with beach replenishment as a contributing factor because of the profound shore break,” said Fritchman.

He said there was a shore break along the coast before the replenishment project was completed, but it was not a constant situation and not as profound.

He said cobble and shale deposited on the beach because of replenishment causes lacerations. “This leads to a lot of minor injuries including my staff. We have all had injuries this year on our feet. It’s now become part of our job description.”

“Our job responsibilities have changed slightly since replenishment.”

The 28-year-veteran lifeguard said beach replenishment is a sign of the times.

“The bad news is that is never going to get better because global coastal erosion and global coastal sea level rise are facts,” Fritchman said.

In Dewey, patrol members made 13 rescues in 2003, 18 rescues in 2004 and 18 again in 2005. They made 28 assists in 2003, 23 assists in 2004 and 19 assists in 2005. There were 23 major medical cases in 2003, 36 cases in 2004 and 49 cases in 2005. First aid was administered to 59 people in 2003, 83 people in 2004 and 109 people in 2005.

Fritchman said more than 11,000 people are on the beach during an average weekend in Dewey.

Capt. Kent Buckson, a 20-year veteran of the Rehoboth Beach Patrol, said surf-related injuries decreased compared to last year, but still are above average. He said he would make a report on injuries to the Rehoboth commissioners in November.

Rescues by Rehoboth Beach Patrol members jumped from 154 in 2003 to 487 in 2004 and then to 337 in 2005. Buckson said there were 10 neck/spinal injuries in 2003, 12 in 2004 and 38 in 2005. Patrol members provided medical assistance to 227 people in 2003, 1,120 people in 2004 and 723 people in 2005.

He said there are negatives and positives associated with beach

He said there are negatives and positives associated with beach replenishment.

Buckson said surf-related injuries increased dramatically the summer following replenishment because of the steep contour of the beach. “We had triple the number of backboard injuries from the last season, but a year later, they were not as high.

“Over time, we are getting a more gradual slope on the beach. Last year, the wave action and contour of the beach changed; the waves dropped down on the beach. This year the waves didn’t drop down as hard.

“There was no sand bar last year and this summer some of the sand has started to come back. We saw a reduced number of neck and shoulder injuries, but people are still getting tossed and rolled onto the beach. We are not where we were before beach replenishment,” said Buckson.

Buckson said the recent late-summer storms have been a test for the replenishment project. “The dune has really prevented a lot of further damage to the steps, Boardwalk and businesses. Plus it has helped to replenish the sand. There is a lot of sand out there and I think the beach will be back about 80 percent by spring.”

However, the cobble and shells from replenishment that were getting covered by sand were uncovered by the storm, and they have caused many injuries over the past three weeks. “It’s been like riding waves on pavement. We’ve had rough surf since Labor Day weekend and we’ve been making a lot of rescues and getting a lot of cuts and bruises.

“But the storms have helped somewhat to make the slope of the beach more gradual.”

#### **THE NEW BEACH:**

**RIP CURRENTS:** Rip currents are narrow, fast-moving belts of water traveling offshore moving 1 to 2 feet per second, although some currents have been clocked up to 8 feet per second. Rip currents are the leading surf hazard accounting for 80 percent of water rescues, according to the National Weather Service. They can be found on most beaches every day. Under most conditions the speeds are relatively slow. They are most likely to be dangerous during high surf conditions.

**SHORE BREAK:** A shore break occurs when waves break directly on shore creating unpredictable and dangerous conditions.

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