

to shift a portion underwater where it is needed to build a foundation for the new beach. Second, the natural beach in November was somewhat healthier than its winter average shape. A 50-ft dry beach in late fall allowed us to start building further seaward. As the winter progresses, we expect some sections of beach to be less healthy just before new sand is pumped in place.

In most projects of this type, the first sections to be nourished serve as guides for how the sediments are sorting out on the beach and adjusting to waves and tides. Remember, it is only possible to control the portion that is above the low tide line as the new beach is built. Therefore, we expect some variation in the width of the visible beach as the project progresses. What is most important is the overall quantity that is added to the profile, whether visible or below the tide line. Pine Knoll Shores pays for sand delivered, not for any portion dredged but lost before reaching the beach.

As of January 31st, approximately two miles or 40 percent of Pine Knoll Shores was completed. According to contractor records, about 600,000 cubic yards had been delivered. Quantities for payment purposes are surveyed, checked, and resurveyed as necessary before approval by the town. Sand pumping is expected to continue through mid March in Pine Knoll Shores. Once sections are completed, the pipe will be removed, leaving the beach to adjust naturally. Then it is up to nature to bleach the sediments and give the beach a natural look.

As for the unexpected, a number of factors caused production delays since the onset of the project.

First, GLD&D encountered thousands of tires in borrow area B1. Apparently, North Carolina Division of Marine Fisheries used tires back in the 1970s to build fishing reefs about three miles offshore. The tires were supposed to stay in designated areas, but many broke lose during storms and, it seems, found their way to our borrow areas. This has caused delays because the tires get sucked into the dragheads and lower production rates. Some sections of the borrow area are worse than others so GLD&D is seeking to avoid the worst spots. A scallop dredge has also been hired to drag the area for tires, collecting about 1500 so far.

Second, four juvenile turtles were unexpectedly taken on December 15th, well after the normal dates when the turtles populate the area. In hindsight, it appears some turtles postponed migration to warmer waters because of the unseasonably high temperatures in December. Water temperatures remained above 60 degrees well into the month, increasing the chances of an encounter. Following established procedures, GLD&D suspended operations on the afternoon of December 15th, while the regulatory agencies reviewed the incident. Work resumed with the *Manhattan Island* on December 27th. The *Sugar Island*, which went to Florida while the turtle situation was being reviewed, returned to the project on January 6th. Among the environmental protection measures implemented under protocols established for the project were trawling for turtles and relocation of any additional ones that might be caught. This served as a means to check that turtles had left the dredging area. By New Year's, water temperatures dropped below 57 degrees which is reportedly a key threshold for turtle presence.