

SHORELINES – March 2009

What's Next

Roughly two years ago (winter 2007), our last “big” nourishment projects were completed and signified the end of a flurry of nourishment activity that started in 2001-02. The accompanying figure and table depicts the chronology, location, and volumes associated with these large-scale nourishment events. In summary, if we tally all of the funding sources and all of the sand delivered to Bogue Banks, we can conclude that approximately 10 million cubic yards of sand have been pumped to the beaches for a total cost of roughly \$80 million. That’s enough sand to load 666,667 standard dump trucks, or extend a regulation hockey rink three miles into the sky - that’s a lot of sand!!!

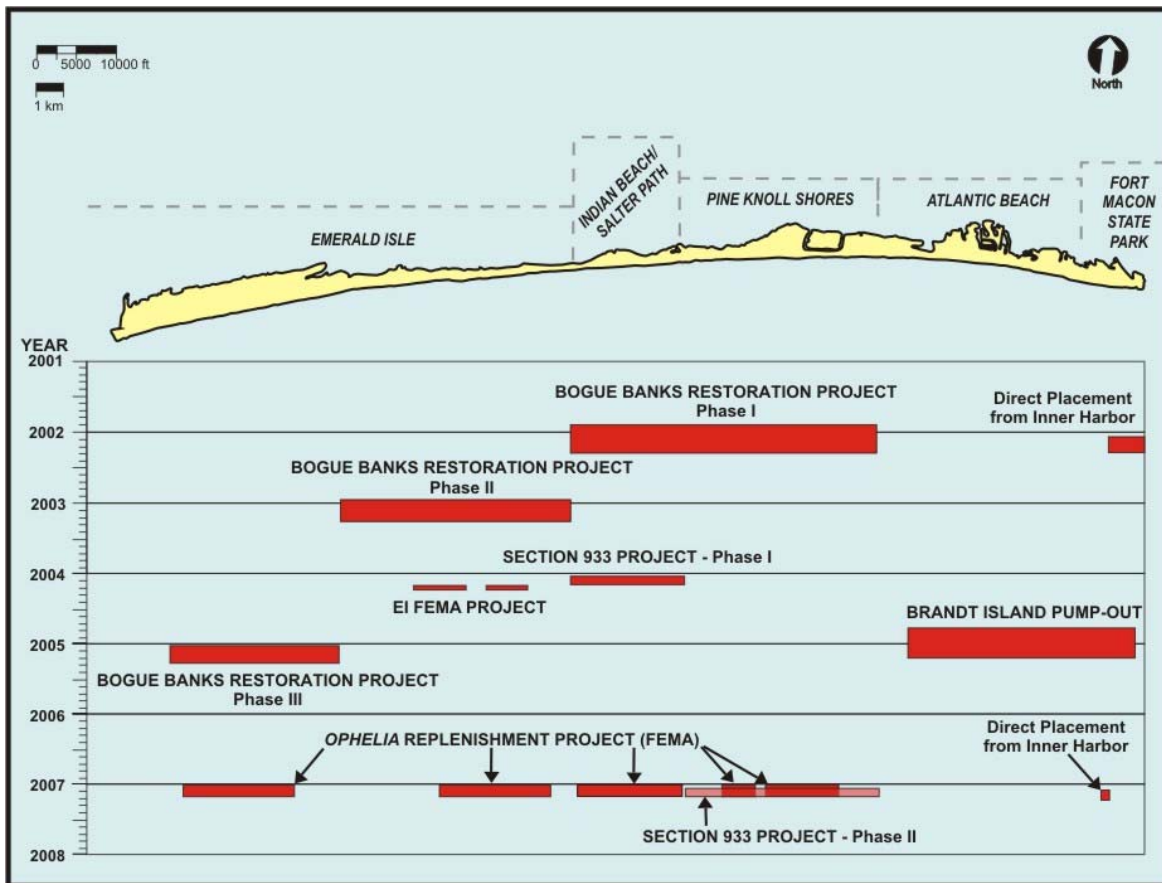


Fig. 1 – Site map of Bogue Banks depicting the geographic ranges of beach nourishment projects constructed in the 2000s. The general timeline for each construction event is represented along the vertical axis of the graph.

We could fill a year’s worth of print space discussing the details of each nourishment project and thus for the sake of brevity, let’s just remember that; (a) some of the projects were 100% locally-funded and utilized offshore borrow sources or Bogue Inlet as a source of sand, (b) other projects were either 100% or partially funded by the Federal government

and involved either actively or previously disposed dredged material from the Morehead City Harbor Navigation Project, and (c) other projects were reimbursed by FEMA and used offshore disposal areas (also associated with Morehead City Harbor dredging).

And one important thing to keep in mind is that although the projects were constructed in the 2000s, the events of the 1990s spawned major organizational/administrative efforts and helped to kick-start project planning and permitting. Probably the two biggest factors in the 1990s were; (1) the impacts related to five nearby landfalling hurricanes, and (2) the realization that dredging & disposal practices at the Morehead City Harbor were negatively affecting Bogue Banks.

So what's next? Well first of all, the beaches are generally in very good shape at the present according to our thresholds we monitor each year (see last month's *Shorelines* article). Intuitively that makes a lot of sense considering all of the nourishment projects that have taken place this decade. Actually, if you take the 10 million cubic yards of nourishment sand and divide that number by the distance of Bogue Banks (~132,000 feet), the average gain in sand is 75 cubic yards per linear foot (not taking into account what has since eroded off the beach). If we do take erosion into consideration, the beaches on average still contain 52 cubic yards a linear foot more than they did in September 1999 (post hurricane *Floyd*) as measured from the toe of the dune out to -12 feet below sea level (NAVD 88). Besides acting as a buffer for storms, this sand is also affording us some time to plan, which is much better than the alternative, i.e., damage control and crisis management. Based on very cursory calculations and without a major storm impacting Bogue Banks, we should be roughly four years away from our next nourishment project.

Nourishment Project	Year	Nourishment Volume (cubic yards)
Bogue Banks Restoration - Phase I	2002	1,733,580
Dredge Disposal to Ft. Macon	2002	209,348
Bogue Banks Restoration - Phase II	2003	1,847,762
Section 933 - Phase I	2004	699,282
Isabel - FEMA Reimbursement	2004	156,000
Brandt Island Pump-Out	2005	2,920,729
Bogue Banks Restoration - Phase III	2005	690,868
Section 933 - Phase II	2007	507,939
Ophelia - FEMA Reimbursement	2007	1,229,836
Dredge Disposal to Ft. Macon	2007	211,000
	Total =	10,206,344

Table 1 – Summary of the volume of sand associated with beach nourishment projects this decade.

In the interim, the County (through the auspices of the Beach Commission & Shore Protection Office) and the Bogue Banks municipalities are currently working on two long-term nourishment strategies that should put in motion plans to keep the beaches healthy for the next several decades.

The first effort is the "Shore Protection Project", which is designed and partially funded by the U.S. Army Corps of Engineers. It is often referred to as the "50-year project" because the plan includes initial construction and subsequent periodic maintenance for 50 years. The Corps of Engineers is currently in the Feasibility Phase (or study phase) of the project – the Feasibility Agreement was signed in 2001 and the study was stipulated to cost ~\$3.3 million total and be completed in four years. The Study is now over four years overdue and roughly \$800,000 over budget. Plus, the Federal government has providing almost no funding for beach nourishment construction/maintenance activities across the Country. Obviously the prospects for this effort are not looking favorable at the present moment.

Realizing our efforts with the Corps of Engineers may a take a while to come to fruition, we've started taking the first steps in developing a new, multi-decadal nourishment program. The majority of funding could very likely come from the portion of the County's occupancy taxes already designated for the purpose of beach nourishment, and would be significantly augmented with State funding, and local funding to even a lesser degree – again, this is all just emerging off the chalkboard. It is also anticipated that this master nourishment plan will also satisfy; (1) FEMA requirements to remain eligible for reimbursing the cost of replacing sand lost during a Federally-declared disaster, and (2) serve as municipalities' 30-year nourishment program, which will help communities retain a potential static vegetation line exception that the State may offer by virtue of possible new rule changes.

Another thought to keep in mind is that we have a nice opportunity at the present time to reassess the effectiveness of our past nourishment projects, identify the logistical weaknesses that did occur in the past several years, and now go ahead and "build a better mousetrap." We hope to take advantage of this and preserve our beaches for a very long time to come.