
Atlantic CoastWatch

Cape Wind Nears Approval

The **Cape Wind** power project in Nantucket Sound, likely to become the first offshore wind farm in the US, has won a favorable Final Environmental Impact Statement from the Interior Department's **Minerals Management Service** (MMS). Prospects for marketing the power have brightened. Local support has grown. Apparently unbiased polling of residents of the Cape and Islands by the **University of Delaware** conducted in 2005, and again weeks ago, indicated a shift from 56 percent opposed to the project to 57 percent in favor, according to the *Cape Cod Times*. Still, Cape Wind has not achieved final approval from the **Department of Interior** for a lease.

Governor Deval Patrick of Massachusetts, a strong advocate for the project, recently heralded the agreement of **National Grid**, power supplier to Nantucket and other MA areas, to begin negotiations for a long-term purchase of power. **Tom King**, president of National Grid's US operations, is quoted by the *Boston Globe* as saying the company wants to be a catalyst that helps to develop the US wind industry. With negotiations completed and state approval of the arrangement obtained, the estimated \$1 billion financing becomes much more feasible.

The *Globe* reported that Patrick appointee **US Senator Paul G. Kirk, Jr.**, following in the tradition of **Senator Ted Kennedy**, has written **President Obama** opposing the project, urging the development of overall standards before its approval. But many other politicians are favorably inclined. Patrick's secretary of energy and environmental affairs, **Ian A. Bowles**, points out that, "after eight years of thorough review" Cape Wind is "the only offshore wind project that has the potential to be built in President Obama's first term." And **US Representative Edward J. Markey**, chair of the Select Committee on Energy Independence and Global Warming, advocated the approval of Cape Wind before the Copenhagen conference.

(Continued. p. 7)

Faulty Oversight in Puerto Rico

In October, reported the *Miami Herald*, a fuel tank farm in Bayamon, Puerto Rico exploded. The result was what the paper called a "massive" toxic fire that "took firefighters several days to extinguish and caused fuel leaks into neighboring waterways." The incident was the culmination of a long history of gross environmental violations on the part of the company, **Caribbean Petroleum Company** (CAPECO) that operated the tank farm.

Since 1990, said investigative reporter **McNelly Torres** in the *Miami Herald* article, at least 25 oil spills from the company had been recorded. Clean Water Act violations and fines have been frequent, prior explosions and fires, and reports of unsafe working conditions have resulted in \$1.3 million in penalties and fines.

When asked why CAPECO is allowed to continue operating, the **EPA's** Jose Font ducked. "What we have to look for is compliance with the law," he said.

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Atlantic CoastWatch

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Sayings

(What follows, "**Most Americans don't know what a watershed is. Do you?**" was written by **Melanie D.G. Kaplan** and first published as a post on the *Smartplanet.com* website.)

A couple weekends ago I bundled up and took a boat tour of the Anacostia River with **Jim Connolly**, executive director of the **Anacostia Watershed Society**.

The Anacostia is not only Washington's forgotten river, separating the city's poorest section from the rest of D.C., but it's heavily polluted. According to the **Chesapeake Bay Foundation**, the Anacostia is the area's greatest source of pollution to the Bay, including millions of gallons of raw sewage. Today, there are a number of groups, including the Anacostia Watershed Society, that are working to clean up the river. But it's still in bad shape.

One of the things that stuck with me after Connolly's tour is that most Americans don't know the definition of a watershed—which is clearly an obstacle in educating the public about clean water.

According to the **Environmental Protection Agency**, a watershed is the area of land where all the water that is under it or drains off it goes into the same place. The EPA says there are 2,110 watersheds in the continental United States. And we all live in a watershed, because when it rains, the water collects and eventually flows into a stream, river, lake, wetland or the ocean.

Our daily actions within these watersheds—whether it's pesticides on our front lawns, cigarette butts tossed on the sidewalk or tree removal for development—can be detrimental to our bodies of water.

One of the threats to the watershed is stormwater runoff. In urban areas like Washington, stormwater flows over paved roads and collects sediment, oil and metals that are then dumped into water bodies that are used for drinking and recreational activities. When soil is covered by pavement, it can't absorb and filter stormwater like it would naturally.

So a group of researchers from **Virginia Tech**, **Cornell University** and the **University of California at Davis** recently released a manual that explains how to use trees in urban stormwater management systems to help protect water resources. The manual, *Managing Stormwater for Urban Sustainability Using Trees and Structural Soils*, is a novel system that uses structural soils (engineered tree soils) to detain stormwater and allow tree root growth in confined urban areas. The report says this approach more closely resembles the natural water cycle than traditional stormwater management techniques.

This is a good introduction to the importance of having proper soil into which stormwater can be filtered," Connolly wrote in an email. "It sounds like Virginia Tech has developed a way to enhance compacted soil so as to allow for perviousness while still supporting pavement and weight on top. If this works, it holds great promise for urban areas."

This is just one small piece of the puzzle in cleaning up our waterways. The most important thing to understand is that no matter where we live—whether it's on the coast or miles from a substantial body of water—we live in a watershed. The water that falls on our front porch and on our street and in our neighborhood will hit a body of water eventually.

Now you know what a watershed is.

Media

⌘ An absorbing read is *Green Metropolis* (Riverhead Books, 2009) by *New Yorker* writer **David Owen**. This book's origin was a 2004 article in which Owen showed how the density of New York City makes it "a model of environmental responsibility" in comparison to car-centric suburbia. He terms the latter an "ecological catastrophe" to which he moved his family and where, for practical reasons, many are compelled to live. Along the way on his unevenly-argued but gripping journey through the issues, Owen bravely skewers environmental gurus, famous thinkers, and green designers alike—and gives us a lot to think about.

⌘ *The Chesapeake Watershed, a Sense of Place and a Call to Action* came out last spring. The author, **Ned Tillman**, is an environmentalist and a long time resident of the area of which he writes. He recounts not only his personal history, but that of this important estuary. Along the way he imparts the urgency of preserving it, and how each of us can help make a difference in the places where we live by how we live.

⌘ *The Fish Belong to the People* is a full-length documentary, by Maine-bred filmmaker **Will Hyler**, about the struggles of fishermen in Port Clyde on the state's midcoast, to earn a living and at the same time restore the sustainability of the badly depleted resources. This appealing film, which premiered at the Camden (ME) International Film Festival in October, brings a big story down to the family level and says a lot about gritty Maine determination.

Caribbean Tries Sustainability

Scientists and researchers from the **Columbia University's Center for Environment, Economy and Society** (CEES) have taken on the town of **Miches** on the east coast of the Dominican Republic to try out some of their theories. The small port is currently fairly inaccessible, and quite backward, but it has inherent natural beauty and is situated near an area where whales and other marine mammals pass through.

Along that same coast are some highly developed resorts, such as Punta Cana with hotels lining the beach and several golf courses (eight according to the publicity on the web).

The Miches project grew out of the **United Nations Millennium Development Goals** of 2001, which designated the Dominican Republic as one of its targets. The aim is not to replicate a dense resort similar to many others throughout the Caribbean, but rather to work with the local community on improving the land and the infrastructure. This will not only benefit the inhabitants, but is also expected to attract visitors seeking a different experience of a local town with environmentally friendly amenities.

This community of fishermen and farmers does not want to lose ownership and control of the area, and is actively engaged and working with the outside advisors, CEES and others including the **Peace Corps**.

CEES is a fairly new department at Columbia, formed in 2006 on the premise "that local environments, economies and societies are interdependent... government alone cannot be responsible for the environment. The task is too complex and interacts with too many spheres of daily life."

People

Adrian DeWind, who for ten years chaired the board of the **Natural Resources Defense Council**, died in August at the age of 95. A hard-hitting lawyer with a broad range of environmental interests, DeWind did much to guide NRDC's rapid growth in size and influence. Said its magazine, *One Earth*: "He oversaw the transformation of a small band of environmental litigators into a highly disciplined organization with significant political clout."

Awards

Chip Giller received a \$100,000 award from the **Heinz Family Foundation** for founding and running *Grist*, a nonprofit environmental Web magazine operated by 25 employees. This is the first year the Heinz awards have been set aside exclusively for environmental projects, noted *yaleclimate-mediaforum.org*. Giller connected the environment to poverty, health care and economic growth, *Grist* said. He feels that these links are a new outlook that is understood by the top levels of the federal government.

Species & Habitats

Celebrating its 50th anniversary was the **Caribbean Conservation Corporation** (CCC), an effective and single-minded organization that, it claims, is the world's oldest and "most accomplished sea turtle conservation group." Founded by the eminent sea turtle biologist **Archie Carr**, CCC now conducts fieldwork in Florida, Bermuda, and several Caribbean locations, and is broadly influential in promoting regional and global policies to benefit turtles hard pressed because of careless fishing practices, hunting for meat and eggs on nesting beaches, shoreline development, and climate change. A principal achievement, wrote CCC Executive Director **David Godfrey**, is to have "saved Caribbean green turtles from immediate extinction and helped increase the population by over 500%."

Mark Green, a marine biologist at **St. Joseph's College** in Standish, ME has been researching clam flats.

Sewage, fertilizer and other runoff contribute to high acidification in coastal waters. It seems to get concentrated in the clam flat areas, perhaps because there is less current. The pH levels in Green's study sites are 7.0 to 7.5 as opposed to 8.1, the average for the world's oceans. This leads to stunted growth in adult clams, and dissolving shells and death in the juveniles, according to an article in the Island Institute's *Working Waterfront*. Furthermore, the spat (juvenile bivalves) will not settle in such conditions, and set out to sea where they are at risk from predators. Green has had some positive results by buffering his study areas with crushed clam shells.

Wild Spanish colonial mustangs on about 12,000 acres of the northern beaches of North Carolina's Outer Banks are now in the critical to nearly extinct category because of traffic-induced killings and injuries, shootings, and the plan put forward by the **US Fish and Wildlife Service (FWS)** and the **Estuarine Research Reserve (ERR)** to reduce the 101 herd to 60, said *Miller-McCune.com*. A herd of 60 is too small to survive, according to **Karen McCalpin**, director, **Corolla Wild Horse Fund**, a nonprofit formed in 1989 with the intention of managing, protecting and preserving the herd. Her quest is to get approval for her previously-denied request to FWS and ERR to increase the herd size to an ideal number of 150. McCalpin added that an off site breeding plan should be ready in case there were a hurricane or some other event that could decimate the herd. To help resolve the conflict, FWS and the **North Carolina State University** will conduct exposure studies in the **Currituck National Wildlife Refuge** to determine the impact of grazing animals on maritime forests, marshland and wet meadows used by waterfowl, noted *Hamptonroads.com*.

Restorations

At the beginning of the 20th century, Maryland watermen harvested some 4 million bushels of oysters from the Chesapeake Bay and adjacent waters.

Courts & The Seashore

⌘ Oceanfront property owners keenly await the **US Supreme Court's** ruling, expected next June, as to whether beach nourishment projects unconstitutionally separate them from the sea. A group of 6 of them in Florida feared that if newly created beach were deemed to belong to the public, said the *Washington Post*, "their waterfront view of bleached sand and sea oats would include throngs of strangers toting umbrellas and coolers" with a consequent loss of property value. But last year Florida's Supreme Court, by a 5 to 2 margin, held that the replenishment projects actually protect the landowners by preserving their "access, use, and view" of the sea. The federal Supreme Court's decision to take up their appeal raises the question of whether a finding that replenishment constitutes a "judicial taking," leading to compensation for aggrieved landowners, would make nourishment vastly more expensive and in many instances risk washing away the very property they seek to protect.

⌘ Almost 28 years ago, reports the South Jersey *Courier-Post*, the **US Congress** authorized the **Army Corps of Engineers** to deepen the Delaware River. Adding 5 feet to the channel's 40 foot level, it is widely argued, would bring larger vessels and greater prosperity to the ports of Philadelphia and Wilmington, especially after Panama Canal improvements enable large ships from Asia to bypass US West Coast ports. Opponents express concern about the environmental impacts of dredging and the disposal of spoils, and have doubts about the project's economics. As the battle recently spilled into federal court, Pennsylvania officials including **Governor Ed Rendell** supported the project; Delaware, New Jersey, and environmental groups expressed opposition. The Corps told the court it will continue to seek a permit but wants to get started without one. After hearing testimony **Sue L. Robinson**, federal district judge, called for more information.

RI Scientists Present in Copenhagen

A team of **NOAA** scientists based at the **University of Rhode Island** has, reports the *Providence Journal*, come up with startling information about ocean warming to present on "Ocean Day" to climate change negotiators at the Copenhagen meeting.

In 61 out of 63 key ocean areas studied, reported **Kenneth Sherman** of NOAA's **Fisheries Science Center**, sea surface temperatures were found to be warming. "In 18 of these areas," the paper continued, "the rate of warming was two to four times faster over the last 25 years than the globally averaged sea surface temperatures reported by the UN's **Intergovernmental Panel on Climate Change** in 2007."

Each of these regions, as defined by Sherman's team, is a "large marine ecosystem." Examples are the US continental shelf from Canada to Cape Hatteras, and Cape Hatteras to the tip of Florida. Collectively, they produce 80% of the world's marine fishery catches. Though fish harvests in some of these regions were found to be increasing "because rising temperatures were increasing zooplankton," catches were declining elsewhere and harmful algae blooms were on the rise.

"What we have is pretty dramatic stuff," Sherman told the *Journal's* environmental reporter **Peter Lord**. Sherman complained that claims made by climate change skeptics were obscuring the realities of what is going on out at sea and in the atmosphere, and that "it is really important to get the facts out there. They're not surfacing."

New Bedford's Toxic Legacy

In the olden days, the area in New Bedford, MA that later became known as Parker Street was a forested swamp that came to be used as a peat bog and a site for cranberry cultivation. At some point in the 1930s, reports the *Standard-Times*, an expanding portion of the area became the city's largest dump to which its **Department of Public Works** brought truckloads of household trash and ash from coal burned for home heat. Later, local industries began using the dump to dispose of toxic wastes including PCBs, commonly used chemicals that were legal until 1979.

In those times, reports the paper in the opening part of an extended series on New Bedford's toxic legacy, kids would visit the dump to "shoot rats and cans with their air rifles" and frequent fires sent "thick, foul smelling smoke through the neighborhood." Water on the site was yellow, recalled one longtime observer, **Richard Chartier**, and did not freeze in the winter. "To us, polluted meant you just shouldn't drink it." Unaware of the possible links between PCBs and cancer, the town built a large new high school on the site, and later added an athletic field using dump ash as a construction material.

City fathers, totally unaware of PCBs, applauded these moves. Former **Mayor George Rogers** told the paper that, when local officials selected Parker Street for the school, "We knew it was a dump, but then most schools all over the country were built on either dumps or cemeteries. That's the only place where cities have free land."

Later came the birth of **EPA**, the banning of PCBs, and the advent of the Superfund program. The Parker Street Waste Site, though not officially a Superfund site comparable to the infamous Love Canal, has become subject to massive cleanup efforts estimated to cost as much as \$103 million centering on the high school, the athletic field, and a nearby middle school added in 2005. Health impacts are suspected and under investigation.

Since the site is city-owned, New Bedford has the responsibility to lead the cleanup effort and is seeking help both from the state's **Department of Environmental Protection**, EPA, and--via lawsuits--from some of the corporate polluters. The extensive cleanup progresses. But what most clearly emerges so far from the notable *Standard-Times* series is the innocence of the city officials in those earlier times.

With Appreciation

We are delighted to report receipt of substantial new commitments from two longstanding supporters: the **Fair Play** and **Curtis and Edith Munson Foundations**, and cannot thank them enough.

We also extend very special thanks to the **Lee and Juliet Folger Foundation**, to **Simon Sidamon-Eristoff**, to the **G. Peabody and Rose Gardner Charitable Trust**, and to these other recent and most welcome donors:

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Now the harvest is down to a mere 100,000 or so bushels, collected by about 500 watermen of whom few can afford to work full time within the fishery. Decades-long oyster restoration efforts, not often very successful, have centered on replenishing existing oyster beds out in the wild with new spat. Now, according to several newspaper reports, those seeking to restore the fishery are, says *Southern Maryland News*, "taking a more scientific approach" by seeding in sanctuaries within which harvesting is prohibited or in carefully "managed reserves." Citizen oyster gardening programs, in which individual citizens hang cages off their docks, or attach floats to them and place bagged oysters on the floats, have also flourished in recent years. Several such systems have shown considerable success, with young oysters elevated above silty water at the seafloor and reaching harvest size before the deadly MSX and Parvo diseases hit them, and exercising their prodigious filtration capabilities to improve the quality of nearby water. The State of Maryland is encouraging these efforts with a tax credit of up to \$500. The *Annapolis Capital*, October 10, 2009, listed ten sources of information about how individuals can join the fast-growing ranks of Maryland and Virginia oyster growers.

As reported by the *Dennis Register*, water quality in Lewis Bay, near Hyannis and Hyannisport, MA, has been on the decline for some years as shoaling has sharply reduced water flow through a natural channel between Smith's Point and Egg Island that provided good tidal flow into the bay. Now the **Army Corps of Engineers** -- responsible for dredging the present channel into Hyannis -- has commissioned a water quality study, in cooperation with the **Town of Yarmouth** and the **Lewis Bay Research Center** to verify the latter's measurements of water degradation, begun in 1996, and to determine if re-dredging of the old channel will restore water quality. **Brian Braginton-Smith**, director of the center and **Karl von Hone**, Yarmouth's Natural Resources Director attribute the bay's decline in water quality to dredging

the present channel and the increased ferry and ship traffic through it. The study should take 18 months.

Reports

Gathering data from 131 state and local agencies, EPA researcher **Jim Titus** and colleagues have assembled a comprehensive assessment of how well Atlantic coastal communities are prepared for sea level rise, and the consequences unless adaptation measures replace existing policies. Detailed maps accompanying his recent article on the subject, published in *Environmental Research Letters*, focus not so much on land elevation as on the prospects for wetland migration as the waters rise. Almost 60% of Atlantic coastal lowlands are expected to be developed and thus exempted from wetland migration. Only 10% of such land has been set aside for conservation, and the remaining 30% could be developed. The continuation of current policies, especially shore protection structures which block wetland migration, have a huge cumulative environmental impact in probable violation of the Clean Air Act. What are needed are new “estuary-wide plans that define the fates of shorelines as the sea level rises,” the report states. But for the moment, said Titus: “This is like the Charge of the Light Brigade where people are moving into harm’s way, and they know it, but no one gives the signal to change course.”

The **Royal Caribbean’s** *Oasis of the Seas* pulled into Port Everglades in mid-November, amidst much excitement in the South Florida press and among cruise liner aficionados. Indeed, she is the largest ever, accommodating over 2000 in crew for over 6,000 passengers – a floating town, with more amenities than such a town could provide: an entertainment boulevard that runs the length of the ship, seven neighborhoods that include a mini Central Park with tropical foliage; sports activities that go way beyond the proverbial shuffleboard with ice-skating rinks, a golf course, climbing walls, and a Flow-Rider surf simulator. She is five times bigger

Chemical Soup in Delaware

The official website for Delaware City on the Delaware River calls it a “quaint riverfront community” and a “gateway to many natural and historic treasures, such as the Delaware Estuary marshes, the Chesapeake and Delaware Canal, Fort Delaware and Fort DuPont. In a recent article, Wilmington’s *News-Journal* painted a less pretty picture of a region once throbbing with industrial vitality, now “a blighted—and in some places dangerously contaminated—landscape that once produced fortunes.”

A high-water mark for Delaware City came in 1957, the paper continued, with the opening of the **Valero Energy** refinery, the largest ever built in a single project. “Over the years, the refinery would become a new center for a multi-state petrochemical industry already firmly rooted upstream...other factories rose out of the surrounding farm fields to make an alphabet soup of chemical products.”

But in recent times, with tough economic conditions and tightening environmental standards, the old plants began shutting down, a trend that culminated this year with the closure of the Valero refinery. Employment in Delaware’s chemical industry was off by 53% between 1992 and 2007, according to one report, and the decline continues. What’s left behind is a messy “ghost town” of plants hard to adapt for other uses, Superfund sites, and the falling apart of a region once proud to be known as the “chemical capital of the world.”

It’s part of a broader trend. “In the 1980s, we saw the closings of a lot of steel mills and heavy industries,” said **Craig E. Collen**, a professor at **Louisiana State University**. “I think we’re now seeing the rusting of chemical corridors around the country. We’re in a decline phase, and I don’t know that we’ll see a rebound.”

Energy Companies Act Green

Saying that concern for natural gas drilling in the New York City watershed has become “a needless distraction,” **Chesapeake Energy** has voluntarily decided not to exercise its option. The reason for concern is that the natural gas in question is trapped in shale rock a mile down. Extracting it involves shooting water and chemicals into the ground, a process known as hydraulic fracturing. It carries the risk that chemicals and by-products would leak and contaminate the water supply.

Chesapeake Energy is the only company to have a gas drilling lease in New York’s watershed. It represents a very small percentage (5000 acres) of their vast lease in the Marcellus Shale, an area of 1.5 million acres which stretches from West Virginia through Pennsylvania, into southern New York. In reaching its decision not to drill, Chesapeake Energy apparently found that the risks outweighed the benefits.

That such drilling was even a possibility is a cause for alarm, said the *New York Times*. The paper suggested that New York State should ensure that this watershed be placed off limits to such invasive exploitation, and that, in general, strict safeguards be enacted to protect the city’s drinking water supplies.

In North Carolina, natural gas, nuclear and wood waste are the next generators to replace coal after **Progress Energy** closes 11 units at four coal-fired power plants in 2017. The facilities to be closed, some more than fifty years old, do not have sulphur-dioxide scrubbers and represent about 30 percent of the company’s power generation from coal, said the *Associated Press*. The closings will “result in significant emission reductions, including carbon dioxide, sulfur dioxide, nitrogen oxides, mercury and other pollutants,” the *Charleston Gazette* said.

Cape Wind, Continued from p. 1

The current delay is occasioned by a precedent-breaking effort to have Nantucket Sound listed on the National Register of Historic Places. Two tribes of the **Wampanoags** oppose the project, saying an unobstructed view of Nantucket Sound is vital to their culture--which includes greeting the sunrise every day--and that their oral history indicates their ancestors once inhabited Horseshoe Shoal, the project's shallow-water site. Although a body of water has never received such a listing, the **Massachusetts Historical Commission** forwarded a favorable recommendation to the **National Park Service** which has received a formal request from the MMS to make the decision before January 3.

Numerous editorials (including the *New York Times*) and comments from industry spokesmen decry the continuing delay. They cite the possible practical difficulties in declaring a body of water a historic landmark, and point out the US is falling behind other countries in renewable energy and the industrial capacity to produce the machinery to capture offshore winds.

NY Sewers Falling Behind

Sewer systems are the most frequent violators of the Clean Water Act, which was passed in 1972. According to the *New York Times*, in the last three years alone more than a third of all sewer systems in the nation have reported violating environmental laws by dumping improperly treated waste water.

It is not certain that those which did not report a violation are doing any better. In any case, fewer than 20% of the reported violators have been fined. Plant managers are trying to do the best they can with what they have, and the fines would only contribute to their over-stretched budgets.

The primary reason for this situation has been the rapid growth in cities. Infrastructure improvements have not kept pace and cannot handle the increased volume of waste; furthermore the paving over of green spaces has added to the amount of stormwater in the systems.

New York City started building its sewer in 1849, and many of those original pipes are still in use today. Its system combines rainwater runoff with sewage. It has 14 treatment plants. When it rains these get overloaded and the excess is released via overflow pipes into the rivers and harbor.

The city is fortunate in that its drinking water system is not connected to the Hudson River, but collected in reservoirs upstate. This is not the case with many other cities, where the safety of the drinking water is now also coming under question.

According to the *New York Times* article, several years ago city officials estimated that it would cost \$58 billion to improve their waste water system so as to prevent overflows. The stimulus plan passed earlier this year allocated \$6 billion to improvements in water and sewer systems nationally.

Lacking the money needed for major improvements, many communities are putting in zoning laws and regulations to encourage absorbent landscaping and porous pavements, and giving tax credits for green roofs. Still it does not appear that we are getting any closer to attaining the ambitious goals set forth in the Clean Water Act.

than the *Titanic*, according to the *Chicago Tribune*. This ship is destined for southern waters, so not likely to encounter an iceberg; but her impact on the Caribbean region will be major (see *ACW* March-April 2009 issue).

As "green" construction techniques come into ever broader use, there is growing interest in paving materials that enable stormwater to percolate softly into the ground rather than wash off roadways in fast moving sheets. Such runoff from commonly used impervious surfaces provoke flooding and pollution. But recently more and more communities are switching to materials no less strong than conventional pavement, but also porous. The new coarser-grained pervious materials, now widely available, can even qualify as water retention structures, replacing traditional stormwater management systems such as retention ponds. An example of the trend, reports *The Capital* in Annapolis, is a publicly owned park in St. Anne's County, MD that is using federal stimulus funds to pave its parking lots, extensively using permeable materials. It's "not a magic bullet," said project engineer **Lee Edgar** in the county's public works department. For one thing, the new materials require more maintenance. But Edgar told the paper that he is nonetheless "very enthusiastic" about making such a contribution to the health of the Chesapeake Bay.

New York City is testing hybrid garbage trucks; one built by **Mack Trucks** with a diesel-electric power train, and three other designs by **Crane Carriers**, two of which store energy as hydraulic fluid under pressure. According to the *New York Times*, the competing designs will be tested for about a year, after which the city will each year begin buying about 300 of the model which saves the most fuel, is easiest to maintain and handles the best (particularly for winter snow plowing). Due to the stop and start nature of garbage collection, the new trucks are expected to save about 30% on fuel (and related exhaust emissions). Industry experts expect the NYC buys to spur produc-



Atlantic CoastWatch
Sustainable Development Institute
3121 South St., NW
Washington, D.C. 20007

Tel: (202) 338-1017
Fax: (202) 337-9639
E-mail: susdev@igc.org
URL: www.susdev.org
www.atlanticcoastwatch.org

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tion of other heavy-duty hybrid trucks, bringing down the price. **Rocco DiRiccio**, deputy commissioner of Sanitation, says, "There's nothing available in 2009 that's better than ours. We're pioneers."

Funding

A wind turbine drive train testing facility will start operating at **Clemson University** in South Carolina at the end of 2012. Construction of the \$98 million facility is financed by \$45 million from the **Department of Energy** (DOE), and \$53 million from state and private sources, said the *Associated Press*. The testing facility will be part of the university's **Restoration Institute** campus at the former Navy base in Charleston. The 200-ton wind turbines probably will arrive by sea, noted the *Associated Press*. It also pointed to the DOE estimate that building off the new facility's research, the wind industry in South Carolina could provide up to 20,000 new jobs.

Federal resolve to establish the Chesapeake Bay as a restoration model has uncorked a record \$50 million in 2010 funding for the **Chesapeake Bay Program**, reports *Bay Journal*. That's \$31 million more than the program got for 2009, and \$15 million more than what was in the original **Obama** budget.

Deep Sea Robot Scores

Last April, a team led by **Scott Glenn**, professor of marine science and director of the Coastal Ocean Laboratory at **Rutgers University's Institute of Marine and Coastal Science**, gathered at a field station in Little Egg Harbor, NJ. There, assisted by faculty colleagues and students, Glenn loaded a 7 foot 9 inch, computer-driven "aquatic glider" named *Scarlet Knight* aboard a research vessel and headed for the open sea to launch the submersible robot and send her across the Atlantic.

221 days later, reported the *Washington Post*, ecstatic members of the research team retrieved the glider, shaped like a torpedo with wings, from stormy waters off Spain. Though incommunicado for most of her journey, during which she descended to a depth of 600 feet but also surfaced frequently, she transmitted large volumes of important data and heralded a new era in ocean and climate research.

One of 23 gliders in the Rutgers fleet, *Scarlet Knight* benefitted from the team's prior experience, which included the loss of a similar vessel last year after five months at sea. Problems with hitch-hiking marine species from barnacles to remoras led to the development of a special critter-proof paint, and lithium batteries proved longer-living than conventional ones put aboard previous robots.

The gliders move by changing buoyancy, reported *PhysOrg.com*. "A small electric motor operates a pump, which sucks in water through tiny holes in the nose. The nose dips, the glider sinks, and its delta wings turn the downward motion into forward motion. At its preprogrammed depth, the pump spits out the water. The nose rises, the glider ascends, and the wings turn the upward motion into forward motion...every few hours, the glider pops out of the water and calls the lab with a satellite phone in its tail."

"We think this will be just a precursor, like Lindbergh's trip across the Atlantic," said engineer **Clayton Jones** of **Teledyne Webb Research**, the Falmouth, MA company that built the glider. "In a decade we think it will be commonplace to have roving fleets of these gliders making transoceanic trips around the world." A **NOAA** spokesman called the voyage of *Scarlet Knight* a "seminal event" offering "a new world in our capability of using the oceans to help answer society's questions."