

## Restored Beach Welcomes Residents and Visitors

Captiva Island kicked off the New Year with a wider beach beckoning residents and visitors to find more time to enjoy this beautiful island in 2014. The beach renourishment project extended the beachfront significantly further seaward with beach fill placement of 740,000 cubic yards along Captiva's shoreline from Redfish Pass to Blind Pass. As part of the Project, existing dunes were rehabilitated and native dune vegetation will be planted this winter. The restored beach provides a buffer from storms for island property and structures while enhancing wildlife habitat and the recreational value of the shoreline. Additionally, 75,000 cubic yards of sand were pumped onto northern Sanibel as part of an interlocal agreement. Coastal Planning & Engineering (CP&E) provided all engineering services for the Project Sponsor, the Captiva Erosion Prevention District.



Tourists and residents alike enjoy the sunset on the wider beach

The CEPD awarded Great Lakes Dredge and Dock the \$19.4 million construction contract in August following a competitive bid process. The Project commenced on Captiva October 7, 2013 following the hatching of the last turtle nest. While the Captiva segment of the Project was estimated to be completed on November 26, the final load of sand was placed on the island at 8:00 am on December 16 following delays due to mechanical problems with the booster pump *Jesse*. Once work on Captiva was complete, the pipeline was moved to

(Continued on Page 2)

## Hi-Tech Equipment Used in Project Fascinates Onlookers

By Hans Wilson, P.E.

Imagine cruising along a Captiva beach at a little more than walking speed. No, it's not on an ATV, like the turtle patrol folks, but a three wheeler. No, not like the "Big Wheel" you pedaled around the driveway at the ripe old age of four. And, no, not like the Harley Davidson Tri-



The CRAB getting ready to make another run offshore

Glide you and the wife take down to 'Tween Waters Inn for lunch. No, this baby is the ultimate beach 3-wheeler. You are on board the Coastal Research Amphibious Buggy,

better known as the CRAB.

Cruising along about 35 feet in the air, you get a view on par with most second floor condominium units. The diesel Caterpillar engine powers the hydraulic system operating the drive mechanisms and steering. The bio-degradable hydraulic oil driving all three wheels is vegetable-based for environmental protection. The engine compartment is enclosed to contain any accidental fluid leaks.

As you head down the beach, you hang a hard left and head out into the Gulf of Mexico.

This is the ultimate beach buggy. The Trimble RTK GPS unit records your exact latitude



and longitude along with the ground elevation and sends the data to a central computer used to determine the beach profile. As you steadily head out into deeper water, there is that temptation to drop a line and troll

(Continued on Page 3)

## Restored Beach Welcomes Residents and Visitors

(Continued from Page 1)

northern Sanibel and fill placement on Sanibel was completed at 3:30 pm, December 26. The contractor used two hopper dredges, the *Padre Island* and the *Dodge Island*, to vacuum sand from a borrow area located approximately 8 miles offshore in the Gulf of Mexico. This sand source is outstanding in its compatibility quality with the existing sand along the shoreline. The sand was then transported to the booster pump *Jesse*. The submerged pipeline length from the booster pump to the discharge area was two miles. The CEPD requested and was granted a permit modification



A bulldozer spreads the sand just pumped in from over 2 miles offshore

to extend the area of the pipeline corridors to enable contractors to have more flexibility.

In June 2012, Tropical Storm Debby impacted Captiva and Sanibel Islands. The one mile stretch of road near 'Tween Waters Inn was in danger of being undermined from the force of the waves. The road is the only evacuation and emergency responder route on and off Captiva. The CEPD, Captiva Fire District, Lee County Sheriff's Department, and Lee County Department of Transportation worked late into a stormy June night to stabilize the road. The urgency of a Captiva beach restoration project before the next hurricane season was clear.

A favorable Project Implementation Report written by the Army Corps of Engineers (ACOE) for Federal rehabilitation assistance and construction general funding for the Captiva restoration project due to Tropical Storm Debby was approved in Washington for the federally-authorized project. A full assessment and recalculation of the cost sharing percentage was completed by the ACOE with little change. The Corps solicited bids for the Project. Unfortunately, the Project Agreement was with-

(Continue on Page 4)

## Paying for the Project

How Captiva foots the bill for the cost of beach nourishment on this beautiful barrier island is a process important to Captiva property owners. Under the State of Florida Department of Environmental Protection Beach Management Program, financial assistance of project costs is available to local governments for beach restoration and nourishment activities. While the State will pay up to \$4.6 million of Captiva's eligible costs, the local community must also be willing to help pay for the nourishment project. Local funding for the 2013/14 re-nourishment project is provided by the Lee County Board of County Commissioners and special assessments of Captiva property owners.

The enabling legislation of the CEPD requires that special assessments used to help finance a beach project be levied against benefitting properties in proportion to the benefits received by the properties from the project. The benefits from the 2013/14 project are the same as those that were used to determine assessments for the previous beach nourishment projects undertaken on Captiva since 1989. CEPD retained renowned economist William Stronge, Ph.D. to work with the senior engineers of Coastal Planning & Engineering to conduct an analysis of the project and determine the nature and extent of benefits expected to accrue from the project and allocate those benefits to the proper recipients by categories or zones of comparable benefits.

### 2014 Commemorative Calendar

CEPD has created a 2014 Calendar commemorating the 2013 Renourishment Project. The Calendar contains photographs documenting the project from beginning to end. Call the CEPD office at 239-472-2472 to reserve your complimentary copy and pick it up at 11513 Andy Rosse Lane, Unit 4, Captiva, between 9:00 A.M and 5:00 P.M., Monday through Friday. Sorry, but due to a limited supply, the calendars are only available to Captivans.

The project will generate a stream of benefits for property owners on Captiva which ultimately will show up as an enhancement of property values beyond the levels they would have attained in the absence of the project. The benefits from the nourishment project are twofold: storm protection and recreation.

The storm protection benefit received by a property is based on the reduction in property loss due to erosion and storm damage as a result of the added protection of the beach width and distances from the mean high water

(Continued on Page 3)

## Paying for the Project

(Continued from Page 2)

line. Only properties that front on the Gulf of Mexico receive storm protection benefits under this definition.

The second benefit category is based on the value of the recreational experience of the restored beach provided to people living or staying in residences throughout



A newly restored section of Captiva's beach. It adds both storm protection and recreational value

the island, as well as those commercial properties that benefit from the allure of the beach for their customers or visitors. Unlike the storm protection benefits, the recreational benefits flow to all properties on the island regardless of whether they are on the Gulf or not.

Within each of the two benefit categories, storm protection and recreation, properties are grouped by beach zone (location) and land use. The beach zones are determined on the basis of erosion conditions in the different beach areas. Land use includes use of the property as a single family home, multi-family, interval property, or commercial. Land use classification is determined by the Lee County Property Appraiser. Collectively, this process and calculation is called "apportionment," where properties are assigned a rate according to the proportion of benefits that accrue to each property. Assessments are then calculated using this apportionment applied to the current *Just Value* of the property as determined by the Lee County Property Appraiser. The *Just Value* of a property can be found on the Notice of Proposed Property Taxes (TRIM Notice) that each property owner receives from the Property Appraiser annually.

Once engineers certify the project completion and the total cost of the project, including the amount of all other expenses relating to the project are determined, a preliminary assessment roll will be prepared by the economist and engineer and filed with the CEPD. The preliminary roll is advisory only and subject to the action of the CEPD Board of Commissioners. The District Board

(Continued on Page 4)

## Hi-Tech Equipment Used in Project Fascinates Onlookers

(Continued from Page 1)

for fish. But that isn't the purpose of the CRAB. Instead you steer offshore, looking closely at the computer screen to make sure you are on track. It is kind of like a video game, where you work to keep the vehicle on your survey line. Your working platform sinks deeper and deeper into the Gulf, up to 16 feet typically.

The CRAB is an ingenious contraption designed to collect data in that tricky transition from land based to vessel based beach surveys. The land part is relatively easy to control, with surveyors recording horizontal locations and elevations using total stations and Real Time Kinetic (RTK) survey controls. The water surveys are a bit more complicated. Along with maintaining horizontal positions, you have to verify the vertical datums with more intensity, accounting for the tide, the heave and pitch of the survey vessel, with the ultimate result an accurately referenced depth. With the CRAB this is essentially eliminated. The GPS antennae on the CRAB tells your exact location and the distance from the antennae to the ground, whether on the beach or in the water, remains constant.

The CRAB can operate in waves up to 5 feet. The more limiting factor

is the wind, with a maximum of 25 mph before the CRAB operations come to a halt. The first CRAB was built by the U.S. Army Corps of Engineers in the 1980's. Great Lakes Dredge and Dock Company built their first unit in the late 80's, the second one in 2002, and the third in 2004. The CRAB is all aluminum, given the harsh environment it operates in. It takes a full day and a 40 ton crane to disassemble a CRAB for transport to the next site.

So the next time you see a War of the Worlds creature lumbering up out of the water, take heart, we are only being invaded by the creativity of a bunch of engineers and the operations of a world class dredging company.

-Hans Wilson, PE is a consulting engineer providing administrative support services to the Captiva Erosion Prevention District



The hi-tech CRAB together with lower-tech bulldozers

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(Continued from Page 2)

drawn by the Corps several hours prior to the opening of the sealed construction bids.

The perilous state of Captiva’s only evacuation route left little time to complain and no options such as forgoing or delaying the project. The District was very concerned about the lack of available dredges, higher prices, and scheduling competition with Super Storm Sandy projects. With or without Federal assistance, the Project had to move forward quickly. Within two weeks of receiving the disastrous news from the Corps, and with the monumental effort of consulting engineers at Coastal Planning and Engineering, Steve Keehn, P.E. and Nicole Sharpe, P.E., the CEPD advertised the project for bid and awarded the contract to Great Lakes shortly thereafter. The District’s Comprehensive and Emergency Response Plan is designed to ensure the District is well prepared to respond to coastal emergencies.

Project funding is being provided by the State of Florida, Department of Environmental Protection, the Lee County Board of County Commissioners, and Captiva Island property owners. Prior to the Project, Captiva voters overwhelmingly approved a referendum to borrow funds for the beach nourishment Project.

## Paying for the Project

(Continued from Page 3)

will provide a notice by publication of a meeting of the CEPD at which all interested persons may appear and file any written objections to the confirmation of such roll. Any assessment may be paid without interest at the CEPD office on or before 60 days from the date of the publication of the notice. Assessments are also payable in equal annual installments with interest through the Lee County Tax Collector.

Please contact Kathy Rooker, CEPD Administrator, should you wish more information (472-2472).

### SAVE THE DATE

2/12/14	Regular Board Meeting	1:00 pm
3/12/14	Regular Board Meeting	1:00 pm
4/9/14	Regular Board Meeting	1:00 pm
5/14/14	Regular Board Meeting	1:00 pm
6/11/14	Regular Board Meeting	1:00 pm
7/9/14	Regular Board Meeting	1:00 pm
8/13/14	Regular Board Meeting	1:00 pm
9/22/14	Regular Board Meeting	3:00 pm

All meetings are held at Tween Waters Inn, 15951 Captiva Dr., Captiva, FL 33924. The public is welcome.

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