IWA PIPELINE

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3651 Sanibel-Captiva Road, Sanibel, FL 33957 • http://www.islandwater.com
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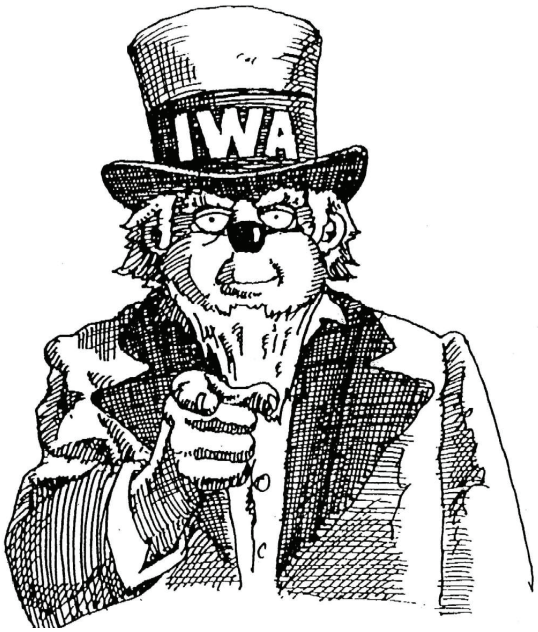
IWA NEEDS YOU!!



Its election time at IWA again, and next year three seats on our Board of Directors will be up for election. The seats are currently held by William Fenniman, Timothy Gardner and William Carr. Mr. Fenniman and Mr. Gardner are completing their 3rd and final terms and Mr. Carr is running for re-election for his 3rd and final term.

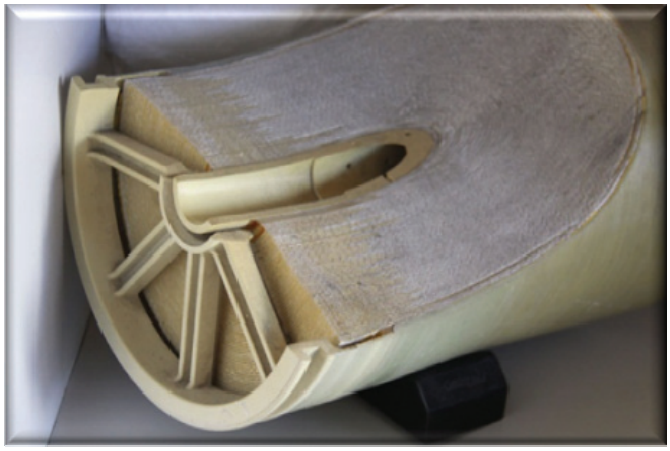
IWA is governed by a five member Board of Directors who serve without pay. Directors must be year-round residents of Sanibel or Captiva, so that they can attend all Board meetings, and must be IWA Members or an official representative of a condominium or other IWA Corporate Member. Directors must have no conflict of interest, including but not limited to, active involvement in an enterprise which could potentially do business with IWA or which could benefit from involvement with the Association.

Meetings are normally held on the fourth Tuesday of every month. Directors are elected by the Membership at IWA's Annual Meeting to be held in April. Anyone who would like to run for one of the open seats should contact our Board Recording Secretary, Beau Stanley, at (239) 472-2113 (extension 114) or by e-mail at beau@islandwater.com by ***no later than January 7, 2011.*** A background check will be run on all Board candidates in our post-911 world.

REVERSE OSMOSIS...

Often in this newsletter, we have referred to the fact that our water treatment plant uses a process known as Reverse Osmosis, or more simply, RO. While it takes a lot of expensive equipment to accomplish RO, the principle is a relatively simple one.

Before you can understand RO, it is first necessary to understand Osmosis. If two water samples, with different concentrations of impurities (like salt), are separated by a semi-permeable membrane, water will pass through the membrane from the lower concentration (purer) side into the higher concentration side. This tends to equalize the impurity concentrations on both sides of the mem-



RO Membrane Display Sample

brane. Obviously, this would not be a very useful water treatment process, since we would end-up with less pure water. The movement of water across the membrane can be stopped by applying pressure to the more concentrated (less pure) water. The pressure required to stop the flow is known as the osmotic pressure of the water.

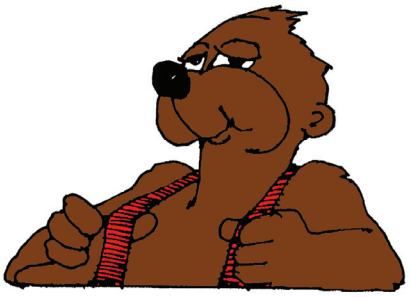
Reverse Osmosis is, cleverly enough, just the reverse of Osmosis and hence its name. In RO, pressure in excess of the osmotic pressure is applied to the more concentrated water, forcing pure (less concentrated) water backwards through the membrane, producing additional pure water. Now that sounds like something useful, and it is, in fact, exactly how our RO treatment plant works.

Water from our deep (approximately 800 feet) wells, located along San-Cap Road, is pumped into the RO plant, where it is first filtered to remove large particulate matter, like sand, that would otherwise plug the RO membranes. Next the water passes through the high pressure pumps, where the pressure is increased to around 180 pounds per square inch (psi), which is about three times the pressure of the water at your sink faucet. The high pressure well water is then passed through tubes containing the semi-permeable membranes. The plant contains 720 of these membranes, each costing around $500, with a life of 10 years+/- before requiring replacement. Since 180 psig is in excess of the osmotic pressure of the well water, pure water flows through the membranes and, after minor "post treatment," into our storage tanks for distribution to our Members. The remaining 20% of the well water is now more concentrated in impurities and is known as concentrate (another clever name), or more commonly, brine. We dispose of this brine waste stream down our deep injection well, over 3,000 feet below ground.

Over the years, RO membrane technology has advanced significantly, while their cost has dropped quite dramatically, similar to the case of computers and other consumer electronic devices. As membrane technology advances, the required pressure from the high pressure pumps decreases and we save a lot of electrical power and money. At IWA, we are always looking for new membranes that allow us to do our job at lower cost, and this has been a major factor in keeping our water rates low over the last couple of decades. Unfortunately, it now appears that there may not be a lot of room for additional improvements in RO membrane technology, but we are still keeping in touch with manufacturers who may yet find another way for us to reduce our costs even further.

Now that wasn't so complicated after all.. was it?

FDEP PLANT OPERATIONS EXCELLENCE AWARD…



As you can see from the picture of IWA's mascot, Ozzie-the-Otter is looking proud, as indeed he should be. In late November, we received word from the Florida Department of Environmental Protection, informing us that The Island Water Association has been selected to receive a 2010 Plant Operations Excellence Award in recognition of outstanding treatment plant operation, maintenance, and compliance. It is especially gratifying when the organization that regulates us (FDEP), also recognizes when we are doing a good job.

Plant Operators Brandon Henke and Pat Henry

Our crew at the Reverse Osmosis Plant is dedicated, experienced, professional, and we are not the only ones who have noticed. There is a lot that goes on behind the scenes that is critical to making sure a turn of your faucet results in a supply of clean, safe, and reliable water when you need it. Congratulations to our personnel at the water treatment plant, which is manned 24/7 by a crew of whom we can all be proud.

BLIND PASS BRIDGE PROJECT...

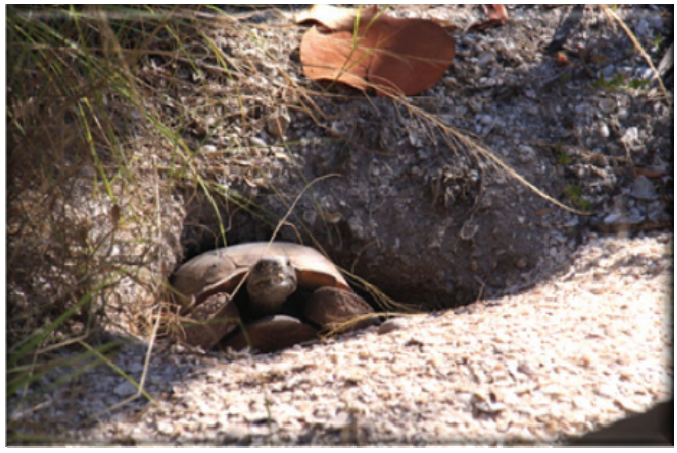
The Blind Pass bridge pipe replacement project has been successfully completed, and water is flowing through the new pipe to our members on Captiva. The temporary line that supplied water while the pipe was being replaced has been removed. Our contractor, Cabana Construction, did an excellent job of removing the old and installing the new pipe while keeping road traffic moving across the bridge. They did some excellent "American engineering" with the design and build of their work "carriage" and pipe handler. The new pipe has a high tech coating system that consists

of a zinc primer, followed by a two part epoxy barrier coat, followed by a two-part polyurethane ultraviolet-protection color coat. The inside of the ductile iron pipe is the standard cement lining that is used on all our ductile iron pipe and fittings. The bolts connecting the pipe sections are corrosion-proof stainless steel, as are the hangers from the bridge structure. We are anticipating, with proper maintenance, this pipe will last as long as the bridge itself.

Blind Pass Bridge Pipe Work

SANIBEL BAYOUS MAIN REPLACEMENT...

The Sanibel Bayous main replacement project has commenced. Before we begin a main replacement project, we try to evaluate the needs and concerns of our neighbors. In this case we had some four-legged neighbors to consider. There were several Gopher Tortoises along the beginning of the pipe route. We contacted the Sanibel Department of Natural Resources and asked for their assistance and advice. They marked the burrows for us and recommended temporary barriers which would assure that our construction footprint would not impact them. Although it was slow going for our crew, digging by hand, the Gopher Tortoises must have considered us speed demons, as we worked past their front yards.



Gopher Tortoise Taking a Look

WATER CONSERVATION…

Meteorologists from the South Florida Water Management District (SFWMD) recently reported that October was the driest October ever recorded since recordkeeping began in 1932. Here at IWA, we recorded a mere 0.01 inch of October rain. Early in November, we recorded 2.5 inches, which was a welcome sight. It has again been dry for the rest of November. Due to the below average rainfall during the wet season, the forecast for a drier-than-average dry season, and the unpredictability of our weather, saving water is going to continue to be important for Southwest Florida.

Water conservation has always been a focus here at IWA, despite its negative impact on our revenues. Did you know that just two or three hours of operating an irrigation system can equal a month of average domestic water usage? We encourage all our members to check their irrigation systems frequently and perhaps take advantage of the local educational programs on native landscaping. Our tropical climate gives us the luxury of many species of plant life that do just fine without irrigation.

HOW DOES A (Chicken) PIPE CROSS THE ROAD?

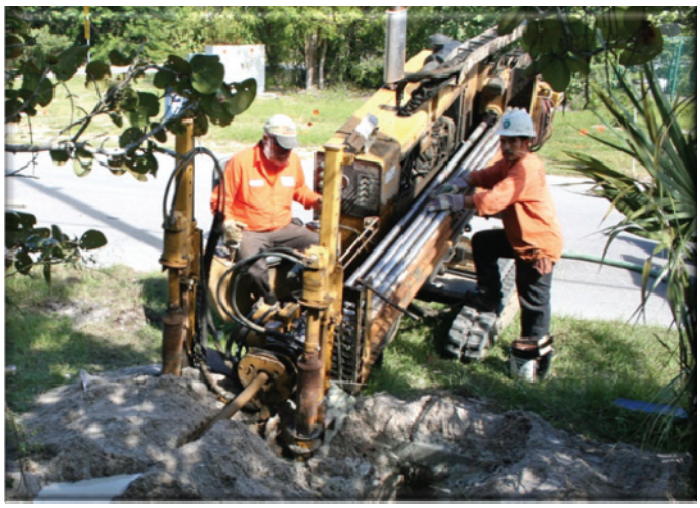
IWA has over 100 miles of water mains on Sanibel and Captiva Islands. There are literally hundreds of pipe crossings under the road network. When subdivisions are first laid out, the water mains are usually installed before the roads. When water mains need to be replaced, added, or upsized, it presents a problem as to how to get the new water main across an existing street with minimal damage to the road. Traffic flow and safety are also considerations. Open cuts used to be the standard method, which would consist of making

two parallel cuts in the pavement, digging out the road between the cuts and laying the new pipe in the trench. New road base material, which compacts well, would then fill the trench, followed by an asphalt patch. The patches are a bit of an eye sore and can also result in a dip or "speed bump" as the fill dirt and road patch settle.

Thrust boring (also known as jack and boring) is another method of getting a pipe across a road. With thrust boring, a pit is dug on each side of the road and a horizontal boring auger is used while simultaneously jacking pipe through the earth while removing the spoil inside the pipe by means of the rotating auger. In unstable soil conditions, such as our island shell and sand, the end of the auger is kept retracted back inside the pipe so as not to cause voids that would let the road settle. In practice, that is easier said than done, and when the auger gets outside/ahead of the jacking pipe, road settlement and more "speed bumps" are the result again.

Directional boring has become the road crossing method of choice. A drilling machine is setup on one side of the road which bores a small pilot hole using "sticks" of threaded flexible pipe rods that are screwed together as the pilot bit advances. An electronic sounding device can accurately track the direction and depth of the drill bit as it progresses. The path of the bit can be adjusted as it travels so that it emerges on the other side at a predetermined location. Drilling mud is used as a lubricant to assist the bit as it does its work. When the pilot hole is completed a larger reaming bit is pulled back through to make the hole the correct diameter for the water pipe or casing that is also pulled back through, behind the reaming bit. Directional bores provide several advantages. They are fast, and they do not impact traffic flow as much as the other methods. Expensive road repairs are not necessary, and they do not require large excavations on each side of the road. Directional bores are used by IWA for small 1" service lines all the way up to our largest water mains, and save a considerable amount of time and money.

Getting back to the title of this article, why the chicken crossed the road is still unknown, although a Texan is rumored to have once said that the reason was to prove to the armadillo that it could be done. These days, on our islands, maybe the chicken, armadillo, and raccoon could use a directional bored "critter pipe" to get safely to the other side.



Directional Boring

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