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Special Issue: The History and Status of the Local Breachways

The stone-lined breachways that we all know, are prominent features here in southern Rhode Island. Boats pass through them, people fish from the rock walls, kids spend hours crabbing, and ocean water and marine life move in and out of the ponds, between the walls of local granite. But to the surprise of many, the stone breachways of today are relatively recent constructions dating back to the mid to late fifties or early sixties. When the breachways were opened many things in the ponds changed - some for better and some for worse. By many accounts the water became cleaner as more cool ocean water entered the ponds and warm stagnant water drained out.

However, many issues developed, which we are still dealing with (or not dealing with as you will learn) today. Water became saltier, which affected oyster populations in the ponds; shellfish predators such as sea stars found it easier to enter the ponds; and most noticeably, superhighways were constructed for sand to be swept into the ponds on storm tides where it has built into great expanding delta formations that are choking out acres of habitat and restricting water exchange. Within this issue, we report on a broad range of issues associated with the breachways ranging from history to restoration initiatives. We hope you find the reading illuminating.

SPC on Road Seeking Breachway Dredge

In a sustained effort to see the Charlestown breachway restoration project properly maintained, SPC, Town of Charlestown representative Rob Lyons and others have been meeting with local representatives and government officials. The goal of the meetings has been to raise awareness of the sand buildup in the breachway and pond and the threat it poses to the eelgrass habitat that was recently restored at considerable expense. To this end, SPC has built a slide presentation that leads the viewer

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Blue Shutters and Town Beach News

The Town of Charlestown is continuing to research options for replacing the infrastructure at both Blue Shutters Beach and Town Beach. Both facilities have antiquated pavilions, unappealing restrooms and outdated septic systems.

The debate within town is over what type of facilities should be specified and how wastewater will be processed. There is also a debate over what audience the facilities should serve. The town recreation director has made the case for building larger stick-built structures that

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Dear Members,

There are so many things to report, it’s hard to know where to start. As I have reported before, SPC is actively participating in an ad-hoc group of experts to provide guidance to the Town of Charlestown on many issues that affect the salt ponds. This core group started in Charlestown, but addresses issues common to all the ponds. If it can set a good example, maybe others will pursue similar efforts.

The group has looked at many issues including: a detailed plan to manage on-site wastewater treatment; a town resolution for limiting fertilizer use; leaflets for public education; a program to collect rotting seaweed from coves in the pond; and investigations into better storm water management. The group also supported a study by Dr. Anne Veeger, of URI and her Masters student Jessica Donahue, which plotted nitrogen levels in the wells of volunteers around Quonnie. This along with SPC sampling and thermal imaging will help document inputs of nitrogen to the ponds.

SPC has been a vocal participant lending expertise as appropriate, while looking out for the ponds. We have been active on many fronts, but none more so than advocating for proper dredging of the breachways. One of the best short-term fixes to our nutrient overloading is increasing dilution and increasing flow of fresh seawater through the breachways. You can read about our efforts elsewhere in this issue.

Charlestown has been out in front with initiatives such as cesspool removal, but it’s really the tightening of the screws through DEM Rule 39 that has focused their attention. The encouraging part is DEM has shown signs of flexibility in terms of working with a town that wants to make a sincere effort to find faster and more affordable solutions. We are seeing first hand how things can get done in a scenario like this and we hope a constructive spirit endures.

Elsewhere, SPC spoke in support of revisions to a Town of South Kingstown zoning ordinance that will give officials there more authority to regulate the size of houses on marginal lots. An important tool to help counter non-conforming development.

I am pleased to report that our good friend and Chair of the Environment Committee Ted Callender is recovering after serious surgery. Welcome back Ted! Marshall Mugge and Elise Torello are doing a great job balancing the treasury and membership database.

As we look toward the busy season, Roy Jeffrey is organizing the 26th season of Pond Watchers. There are a couple of openings, so if you would like to participate, let us know.

Salt Ponds Coalition will join other environmental groups to participate in an Earth Day celebration at Kettle Pond on May 14th. We are busy planning two major fundraisers, the Annual Pizza affair at the Hills property on July 14th and a special “Champagne & Oysters” fundraiser in Arnolda in August.

Two kayak trips are planned, June 4th on Green Hill Pond and September 24th on Winnapaug Pond. Check the website www.saltpondscoalition.org for details as they develop.

Salt Ponds continues to be solvent, but certainly feeling the financial crunch of this economy. Your support at any level is appreciated.

I sound like a broken record, but we are successful thanks to a dedicated Board and members like you – Thanks!

Art Ganz, President
SPC Hosts Visiting African Fellows

As part of the 50th Anniversary of The Intergovernmental Oceanographic Commission (IOC), twelve young African scientists were selected for an IOC Fellowship program offered by the US National Oceanic and Atmospheric Administration (NOAA), US Department of State, and the Swedish International Development Cooperation Agency to address ocean and coastal adaptation to climate change. The main objective of the Fellowship program is to contribute to the career paths of Young African Scien-

Town Beaches

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have expanded capacity to service more out-of-town day trippers. Others - SPC included - feel that the town-owned beaches, which are small in size and have limited parking, would be better served by not bringing in large crowds and by providing clean modern facilities to handle residents and the beach-goers who come on their own. In recent years, that has been about 10,000 cars per year per location, according to statements by the recreation director. This existing volume has been enough to cause considerable parking headaches on weekends and nice beach days.

Both sites are in fragile natural areas and are actually below the elevation of the beach face. SPC feels that in such sensitive and exposed locations holding tanks, from which waste is pumped and trucked away, or composting toilets should be specified. Denitrifying septic systems are likely to cost several hundred thousand dollars and will be at the mercy of storm waves and hurricanes. These systems have many electrical parts and inundation could be very expensive.

From an environmental standpoint, pumping the effluent and trucking it to a wastewater treatment plant would be best. And based on our back of the envelope calculations, it would take ten to twenty years for the cost of trucking to reach the up-front cost of installing an in ground treatment system - a period of time during which such a system could be ruined by sand and sea.

Visit out website to read our letter to the editor on this topic, which appeared in the Westerly Sun.
Prior to the hardening of the breachways, the openings into most of the ponds were true breachways – sand openings, which came and went with passing storms and waves. These cuts not only opened and closed, but also changed their course or location along the beach. They tended to be shallow and during placid weather beach-goers could easily ford the cuts by wading across at low tide. Most of the time, conditions were not ideal for boaters wishing to put out to sea and to come back, although at times the channels could be quite deep. Pam Lyons of the Charlestown Historic Society reports that the ocean-going ships of Dutch and Portuguese traders would come into Ninigret Pond in the 1600s and 1700s and anchor in front of the Fort Ninigret trading post.

The ponds were quite different before the hardened breachways, due to lower circulation and less mixing with ocean water. They were less salty than they are now and that brackish quality supported an ecosystem that looked different than what we’ve had since the breachway construction. Pre-construction, widgeon grass was more common in the ponds, and fish species, such as White Perch, were plentiful. Oysters did well in those systems: larval oysters prefer lower salinity and with the brackish quality of the ponds, reproduction was more efficient. Although the cuts would completely fill in at times, the ponds were often open to the sea and anadromous fish such as herring, shad, smelt and sturgeon transited the ponds as they moved from ocean to river for spawning and back the other way as young headed to sea. Ninigret Pond supported a run as fish headed up the stream through Cross Mills and Factory or Teal Brooks. Point Judith Pond also attracted runs to the Sagatucket River at its northern end. Eels lived in the ponds and would exit when nature called them to spawn in the Saragasso Sea (see Tidal Page Spring 2008) and other marine fish such as flounder, bass, and tautog would come and go as breaches allowed.

In the 18th, 19th and early 20th centuries, farmers and/or fishermen would breach the ponds as necessary to let the commercially important fish runs enter. This was accomplished by digging a narrow channel from the ocean towards the pond. The water level of a dammed-up pond was generally higher than the ocean, so once the trench was close to completion the work had to proceed with caution. As the final sand was removed, the workers would literally “cut and run.” Once the water started flowing, the head of pressure behind the outflow would quickly carve a deeper and wider channel through the beach to the ocean. According to an article from 1904 a final breach would be timed for low tide, so as to maximize the scouring effect. Workers would further the cause by calving off slabs of sand for the out-bound flow to carry away. If lucky, the breach would stay open until easterly storms of fall once again piled sand across the mouth of the breach.

When the breachways were dredged deeper and wider and lined with stone so they would stay open, more cool, salty ocean water flowed into the ponds and conditions changed. widgeon grass was replaced with eelgrass (also beneficial habitat) and salinity levels rose. Species such as the white perch diminished or became more seasonal and the marine species became dominant.

In many ways the hardening of the breachways was beneficial for those who lived around the pond and in some ways for the ponds themselves. According to Charlestown resident Rich Hosp, who has summered or resided on Quonnie Pond since the 1940s, the pond was already suffering from pollution by the fifties and mats of floating algae were mucking up summer waters. An article from the Westerly Sun in the late winter of 1961 also references pollution issues: “Quonochontaug residents, particularly those who own homes along the shore of the big pond, have complained repeatedly of the odors caused by stagnation and the harm caused to fish and shellfish.”

Walter Neugent, who summered in a rustic cottage on the Quonnie breachway, and who later helped dredge the channels, likened the water of the 1950s to “lime jello before it sets.” He reports that flounder became scarce and blow fish were about all they caught. Better circulation and flushing with clean ocean water put the breaks on nasty water for decades and restored water quality – even as housing density around the ponds grew.

**Dynamics of breachways:**

Dredging and hardening drastically changed the mechanical or hydrodynamic characteristics of the cuts and increased flushing wasn’t the only effect. Sand, which historically had remained on the beaches and around the shifting mouth of the breachways, started to ride storm currents straight to interior locations within the ponds. As any regular visitor to the beaches (particularly in the October through April period) knows, storm waves and wind can move mountains of sand around in the span of a few hours. Some of this sand is pushed into the breachways by strong currents. When the breachways were soft and sandy, the sand tended to stay around the mouth of the breachway and maybe even filled it in. This prevented deep incursion of sand into the body of the pond. With dredging, and the hardening of the cuts with rock walls, highways were created that allowed sediment transport to reach deep into the ponds. Now, powerful tides, which are often associated with storms and
waves, push and carry quantities of sand into the ponds. The sand is either suspended in the swiftly moving water or pushed along the bottom by the strong, scouring currents. Either way, the sand is swept along until the tidal currents reach deeper and/or wider waters, at which point the velocity slows and the sand settles out. Over time, and with a lack of maintenance, the breachways have been filling in and sand rolls deeper into the ponds, where it continues to fill in channels and build shoals.

This sedimentation has the effect of cutting down on the turnover of water in the ponds. The passageways are constricted, so less clean ocean water reaches into the ponds with each flood tide and less of the water in the ponds exits into the ocean. The water level in the ponds still rises and falls due to hydraulic pressure of the ocean water pushing against the pond water, but the time the water remains resident in the ponds is longer the more constricted the open-water remains resident in the ponds is against the pond water, but the time the water remains resident in the ponds is longer the more constricted the openings become.

Stewardship:

Many people feel that keeping the channels open and free flowing will help reduce pollution in the ponds (the solution to pollution is dilution train of thought), but there are those who feel the ponds should be left to the forces of nature and if the channels are prone to filling in, so be it. After all, goes the reasoning, that's how they were before the stone jetties were built. These folks argue that the lower salinity ponds were good for shellfish and also for waterfowl such as ducks. In our opinion, there are two problems with this reasoning. One is that there are many more houses around the ponds now than there were in 1960 (remember the quote, above, about stagnation and smell even then) and that with less and less circulation the ponds will turn into a nasty soup of algae, bacteria, and hypoxic (low oxygen) water that will not support a healthy diversity of aquatic life. There are many more houses around the ponds now than there were then and it is doubtful that sources of nitrogen pollution and bacteria associated with dense human population can be cut off to the degree necessary to match conditions as they existed when population density was low. Certainly, to do so would be very expensive and would happen over a long period by which point great damage might be done. The second concern is that when the work on the breachways was done, mankind created a ecosystem that is dependent on cool ocean water. Is it not our responsibility now to maintain these conditions, so the creatures and plants that have kept house there over the past half-century can continue to thrive? There seems to be a double standard in the environmental field when it comes to issues like this. When a suggestion was made to angle the Quonnie breachway towards the west by dredging through the sand lobe that had filled since the Quonnie breachway was built, and thus improve circulation, the people in charge of the roseate tern and piping plovers about laid an egg. “That’s protected habitat!” went the cry. Same reaction when it comes to piling sand from maintenance dredges on a small fraction of the new sand lobes, which would build island habitat and drastically trim costs by greatly reducing how far the sand is pumped. But when it comes to caring for the thousands of acres of habitat that the state created, many are strangely quiet.

So who is responsible for maintaining the breachways? First and foremost it is the State of Rhode Island and Providence Plantations. (Now that we’ve reaffirmed that name through a statewide ballot I feel compelled to use it at least once!) Contrary to what many believe, the breachways are state, not federal, property and the dredging and hardening of them was done by the state. The Army Corps of Engineers (ACE) maintains the channel at Point Judith since it alone out of the southern RI breachways is designated a federal navigation way, but the rest are a state obligation. The local towns seem to have little say over maintenance of the breachways.

The governing body for dredging in Rhode Island is CRMC (Coastal Resources Management Council). CRMC understands that they are generally responsible for maintaining the breachways, but it does not seem to be a priority. Indeed, for decades practically nothing was done.

Back in the early 2000s CRMC engaged in the South Shore Restoration Program, with aspirations to not only dredge the channels, but also restore acres of eelgrass beds in Ninigret, Quonochontaug and Winnipaug Ponds. These projects would be financed by 70% federal funds with a 30% state match. Ninigret breachway was dredged under this program and close to twenty acres of eelgrass habitat was restored - a great job, for which they and others deserve recognition. Since then money has become tighter and although CRMC continues to put in funding requests for these projects, the requests have gone un-funded. This has led to CRMC saying they want to do the work, but that the money is not there, so our hands are tied.

This is particularly obvious in the case of the fairly recent project at the Charlestown breachway. Dredging and restoration there was underwritten with federal money and the state signed a contract to maintain the settlement basin once the work was complete. Within a couple of years two large winter storms filled in the basin, but the state has since refused to dredge saying they can’t find the money. This is the situation that led to SPC and Charlestown going on the road to advocate for funding. For more on this topic please read the page 1 article about SPC on the road.

Maintenance options:

There are not a lot of options when it comes to maintenance. In Weekapaug,
Quonnie and Charlestown sand needs to be removed to increase flush rates and prevent the siltation from getting worse. The options pretty much boil down to this: a) Conduct a full dredge with the installation of settlement basin, or b) Install a settlement basin alone to put the brakes on continued buildup of sand until a time when more extensive work can be completed.

At this point, full dredges are a pretty big deal. A lot of sand has settled in the ponds and serious equipment is required to take it out. The jobs will be complicated and made much more expensive by stricter wildlife protection regulations, which restrict where the sand can go. During the initial jobs, the dredged materials were mostly used to back fill against the new stone walls lining the channels. The dredging was done with large cranes that would swing and then throw heavy steel buckets into the channel and then drag them back to scoop out sand. The scoops were lifted from the water and the sand was dumped along the side, where bulldozers pushed it out to grade.

Today, state and federal agencies are very particular about where the sand can go. Many of the original fill areas are now heavily vegetated and putting new sand there might destroy habitat. Piling the sand on areas of the flats that grew out of the breachway sitation problem to create a few new islands would be the least expensive alternative, but would also destroy now existing habitat even as it made new vegetated habitat. Options that are potentially acceptable to state and federal regulators all seem to involve moving the sand significant distances to the beach face.

When the Charlestown breachway was dredged a few years ago, a hydraulic dredge was used. Such dredges are generally built on a barge and consist of a large diesel engine that powers a cutter head and a powerful pump. The cutter head eats into the compacted sand and the pump sucks up the sand/water mix - known as slurry - and discharges it through 8” to 14” pipe.

With the Ninigret job, the pipe ran from out in the pond, float to float, to the barrier shore, and then across road and dune to the beach face - a distance of roughly three-quarters of a mile. Such an operation is very expensive and relatively few companies have the infrastructure to do the job. Jobs are put out to bid and the low-cost bidder might be a regional company or from halfway across the country.

As one can guess, a large percentage of the cost is associated with getting the equipment on site. Adding to the difficulty, dredge work is only permitted in RI during the cold winter months when fewer fish are on the move in or out of the ponds and public activity is low. This requires that the machines run extended hours - sometimes even 24/7 - through the coldest stretches or risk the discharge pipes freezing up and breaking. Needless to say, a breakdown in equipment under such conditions is a big deal.

However, if one of the criteria to obtaining a permit is moving the sand to the beach face, there aren’t many alternatives given the volume of sand. You might pile the sand in one of the state parking areas found alongside most breachways and then truck it away, but for a full dredge job that is a lot of trucking. Right now in Charlestown breachway, an estimated 30,000 cubic yards of material need to be removed to fully repair the settlement basin. The largest over-the-road dump trucks hold about 20 yards of material, so 1,500 trips would be needed to move it all. That’s a lot of trips and a lot of weight passing over small local roads.

In some areas, a barge is used to shuttle dredge material from work site to dumping ground. In the breachways this is problematic, since dangerous currents in the breachways, and rough winter weather, would hamper barge traffic for days on end. With a crew of five or six and lots of expensive equipment on site, you can’t be waiting for high seas to pass.

Another complicating matter is where the sand should go relative to the mouth of the breachway. Put it in the wrong place and it is likely to come right back in during the next big storm. The dominant long-shore drift in South County is from west to east, which would suggest the sand should go somewhere east of the breachway opening. However, since much of the erosion happens during northeast storms, the sand needs to be placed far enough down the beach to guard against a big storm scooping out the beach and bringing it into the breachway on the flooding tide.

But it gets even more complicated. Federal officials are very concerned about putting sand on piping plover habitat, and if the sand is to go below the tide line there might be concern about covering cobble bottom, which could be lobster habitat. And if that is not enough there is also uncertain case law about putting public sand on private beaches. Some beach owners are uncomfortable accepting state sand for fear it could compromise their ownership position. This all seems like a lot of fuss given that one winter storm can completely reshape the beach face.

All in all it would be a lot easier to just maintain the catch basins on a regular basis. A catch basin dredge job might be 8,000 cubic yards. If the catch basins were installed close to solid land with access for cranes, the work might be done with draglines or clamshell buckets, the way it was originally. Sand could be piled on the shore, allowed to de-water, and then trucked to a nearby public beach. That would be about 400 trips using big rigs. Furthermore, local excavators could do the work, it wouldn’t have to go 24/7, the cost of mobilizing would be less. Sand could be trucked further from the breachway opening.
A local committee has looked into the practicality of a small dredge being owned and operated by a municipal public works dept. or a non-profit corporation set up to manage the process. Ideally such capacity could be used in rotation from one breachway to the next, to the next and eventually back to the first to repeat the process every three to five years. However, it seems the cost might be too high. Maintenance associated with pumping abrasive sand is very high and parts are sometimes hard to find. Furthermore, a skilled crew is needed to prevent clogs in the long runs of discharge pipe. If sand could be moved a shorter distance, the ownership option might be much more attractive.

**Funding**

The major roadblock to dredging and maintaining the breachways is financing. Funds to maintain the Charlestown breachway need to come from the state, since the state signed an agreement to maintain the work that was done. Funding for Weekapaug and Quonnie breachways could fall under the South Shore Restoration Project umbrella, in which 70% is funded by the feds and 30% by the state. Follow up maintenance would be the responsibility of the state.

The 2011 state budget has $429,000 allocated for the South Shore project. If approved, this could be combined with the Town of Charlestown money to service Ninigret and protect the restoration investment there, or it could be used as state match to start on the restoration project within Winnipaug. The amount is about what was called for in the original estimate, but that estimate was generated ten years ago. Prices today would certainly be higher and the actual state match would be quite a bit more.

Other potential funding mechanisms could include: funding by the local towns out of existing revenues, such as is the case with Charlestown; private donations; or some form of tax levied on property in communities adjacent to the ponds and boats that use the ponds. Ultimately, everyone who uses the beaches and our coastal resources benefit by keeping the ponds healthy. A pretty strong case can be made that a portion of state and local tax dollars should be put into maintaining these resources. Every town that enjoys collecting elevated property taxes from coastal properties has an interest in ensuring the long-term health of the resources that draw people here.

**Permitting**

Regulations regarding dredging in the salt ponds are tough. All of the salt ponds are classified as type II waters, which among other things prohibits dredging bottom that has not been officially dredged in the past. Many existing boat channels have never been officially dredged. This is part of why dredging is often combined with restoration work. It offers a mechanism to dredge important channels that haven't been dredged before.

Maintenance dredging can be permitted, but the cost of meeting CRMC demands can be high. A lot of the cost comes when studies are required. Required studies might include tidal flow patterns, wildlife surveys in the water, in the sand, and on the beach where the water/sand slurry would be discharged. They might also include below the tideline on the beach. The studies could have temporal requirement requiring year-round observations. Sand needs to be tested to certify it is not contaminated and is of beach quality.

Please read on through the following section where we discuss history and specifics regarding each of our South County breachways.

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**A Pond by Pond History of the Breachways**

**Point Judith Pond:** The man-made stone breachway at Point Judith pre-dates any of the other South County breachways by at least half a century. In the late 1800s and early 1900s there were ongoing debates about cost and merit of opening a permanent passage between the pond and the sea. Proponents argued that building a channel would allow shipping to move up and down the pond and would help the town of South Kingstown develop economically. Commodities of note would have included coal, seaweed for fertilizer, and fish and shellfish among other basic goods. Opponents didn't think it was worth the cost and some argued that improving Narrow River would serve the area better. The project did eventually proceed and was closely associated with the building of the Harbor of Refuge.

The Harbor of Refuge is the area of protected water that lies within the ring of large stone breakwaters off of Point Judith breachway and just west of Point Judith light. The Harbor of Refuge was built with federal dollars between 1890 and 1900. Continued on page 10.
Top: The Weekapaug breachway into Winnapaug Pond. Heavy siltation has formed from the sharp elbow turn in the channel far to the west.

Above: The Weekapaug beach before the channel and stone jetties were built. There is a smaller rock wall on the east side which was made from rocks pulled out of Fenway Beach.

Right: A view in the Quonnie breachway during construction. Notice the stone bridge across the channel in the middle distance. This was constructed for heavy equipment to gain access to the east side. The dragline cranes worked both sides of the channel and boulders were brought in by truck and then across the channel as needed.

Above: Newly constructed Quonnie breachway looking northeast towards the pond. Pre-dredged from the channel was spread along walls and to the east to construct the state parking area. A maintenance road was originally on the west side, but it is now overgrown.

Below: Dragline crane at work. Notice there is one on the opposite jetty, too.

Right: Quonnie breachway. Note the sand lobes or "flood delta" (in white circle) that has formed since the breachway was built.
Above: Newly constructed Quonnie breachway viewed from the west side looking northeast towards the pond. Probably summer of ‘62. The sand dredged from the channel was spread along the west bank behind the stone walls and to the east to construct the state parking area. A maintenance road was originally on the west side, but it is all overgrown now.

Above: Charlestown breachway has proportionally shorter rock walls and a long stretch of soft-sided channel. The areas at top that are outlined in white are where dredging and eelgrass restoration took place back in 2005 - 2007. The dotted white line identifies siltation building in over the restoration area. The area outlined in black is the settlement basin, which has filled in and needs to be dredged.

Above: A natural breach through the beach face at Cards Pond. This might have been opened by machine to flush the pond, but this is what a small natural breach looks like.

Left: Point Judith breachway is the opening through the beach face. The Harbor of Refuge is defined by the long stone breakwaters that extend far out into the bay and create a protected anchorage as well as protection for the entrance to the fishing harbor. Point Judith is a federal channel due to the fishing fleet and is maintained by the Army Corps of Engineers.

Below: Much of the stone used in the almost 2.5 miles of Harbor of Refuge breakwater walls came from a quarry immediately south of the western abutment of the old Jamestown bridge.
and 1910 to provide a refuge for shipping. Prior to the construction, there were no safe ports between Stonington, CT and Newport. East-bound ships caught up in bad weather would have to ride out the storm at sea, or hazard a passage around Point Judith and across the mouth of Narragansett Bay, which can be a nasty stretch of water when tides and wind team up, or fight it out. In the days before radio, radar and GPS, sudden gales and fog were the ruin of many a ship. With the construction of the Harbor of Refuge, ships could pull into the protected waters within the sea walls and drop anchor. More than 1,300,000 tons of stone were required to build the refuge walls and a major quarry operation was run for many years just south of the western abutment for the old Jamestown bridge.

Work commenced on the present channel into Point Judith Pond (or as some call it Salt Pond) back in 1901 and proceeded through approximately 1910. In time, a sizable commercial fishing fleet developed in the pond that continues to this day. (Folks in the Northeast might watch the reality TV series “Lobster Men,” which follows several boats that sail from Point Judith harbor.) Given the commercial fleet, the many marinas and the Coast Guard station, Point Judith Pond holds the distinction of being the only South County channel designated as a federal navigation way. As such, it is maintained and dredged as needed by the Army Corps of Engineers. For more detail on the history of Point Judith Pond, the breachway and the Harbor of Refuge, see the book A Place of Quiet Waters, by Prentice Stout. It is available in local libraries.

**Ninigret Pond**

Charlestown breachway has a long history. As Pam Lyons of Ocean House Marina and the Charlestown Historic Society reports, the breachway was once deep enough and wide enough to accommodate the ocean-going sailing ships of Dutch and Portuguese traders, who visited the trading post at Fort Ninigret starting around 1630. However, according to An Elusive Compromise, a booklet by Virginia Lee, the channel started to shoal by the mid 1700s and became unreliable for shipping. Ongoing attempts were made by farmers and fishermen to open the breach, but most years it would close back up with the fall and winter storms.

In 1904 a greater effort was mounted to dredge the breachway and protect it with rock walls on either side. Rocks were harvested from local fields using a rock hoist device (shown below) and were then rolled to the growing rock wall on a set of narrow-gauge rails. East and west walls were constructed 60-feet apart and the project was completed by 1910. In 1912 a storm overwhelmed the wall and collapsed the stones. Soon after, the cut closed up again.

The present breachway was started in 1952 and was built on a larger scale. The channel was dredged to a width of 120-feet and heavier rock walls were built out of large granite blocks, many of which were waste rocks from local quarrying operations. The rock walls were fitted together more skillfully and the resulting stone jetties have endured until today.
In 1985 the breachway was dredged again and at this time a settlement basin was created to catch sand before it made it into the pond. The Corps headed up this federally-funded project and also dug a 30-foot wide by 3-foot deep (at mean low water [MLW]) channel from the wrecked barge (about half-way into the pond) northeast to the pond proper. An additional north/south channel 20’ wide and 2-feet deep (MLW) was dug from Pond Street down to the mouth of Green Hill Pond, with the intention of improving flushing. Sand from this project was discharged at Charlestown beach. This project was a long time coming and was done with the backing of Senator John Chafee.

The Link Channel was dug in the mid 1960s so anadromous fish such as smelt and herring could more easily enter Green Hill Pond and from there run up Factory Pond Brook. It runs from the main channel in a straight east-west line to the Green Hill Pond culvert. Various agencies fought over whether the channel was beneficial or detrimental - the same argument about clean ocean water vs. lower salinity levels. Eventually the channel was abandoned and it quickly filled in. Today it is just a few inches deep.

Around 2000 the most recent dredging operation was commissioned and it was aimed at cleaning out the settlement basin, opening the channel, and then removing approximately 14-acres of shoaled sand around the entrance to the pond. Money for the project largely came from federal funds which came to Rhode Island via Senators John Chafee and Jack Reed. The project was called the Ninigret and Cross Mills Habitat Restoration Project and was guided by an advisory committee made up of representatives from the community, the state, URI and the Army Corps. The Corps took lead on the project and in the fall of 2004 work got under way. Dredging was finished over the winter of 2005/2006. A total of 105,000 cubic yards of sand were removed for a final cost of $2,578,000. Over the summer of 2006 a separate contractor planted eelgrass in the western lobe for a cost of $99,000. In the fall of 2007 an additional 47,000 cubic yards of sand was removed from the eastern lobe of the flood delta for an additional cost of $864,000.

As a condition of the federal funding for this project, the state, represented by the director of CRMC, signed an agreement to maintain the settlement basin on a regular basis, so as to protect the eelgrass restoration efforts. The maintenance contract calls for the state to survey the project “at least every other year” and to dredge when there is “two feet or more of shoaling over 50% of the basin.” After six years, none of that has happened. The site has not been surveyed and no maintenance has been performed. Between the initial dredging and now some large winter storms filled in the basin and sand has again started to fill the channel and the recently restored eelgrass beds.

Quonochontaug Breachway

The Quonochontaug breachway has a rich history. In the 1800s and early 1900s there was a busy community of hotels and shops located along the eastern side of the breachway. Institutions such as Eldridge House and the Breakers sat roughly where the cottages and docks now sit along the rock jetty, just south of the state parking area. There was a boardwalk that ran along the channel between the buildings and the water. It was elevated some distance above the water (by some accounts 12-feet or so) and ladders descended to docks where small boats tied up. On the west side of the cut stood a U.S. Coast Guard lifesaving station. It was manned by a contingent of servicemen who were regularly seen drilling in their six-man doories and who would put out to sea, as needed, to rescue sea-goers in distress. Remnants of the old station are still visible and SPC points them out during its...
Guided paddles on Quonnie Pond. The channel followed the current path as far as the sharp bend, but then, rather than running straight into the pond, it curved sharply to the west and then meandered towards the pond, connecting with the main body of water a little east of Nopes Island. Closer towards the pond - on the east side of the old channel - a number of cottages were occupied by local families. This area is cut off from the sea now and is a great place for kayaking. If you look at the right spots, you can spot several pilings from these historic homes.

The current rock walls were constructed during the summer of 1961, at which point the channel was re-routed to its current track. Granite blocks were brought to the site via truck, and large cranes with drag lines (bucket scoops designed to be flung out into the water and dragged back) were positioned on both sides of the channel to excavate it to a width of 125 feet and a depth of 4 feet at MLW. Sand from the dredging operation was used to fill in behind the newly constructed rock walls and to construct the access road and parking area on the east side, as well as a service road on the west side intended for access by heavy machinery when future maintenance was needed. The western access road is now overgrown by brush and grass, but it was there and was intended for maintenance access.

There are many references in the historic record to seriously degraded water quality prior to the dredge work. One article from the Westerly Sun references “poor circulation, stagnation, and foul odors.” Another from the winter of ’61 states that residents have “complained repeatedly of the odors caused by stagnation and the harm to fish and shell-life.” Rich Hosp recalls the pond being smelly and choked with mats of weed, and as noted earlier in this text, Walter Neugent recalled the water resembling “lime jello” in color. In a press release from Sept. 1960 then-Governor Del Sesto cited better circulation in the pond as a benefit of the project. He also noted that “the new project will increase access in and out of the pond and thus stimulate boating activities.” The Governor summarized by stating that “he was certain the project would do much to stimulate activity in the area and prove a great help to [the] entire South County area.”

Dredge History: As stated above the channel was dredged in 1961 from the ocean to the edge of the pond, or an area basically adjacent to the northern tip of the state parking area. Since then, no dredging has taken place and...
sand has created very large lobes to the east and west of the navigation channel. The channel through the flats is shallow in areas and this portion—about five-hundred yards—has never been officially dredged. It has been defined by current and motorboat prop wash. That means that any future dredge will not be considered maintenance and that makes permitting harder. With passing years, the channel has drifted to the east and now angles slightly towards Quonochontaug.

**Current Dredge Status:** The Weekapaug Foundation for Conservation has been trying to dredge the Quonnie channel for about five years. Local resident and benefactor Finn Casperson was a champion of this effort and felt that since the state had not maintained the passage, private interests should come to the rescue before the vibrancy of the pond declined too far. Mr. Casperson financed several studies of the pond, which were conducted by professors and students at URI. With his passing in 2009, the board of the Foundation has had to take on the nettlesome issues associated with not only permitting the project, but financing it as well. At the time of publication, the Foundation has yet to receive permits.

The WFC plan is an ambitious one that seeks to dredge large volumes of sand and pump it to the beach, where it would be used to build up the height of the beach in order to better protect the barrier, the pond, and the people who live around it. As the plan developed, dredging of the Weekapaug Yacht Club channel was added to the project and this further complicated the application. Initially the idea was to dredge straight out of the harbor and across the sand flats where people dig for clams. This would have mined a lot of sand for beach nourishment, but was a non-starter for the state and groups like SPC. This flat is productive ground for clams and scallops, not to mention assorted worms and crustaceans, and as such is an important resource for people and wildlife. And again, the pond is type II waters and dredging undisturbed sandy bottom is not allowed. The revised proposal currently in front of CRMC has gone back to dredging the path of the existing channel from the Yacht Club.

Whether WFC will soon receive permits to dredge, and whether they will proceed if they do, is not known. In the meantime, it appears that dredging Quonnie through CRMC and the tidal delta restoration program is on hold.

**Weekapaug Breachway**

**Winnapaug Pond**—also known as Brightman’s Pond—used to be one of the most productive habitats in the salt ponds region. We profiled the pond in the Summer 2008 issue of the Tidal Page so no need to go into it again here. The breachway has long followed its present course, but prior to the dredging and stonework it was characterized by a wider and shallower sandy delta where it met the sea. Inland, at the same site as the current bridge, there was a bridge for a trolley that ran from Westerly, to Watch Hill, and on into Weekapaug. A modest stone wall lined parts of the breachway and extended out along the east side of the cut to the sea. This wall was built in the early part of the 1900s from stones pulled out of Fenway Beach, which was originally quite rocky. North of the bridge the channel widened into a significantly wider basin, before narrowing again as it stretched further north towards the pond. Around 1,000 yards from the ocean the channel hooks hard to the left and feeds into the pond. At this bend in the channel, kids used to swim from a floating platform with a diving board, which was moored in the relatively deep water of the cove adjacent to the channel. Today a large portion of the cove is silted in.

**Dredge History:** The Weekapaug Breachway project received approval from the Army Corps of Engineers on July 10th, 1953. The plan, which was built the following year, featured the prominent stone breakwaters so visible today, an 18” thick layer of paving stones under the bridge to guard against erosion, and a new island rimmed with rip rap and filled with sand from the dredge job. Walter Neugent, who is quoted in the Quonnie Pond section of this article, operated one of the drag line cranes and spoke with us about building the island.
and the rhythm a good operator would employ while operating the crane: pull the bucket in, lift it from the water, dump it on the back swing, and when it reaches the apex of its inland trajectory, accelerate it forward by pivoting the cab and the boom back towards the water. The final step was to release the gears at just the right time so the bucket would sail the distance and direction needed to make the next scoop. Kind of like fly casting, but with a five ton hunk of iron on the end rather than a feather.

The island Walter built is just north of the bridge on the western side of the channel and can be accessed by foot via a small concrete bridge from the parking area at the north-west corner of the Atlantic Avenue bridge. Prior to the breachway project, the cottages along Breach Drive were waterfront and looked out on the wider section of the channel where the island now sits. To pacify the residents of this road, a jug-handle canal was constructed around the western side of the new island (hence its island nature) and connected to the main channel at the top and bottom of the island. This was to allow for private docks and small boat access and was not, as some think, a version of a sediment trap. Truth be told, however, it functioned well as a sediment trap and before long the central portion of the jug handle was filled in and is now covered with trees and brush.

Current Dredge Status: Little has been done to prepare for dredging Winnapaug Pond. At this point in time the channel is clear up to the bridge. Just north of the bridge is a sandy section two or three hundred yards long where the depth is only a couple of feet at low tide (except for the boating channel which hugs the west wall and is a bit deeper. After that the channel is pretty clear until you get west of the elbow at the north end of the channel. From that point on, one has to be well acquainted with the lay of the pond bottom to navigate at any time other than high tide. Shoaling is severe and even when you know what you are doing you are likely to run aground in anything larger than a kayak or row boat. Winnapaug is another pond with Type II designation, where it is difficult to get a permit to dredge where the bottom hasn’t been dredged before. In this case dredging did not extend north of the man-made island and the bad sedimentation is well inland of that. Winnapaug Pond would be a good candidate for a restoration project such as was done in the Charlestown breachway, but before money is spent on that there should be an iron-clad plan for ensuring regular maintenance.

There has been newspaper coverage of a small dredging project that is proposed for the north and south ends of the jug handle. Several landowners abutting the canal have sought a permit to dredge a couple of hundred feet of the northern and southern end of the canal down to two-feet below MLW. They propose doing so with a large excavator and piling the sand on an adjacent back lot where it could de-water. They have offered the sand to the Town of Westerly for free in exchange for the town using its highway equipment to scoop it up and truck it down to the town beach, where it would be used to build up the beach.

Also newsworthy are plans for the state to rebuild the Atlantic Avenue bridge, which no longer inspires confidence. Passing beneath it in a boat, one notices many loose stones in the piling and a general look of disrepair. The bridge was built in 1936, which means it weathered the great (awful) hurricane of 1938 as well as Hurricane Carol in 1954. An impressive testament to its good design and rugged construction. Word is the work will take place off season this coming fall and winter.

Summary
The breachways of South County are impressive structures with a lot of history as well as some difficult issues. They have been a defining feature here along the coast for decades and affect all who enjoy the coastal experience in Southern Rhode Island. Not only do they carry fresh ocean water into the ponds, they also carry pond water out and that water washes along several popular swimming beaches. If we let the ponds go, from a pollution standpoint, we will likely find that we not only lose recreation opportunities on the ponds, but might also be swimming in lower-quality water along the ocean beaches. It is in our interest to keep the ponds clean and to fully appreciate the role the breachway channels play in our lives and the life cycle of so many creatures and natural assets.

References
Information for the newsletter articles relating to the breachways was gleaned from many sources. They include (in alphabetical order): Check our website for scans of some of these documents.

- A Pictorial History of Weekapaug
- A Place of Quiet Waters by Prentice Stout
- An Elusive Compromise by Virginia Lee
- Hope Andrews
- Dr. John Boothroyd
- Mark Bullinger
- The Charlestown Historical Society
- Anne Doyle
- Art Ganz
- Lang Heminway
- Richard Hosp
- Pam Lyons
- Rob Lyons
- Jim Morton
- Walter Neugent
- Ninigret and Cross Mills Habitat Restoration Project maintenance manual
- The Providence Sunday Journal
- State of Rhode Island documents
- Weekapaug Foundation for Conservation
- The Westerly Sun
- Wonderful World of Weekapaug

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Salt Ponds Coalition’s Champagne & Oysters Event will benefit our volunteer water testing program now in its 26th year. Salt ponds oysters and clams are just one of the many reasons it is worth protecting Rhode Island’s most valuable resource. With 24 testing stations and rising lab costs, we need community support. Please plan to attend this fun and important summer party at one of the most unique coastal settings in Rhode Island.

You will receive an invitation in June, but please put August 12th on your summer calendar. The SPC Board and the pond critters will thank you!

Green Hill Kayak

The spring SPC kayak trip will take place on Green Hill Pond on June 4th. Green Hill Pond is a pretty place to paddle, but it is also the subject of vexing problems regarding human population and pollution. Don’t worry... the pond is perfectly safe to paddle on. You can’t eat the clams, but water recreation is fine and there are loads of pretty places to see.

The paddle will be a fun exploration of a hard to access pond and it will offer a unique opportunity to learn about the nutrient and bacteria pollution that affects many areas of the ponds. Green Hill Pond is small enough that we can cover the whole thing and take in the entire spectrum of pollution inputs and possible solutions.

The paddle will be leisurely and anyone with basic skills is welcome. More ambitious paddlers can go on ahead and meet up with the group at the next rendezvous spot. SPC does not rent boats, so participants will need to supply their own equipment, including mandatory life vests. The group will meet up at the Ocean Ridge parking area, which is 1/2 mile south of Matunuck Schoolhouse Road on Ram Island Road, on the Charlestown/South Kingstown line. Full details and a map are posted on the SPC website. Please call 322-3068 with any questions. There is no fee for the trip, but we do accept donations to the Abby Aukerman Scholarship fund. Prior registration is not required.

Restoration Maintenance

Continued from front page 1

through the case for maintenance of the restoration work, now. The restoration project is discussed in detail in the first column of page 11, so we won’t go into further detail here.

So far the group has met with Representative Donna Walsh, Senator Susan Sosnowski, and Representative Larry Valencia. The presentation was previewed to members of the Charlestown Town Council as well as the CRMC staff and was then presented to the DEM Director and her staff. An opinion piece ran in the Westerly Sun on March 29th urging support for the work. On April 3rd, Rob, Art and Mark joined Representative Walsh to speak in front of the House Finance Sub Committee, where they appealed for inclusion in the state budget of monies requested by CRMC for the maintenance project.

The town of Charlestown recognizes the importance of keeping Ninigret Pond vibrant and healthy and in deference to the tight state budget, they have allocated $150,000 from the 2010 town budget to assist with the project and entered an additional $150,000 in this year’s budget, which will be voted upon in June.

With $300,000 of local support, the $1-million project cost could be lowered by 30%. This is an offer the state shouldn’t let slip away. Charlestown officials have made it clear that these monies can not be held aside for long. Now is the time to act. In the future, maintenance should be done on a regular basis to keep the cost down.
Please Help Us Help the Ponds

If you haven’t renewed your membership for 2011 yet, please use this form. If you have, please ask a friend or neighbor to become a member.

- An SPC membership for the 2011 season helps fund protection of the ponds.
- With your membership, you will receive future issues of the Tidal Page.
- Donations are tax deductible and can help reduce the tax you owe.

Please make checks payable to Salt Ponds Coalition. Memberships run from January through December.

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Please consider additional gifts to SPC. Your donations to our 501(c)(3) organization are tax deductible.

Please consider sponsoring a testing station. The fees we pay to the lab are $600 per station. Many of our stations are sponsored by individuals or groups of neighbors.

Abby Aukerman Scholarship Fund

SPC raises funds for this worthwhile scholarship, which helps support a deserving undergraduate student in marine studies at URI. If you would like to make a contribution to the scholarship fund, please use this form and write the amount in at right. $_________