



The Maidford River Channel

Has the Maidford River always flowed into the Sakonnet River at Third Beach?

Many are surprised to learn that the Maidford River originally flowed into Sachuest Bay in the vicinity of Surfers End beach. In the 1880's, the Maidford was diverted as part of the drinking water reservoir construction work. The entire Maidford River channel is manmade.

Why does the River channel keep plugging with sand?

The Maidford channel is entirely manmade, and keeping its exit clear to the Sakonnet River at Third Beach has always been a challenge. This is due to its location in a part of the beach where sand naturally accumulates from wind, waves, and currents (deposition zone). The Navy, the Town of Middletown, and The U.S. Fish and Wildlife Service has at various times over the years excavated sand from the channel to allow draining of the river. Most often however, the channel would remain open for only a few days at best, before sand would fill the channel again. Simply put, the area wants to be a beach.

How does diversion of flows upstream of the Maidford into the drinking water reservoirs influence the Maidford Opening?

It is unknown the extent to which diversion of flows affects how often the Maidford River mouth remains open.

Has the construction of dunes near the Navy Beach caused more frequent closure of the Maidford River mouth at Third Beach?

Not likely. This dune was created to restore dunes which had been removed to construct the Naval facilities, to help safeguard the parking lot from increased beach overwash and sea level rise, and to provide piping plover habitat. cursory observations suggest that this sand has largely remained in place, and that the sand clogging the mouth of the Maidford is from sand being brought along the beach face and from higher tides and along-shore transport of sand.

Much more sand has been observed in the Maidford Channel, both above and below the road crossing than ever before. What has caused this?

Many people concerned about the Maidford River have commented on this. There is much more sand in the Third Beach system than ever before. We believe there were two large natural storm events which resulted in this increase in sand.

In October of 2015, Hurricane Joaquin, the largest storm of the 2015 season at Category 4, moved very slowly off the Atlantic coast, bringing large waves and above normal tides to Rhode Island.

At the same time, a period of prolonged onshore winds (4 continuous days) brought high surf and waves to the shoreline¹. Tidal data recorded by NOAA showed that for nearly a week, tides were at least one foot above average.



Hurricane Joaquin as it passed New England

During this period, the shorelines at the Sachuest Point National Wildlife Refuge were closed for a week to public use because of hazardous shoreline conditions.

We believe that these weather events substantially changed the amount of sand being transported along Third Beach. In fact, after these weather events, the large water control structure at Third Beach which feeds the Maidford saltmarsh was plugged with sand for the first time since its installation in 2003.

Finally, Winter Storm Jonas in February of 2016 also brought increased tide heights and sand movement along Third Beach, once again clogging the Maidford Channel.



The Maidford River mouth before (left) and after (right) Winter Storm Jonas, February, 2016. Note the large amount of sand transported into the Maidford Channel after the storm.

¹/See "Extraordinary Onshore Wind Event to Impact East Coast as Joaquin Approaches" blog by Hal Needham, storm surge scientist

Has the persistent clogging of the Maidford River mouth been caused by the ongoing saltmarsh restoration?

No. As discussed in the previous answer, a combination of storm events has caused a “new normal” at Third Beach. There is much more sand in the system now than ever before. No sand was added or extracted from the beach as part of the restoration. The improved drainage patterns have not altered flood flows which typically help to keep the Maidford channel open. Low flows have never helped in keeping the channel open – the top of the beach is roughly one foot higher than the saltmarsh.

Attempts to excavate the channel by the U.S. Fish and Wildlife Service after the storms proved futile, with sand again plugging the channel within 5 days of excavation.

The water near the Maidford River road crossing appears stagnant. What is happening with water quality?

Although water within 100 feet of the Maidford River crossing under Third Beach Road has stagnated, improved drainage of water from the marsh surface, clearing of the ditches and the Maidford River Channel throughout the marsh, and better tidal flows have combined to improve water quality as a whole in the lower Maidford River and saltmarsh.

Previous to the restoration, water was pooling on the marsh surface, water had stagnated within the ditches, and high bacteria counts were the norm. This is quite different today.

For those familiar with the area, one only has to look at the water at the culverts where the campground, or connector road crosses the channel in the marsh. Last year, this water was hardly moving, muddy, and infested with mosquito larvae. Today, the water is clear and you can see an abundance of fish in the channel.

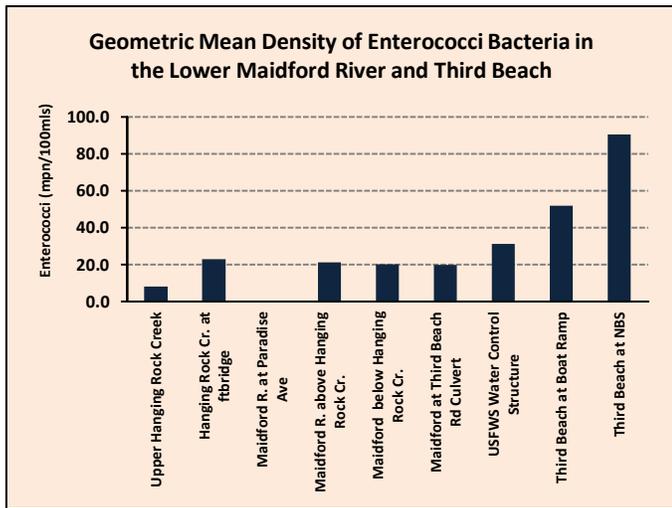


Clear, free flowing water at the Connector Road culverts resulting from restoration efforts.

The U.S. Fish and Wildlife Service has been and will continue to monitor water quality in the marsh and along Third Beach. Using the density of enterococci (a bacteria) as an

indicator of water quality, water within the saltmarsh was found to be cleaner than on Third Beach at the time of sampling.

Limited information compiled during storm events suggests that water quality, again using enterococci as an indicator, improves by over 65% when comparing water entering the area just below Hanging Rock Creek to its exit through the water control structure. This is due to the greater distance water needs to flow through the marsh, and a much larger degree of tidal mixing. Water quality testing is continuing.



Unfortunately water quality immediately adjacent to the Third Beach Road crossing will continue to stagnate until the channel is excavated, or until another resolution is found.

Isn't having the Maidford River Mouth clogged adversely impacting the Saltmarsh?

Because of improved drainage resulting from restoration, the condition of the saltmarsh has been greatly improved despite having the Maidford River mouth closed. Last year before restoration activities started, our tidal monitoring equipment revealed that when the Maidford River mouth was clogged, the marsh would flood for several days at a time. This not only degraded the saltmarsh, but flooded the nests of marsh dependent birds, such as the saltmarsh sparrow, a species of high conservation concern.

This year however, the flooding has been significantly reduced. The saltmarsh does not flood either as frequently or as long. With a larger rain event (over one inch of rain), the saltmarsh will still flood for a period of 24 hours, but this is an improvement over the persistent 10 day flooding events of previous years. Our field equipment is also showing that the tidal exchange within the marsh is greatly improved.

Yet, the situation is still not ideal. While flooding has been reduced, it may still be impacting wildlife attempting to use the marsh for nesting. And while tidal exchange has improved, the channels are still not draining as completely as they should. Certainly, the small area where water has stagnated adjacent to the Maidford Road crossing is still an issue. The U.S. Fish and Wildlife Service, in coordination with our partners, is pursuing a better solution for the Maidford Mouth.

So, what is being done to address the Maidford River Mouth being clogged?

The Town of Middletown, through their Sachuest Bay Resiliency Project, have already designed a new crossing for the Maidford River at Third Beach which shows promise in removing the current under-sized crossing and replacing it with a structure which will also have the ability of managing flows.

However, what is still needed, particularly given the changed conditions on Third Beach (more sand in the system) , is a more thorough investigation of how best to allow for a more effective and continued drainage of the Maidford River across Third Beach.

Such an investigation is set to begin. U.S. Fish and Wildlife is working with Woods Hole Group, a consulting firm, whose charge is to provide a better assessment of sediment transport in the lower Sakonnet, storm surge events, and to recommend different approaches to address the issue.

Once this assessment is completed (over next few months), a final recommendation will be brought to the landowner (Norman Bird Sanctuary) and to the Town of Middletown (who holds a road right of way). Once a decision is made, funds will be used for design of the structure, and dependent upon cost, will be constructed. U.S. Fish and Wildlife Service funds will be used for the assessment, design, permitting, and construction. We anticipate, should sufficient funding exist, that construction may begin in the fall of 2017.

When will the flooding of Third Beach Road near Navy Beach Parking lot be fixed?

The town of Middletown will be addressing this issue with road improvement funds made available through their Sachuest Bay resiliency project. The flooding occurs from rainwater not being able to drain from the area. The Sachuest Bay Project is scheduled to be completed within the next year.

How will restoration efforts impact mosquito production?

Due to improved draining of stagnant pools of water on the marsh surface, phragmites control, and better tidal exchange, we anticipate that the density of mosquitoes will be reduced.