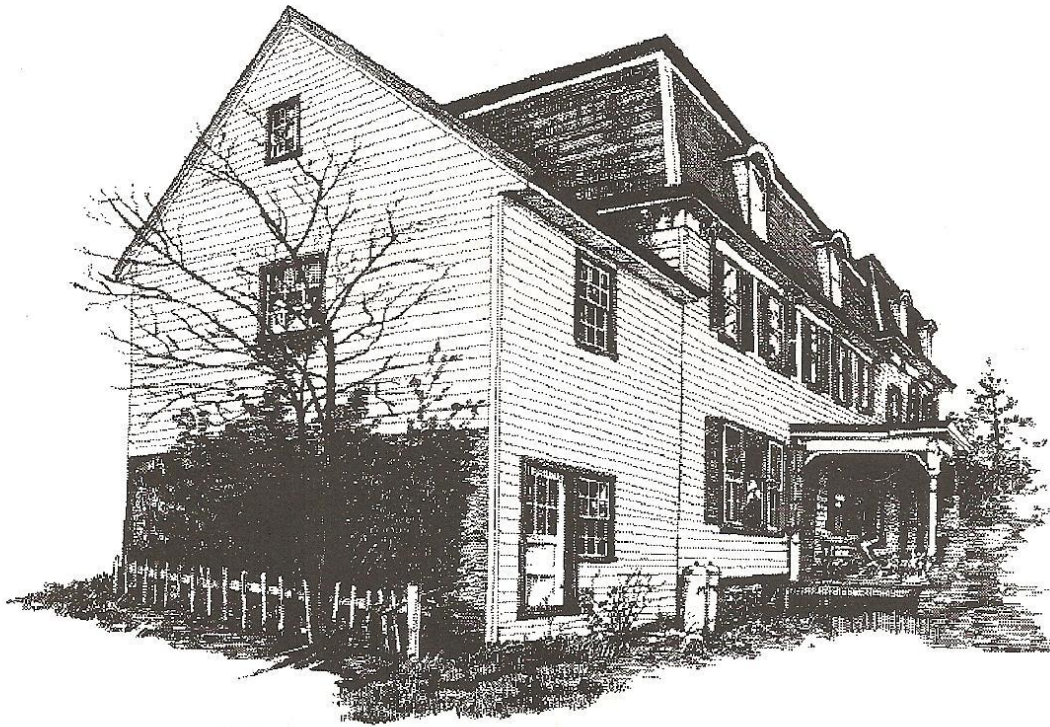


'A Farm & Flood Book'

Three Centuries on the banks of the Delaware



CONTENTS

Introduction	3
I. Farm History; Riverside Homestead Farm	4
II. Farming on the Delaware River Floodplain	9
III. Flooding at the Farm	12

Introduction:

Life on the *River Side Homestead Farm* was memorable during 2011 for the first serious Delaware River flooding in over 30 years. After a three decade hiatus, three floods in six months were a shock, especially the one on April 17, that may have crested at the highest level seen there in nearly 80 years. This led those with an interest in the Farm to recall either their own experiences with previous floods, or what they had been told about them, or both. These recollections, in turn, led to yet another search for '*The Flood Book*', a misplaced scrapbook of collected family photos and hand written records of significant floods during the mid-1900's. A desire to compare 2011 experiences at the Farm with those of earlier times was the impetus for this attempt to assemble a contemporary version of '*The Flood Book*'. Digging through flood-related Farm materials soon suggested a related task: that of collecting and condensing various scattered bits of Farm history into a single source that might be more easily accessed and digested by the constantly expanding network of people who are interested in, and devoted to, what has come to be called 'Taylor Lane', or 'The Farm'.

The intent of this work is to combine a brief history of the Farm with some insight on how life there has been intertwined with the ebb and flow (and overflow!) of the Delaware River from the 1700's through the present day. Much of the text relating to the earlier times was originally written or transcribed by others, notably Howard G. Taylor Jr. (1888-1967), his son Joseph (1914-1991), his son Hal (1939-2001), and Anne Kriebel, who transcribed reminiscences of Howard's wife May Taylor in *Gently, Sister, Gently*. Some portions have been unapologetically edited and reorganized for clarity or brevity (we trust that the authors would not mind!) and in some areas, expanded upon. Much of the graphical material is contemporary.

We see this as just the first of multiple editions of this work. Hopefully, the original 'Flood Book' will reappear, and some of it can be used to flesh out this version. Also, we hope to pull together photos and other contributions from all sorts of Farm sources to give the effort added life. Until then, enjoy this initial effort.

Assembled by the Marblehead Taylors

Christmas, 2011

I. Farm History

(Based on The Taylor Farm, a piece originally written by Joe Taylor in 1982 for the New Jersey Agricultural Society, and on a 2001 update by his son Hal. Some additional material has been added from various sources, including Joe's 1988 pamphlet *'The Cinnaminson Waterfront; Today and Yesterday'*, and *Gently, Sister, Gently*).

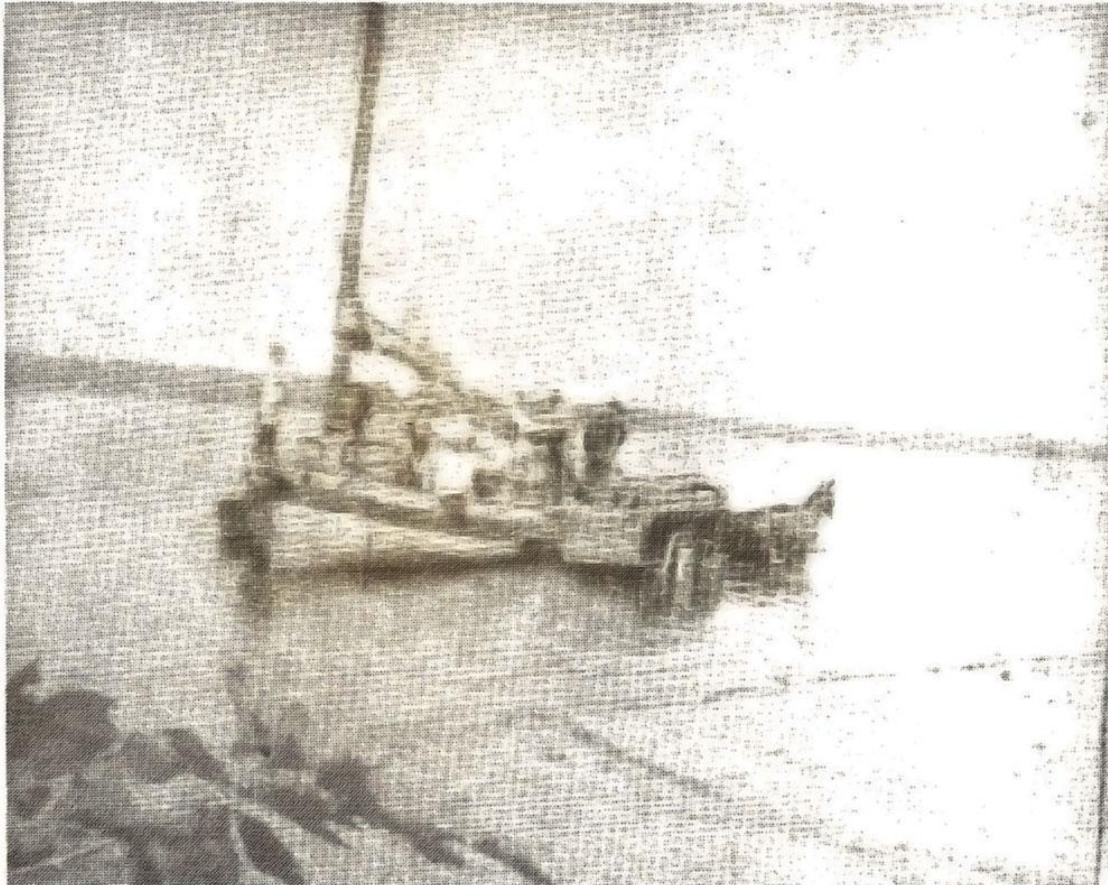
Eleven generations of one family have lived on *River Side Homestead Farm* in Burlington County (NJ) since their ancestor, Joshua Wright, purchased the land on August 9, 1720. The original tract of land consisted of 1000 acres in Chester Township,(dissolved into Cinnaminson and Moorestown townships in 1860) and it included one full mile of Delaware River frontage. The land stretched from Swedes Run on the north to Union Landing (where manure barges from Philadelphia were unloaded) on the south, and inland from the river all the way to Burlington Pike, which is now US Route 130.

The Wright family lived on the land, and soon began a farming operation that produced vegetables and fruit, and hay and straw for their horses and cows. By 1776, they had sold 300 acres north of Taylors Lane to a Charles Haines. A Wright descendant married a Dr. Edward Taylor in the late 1780's, thus setting the stage for the Taylor legacy on the land. The couple moved to the Farm in 1832, and became the first Taylors to live in the old family home. The oldest portion of this house was built in the early 1700's by Joseph Wright, and it is still in use today. The family homes and the main barns and farm buildings have always been located on a 12 1/2 acre section (about 150 yards inland from the current river bank) known in the old records as 'The Island,' where the soil is better drained and where their work was not as likely to be washed away by river floods. This area must have suited the Lenni-Lenape ('original people') tribe of Native Americans as well, as their arrow heads, stone axes, and stone fishing sinkers are still found on this ground.

The nearby railroad once played an interesting role in the story of the Farm. In 1833, two acres of land were sold as a right of way to the Camden & Perth Amboy Railroad, whose route from the Hudson River to Camden was, for a time, the longest railroad in the United States. Construction of the line south from Bordentown was temporarily stopped at the farm that year because they ran out of rails. Additional rails were shipped from England curved, to more economically fit into the holds of the ships, and these rails were heated and straightened at a forge on the farm. While the line was being extended, trains from New York arrived at Taylor Station daily, with passengers completing their trip to Camden by stagecoach. These coaches were drawn by mules that were fed and stabled at the Farm.

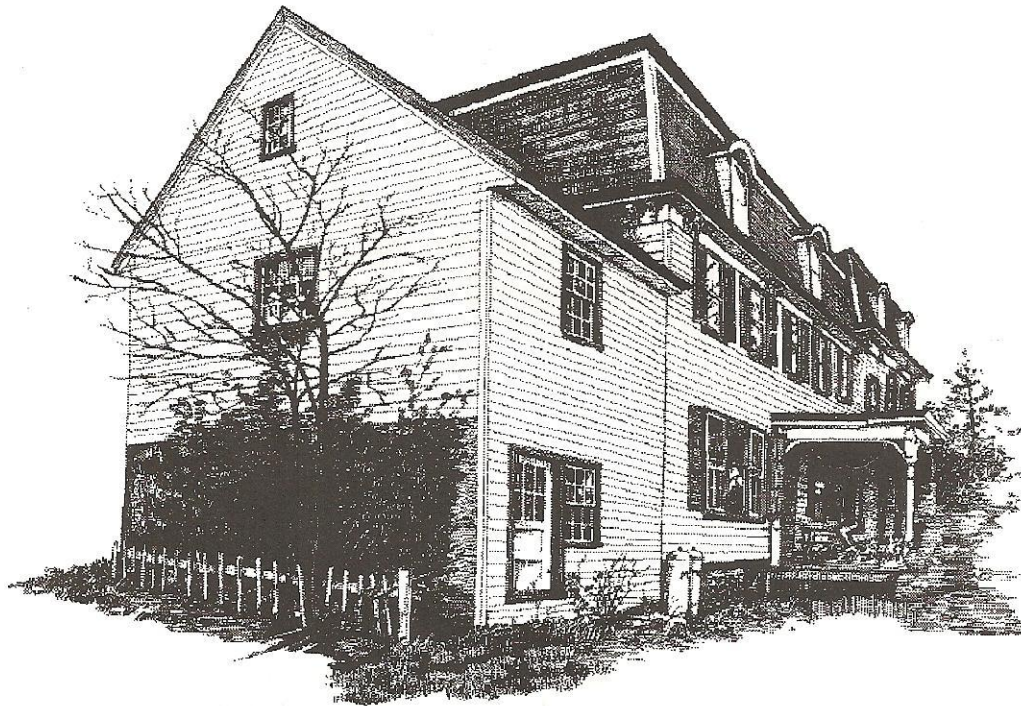
The Delaware River had an even greater influence on Farm life and its operation. For at least a century, the river was the highway by which Farm crops were sent downriver to Philadelphia by boat, and manure (vital to farmers as fertilizer) was shipped upriver from city to the fields and orchards at Taylors Lane by barge. The Farm was primarily a wholesale operation then, and its produce went to the Philadelphia waterfront aboard shallow draft market boats. To load these boats, Farm wagons were driven over the river bank and down the gravel shore into water up to the horses bellies and right to the side of the boats. Wagonloads of fruit, vegetables, firewood, hay and straw from the Taylor, Hunter, and Haines farms were loaded aboard, preferably at high water, so that the trip downriver to the city could be aided by the outgoing tide. The boats had sails, and used them to advantage when the wind

was right. When the wind failed, the boats were propelled with long sweep oars, and the tide. From about 1875 to 1910, the Farm's market boat named 'Gem' was sailed back and forth by Gardiner Taylor and Edward Hunter, a neighboring farmer and friend.



Loading the market boat at the Farm; early 1900's

Gardiner Taylor made a number of improvements to the Farm during the late 1800's, including a second large farmhouse next door to the original, built in 1886. He also improved the river bank by adding a stone facing, making it easier to maintain. Gardiner's son Howard G. Sr. made further contributions to Farm development by establishing a small commercial dairy and with his work with poultry from the 1890's to 1911. He sold milk, eggs, and cheese, and is also known for developing the strain of 'Taylors' Standard Pole Lima Beans', which are still grown there and popular to this day.



The 'Big House'; The portion in the foreground was built c. 1725. The middle portion was added about 100 years later. Its mansard roofline and the 3-story section in the background were added in the 1880's.

Howard G. Taylor Jr. graduated from college and took over the operation of the Farm in 1911. In these times, they continued to grow, slaughter, and preserve most of their own food. They carted river ice to an ice house to keep dairy products cool, and used an underground 'root cellar' to keep crops such as potatoes and apples edible long after harvest. Water was pumped from a well at the barn to the house by a windmill. In the words of Howard's wife May, "Mostly, there was wind, but once in a while we just had to do without, that's all there was to it. When we were out of wind we were out of water." May's father paid to have electricity brought to the farm in about 1920.

Almost by accident, a roadside market was established in 1921; according to May, her two oldest children, Joe and Beck, wanted to find good homes for a litter of barn kittens, and took them out to River Road in a basket. When they failed to find homes for the kittens, May suggested that they try instead to sell some of the peaches harvested from the newly expanded orchards that Howard had developed. "We made a sign, people stopped, and we got the idea that we could sell some of our produce that way," she recalled. The Farm had always been a wholesale business, and in this period it depended on supplying tomatoes by the ton under contract to Campbell's Soup in Camden. But profits were slim, (May resorted to an egg route in Riverton), and the Farm barely survived a foreclosure crisis during the Great Depression. It was not until after World War II that changing demographics and culture (more urban living and fewer backyard gardens) made retail sales and the Farm's roadside market its

lifeblood. 'The Market' was 'manned' by two generations of mainly teen aged girls, and it was supplied by Howard and boys the same age. Most, but not all, of these young workers were Howard's children and grandchildren, and for most this was their first paying job. 'The Market' was known for the quality and freshness of the fruits and vegetables sold, and especially for the continually developed of 'Taylors' Standard Pole Lima Beans'. Howard Jr. enjoyed saying that 'you couldn't get corn any fresher if you took your pot out into the field!' The Market operated until his death in 1967.

Technology came slowly to the Farm. Planting, cultivating, and harvesting fruits and vegetables inevitably requires a great deal of arduous hand labor, and for over two centuries, the only 'power assists' came in the form of draft horses and mules. Machinery was expensive, and the first gasoline powered tractor probably did not arrive at the Farm until the 1930's. Howard G. Jr. never seemed entirely comfortable with mechanized farming, and it was his son Howdy (1932-1957) who orchestrated the purchase of the Farm's first modern tractor in about 1955. Howard G. Jr.'s faithful field hand Howard Jackson was also probably his closest friend. Understood to be the son of slaves, and unable to read or write, he was a man of such courage and quiet dignity that he was always addressed respectfully as 'Mr. Jackson', and deservedly so. The two worked together for decades, they always kept working horses and mules, and they apparently preferred them. They left operating the machinery largely to 'the young folks'.

After World War II, technology in the form of chemical pesticides, herbicides, and fertilizers also came to the Farm. At first, products like DDT were hailed as humanitarian marvels, with the potential to wipe out worldwide scourges such as malaria, as well as to reduce hunger by increasing crop yields. It was only later that people realized they also had devastating side effects. These consequences were laid bare in Rachel Carson's revolutionary work Silent Spring, portions of which were first published in 1962 in the *New Yorker Magazine*. Joe Taylor's wife Sylvia (Syb) was a regular *New Yorker* reader, a committed naturalist, and a mother of six, and she was undoubtedly a prime mover in the family's re-evaluation of the use of chemicals in Farm operations. The use of the most dangerous (and possibly carcinogenic) products was quickly discontinued, and over the next decade even their milder derivatives were gradually phased out.

Howard G. Jr. was the last full-time commercial farmer at Taylor Lane. His son Joseph (1914-1991) was born on the farm, and except for a few years of teaching and child rearing in suburban Philadelphia, he lived there his entire life. He worked for 38 years as an elementary school teacher and school administrator in the South Jersey area. During this time, he was also a part-time farmer. Upon his father's death in 1967, Joe took charge of the Farm operation, which he soon switched to a 'pick your own' format. Together, Joe and Syb also returned the Farm to its roots as an entirely organic operation.

The Taylor Wildlife Refuge was dedicated in 1975, under Joe and Syb's leadership, as a permanent open space conservation easement, covering 90 of the Farm's remaining 120 acres. The refuge includes all the swampland, a large section of the riverfront, about 30 acres filled with dredging spoils in 1957, and some prime farm lands. Development rights to this 90 acres were given in perpetuity to the New Jersey Natural Lands Trust, an agency of the State of New Jersey, so that this land would be protected from development forever. The family still owns full title to the land, and welcomes the public to come and share its variety and beauty.

Joe Taylor died on the last day of 1991. His son Harold (Hal, 1939-2001) moved back to the Farm with his wife Suzanne in 1992, but died ten years later. The family continues to operate the Farm, with Hal's sister Kathryn (Kitty) and her husband Takashi Mizuno living in the house that Joseph Wright started in 1720. Kitty continues to grow and develop 'Taylors' Standard Pole Lima Beans', which are typically sold as fast as they become available. Takashi and Hal's widow Suzanne contribute to the broader pick-your-own operation. The rental gardens started by Joe on about 10 acres of Farm land along River Road have become popular with area gardeners. Barn and pasture space has also been rented to horse owners who care for their own animals, and also produce manure, highly prized as organic fertilizer.

Changes in regional land use and the resulting reductions in area habitats have resulted in substantial changes in wildlife populations at the Farm since the 1980's. Pheasants were once commonplace but have disappeared, while Canada Geese were once seasonal transients and are now permanent residents; beaver were once unheard of at the Farm but are now a 'dam' nuisance, eagerly and continually clogging critical drainage systems; and deer were once welcomed as shy, graceful, and occasional visitors, but are now scorned as voracious pests that make farming without tall fencing untenable. On the plus side, in the 1960's the Delaware River was essentially an oil stained sewer, while 50 years later it is far cleaner, and supports an increasing variety of fish, water birds, and other wildlife.

Since the passing of Howard and May, four generations of their descendants, including Taylors, Snipes, Kriebels, Hinkeys, Emersons, Mizunos, Turners, and others, have frequented the Farm. Some have lived there, some regularly help out with projects and maintenance, and nearly all have maintained an interest and a connection. After almost three hundred years under the care of this one family, the *River Side Homestead Farm*, just like its free-flowing neighbor on the other side of the bank, just keeps rolling along.

II. Farming on the Delaware Flood Plain

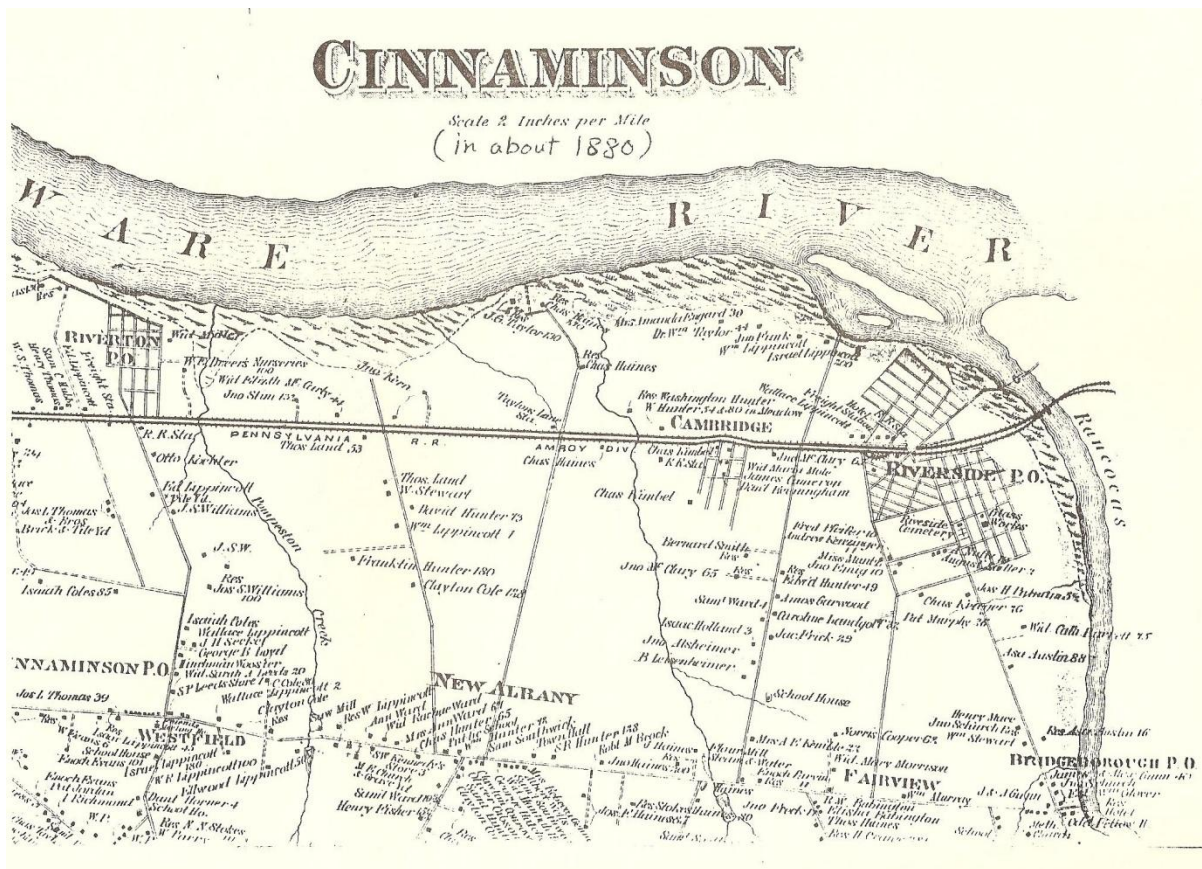
(Based on portions of Joe Taylor's 1988 pamphlet *'The Cinnaminson Waterfront; Today and Yesterday'*)

The colonial newcomers to the New Jersey side of the Delaware River found that most of the best places for settlement were some distance back from the riverfront, where the creeks and streams were narrower, shallower, and easier to ford or ferry across. They built their homes and barns and other work places on the higher (and drier) land some distance away from the river shore. They did their farming where the soil was better drained and where their work less likely to be washed away by river floods.

Some of most fertile soil was close to the shore, however, since the same flooding that sometimes damaged the colonial farmers' buildings and crops had also been depositing river silt, especially rich in vital minerals and organic materials, on the lowlands along the river shore for millennia. This low lying acreage had the potential to be considerably more productive than the typically sandy soils found further away from the river, but realizing that potential required an unusual approach to farming that depended on active management of both land and water. Gradually, area farmers dug a network of drainage ditches and surrounded the newly drained land with manmade levees or dykes, in much the same way that the Dutch had turned large areas of North Sea lowlands into productive farmland centuries earlier.

This kind of farming requires hard work of three kinds: First, the raising of a levee separating the wet, swampy land from the tides at the river's edge; Second, laying large pipes fitted with tide gates on their outer ends under and through the newly built levees; and third, digging ditches to direct the trapped water to the pipes. This water drains out into the river when the level outside the bank is lower than it is inside, and the higher pressure inside pushes the tide gates open. When the tide rises again, it pushes the gates closed and they keep the river water from flowing back inside the bank. After a time, land that had been too wet and swampy would dry sufficiently to support productive agriculture. The pipes through the river bank are called 'sluices', derived from Dutch word 'sluic', and the gates on their river ends 'sluice gates'. Installing these pipes and gates deep enough to drain adequately at low tide is an engineering challenge. Getting them to seal tightly enough at high tide requires thoughtful design and robust construction, as the hydrostatic forces on the gates are considerable, and they are prone to damage from river ice in winter. Finally, they require regular inspection in order to keep them free from floating debris.

In the past, this system was practiced by several farms in what is now Cinnaminson and Delran. Their interconnected river banks extended continuously from the Pompeston Creek north to 'Charles Haines' Flood Gates' at Swedes Run, and on from there all the way to the Rancocas Creek. Sections of this bank were put in place 200 years ago by men using shovels and wheelbarrows, aided by teams of horses or mules pulling wagons and scoops. By common agreement, each farmer maintained his sections of the single long, serpentine bank. A break or washout of any one farmer's section meant that all would probably be flooded, possibly at each high tide, until the break was mended.



Joe Taylor's handwritten note dates this map of the region c. 1880. The dotted line at the inland edge of the wetlands near the river shore approximates the 'long serpentine bank' that was built and maintained by the area farmers. Wrights Point and the Farm's 'Point Lot' are not shown, and Plum Point is not well defined. Swedes Run is shown. Dredge Harbor was created a half century later in what is labeled 'Cambridge'. Note the 'Taylors Lane Sta(tion)' reference where the lane crosses the railroad.

This one long dyke or river bank from East Riverton into Delran was intact and functioning into the 1920's and early '30's. The owners of all the protected farms worked together to keep their respective sections in good condition. But after the 1933 flood, which badly damaged it in several places, the sections in East Riverton, Bellview, and Delran were not repaired, and were never used again. The sections on the former Haines farm (now a wildlife refuge under the care of the Friends of the Taylor Wildlife Preserve) and on the *River Side Homestead Farm* were repaired as soon as possible in 1933, and when necessary since. The most recent serious breach occurred during flooding in 1979, and subsequent repairs were orchestrated by Joe Taylor.

The original protective banks were no doubt raised at least in part by using fill generated by digging the system of drainage ditches inside the banks. In order for the system to work as intended, periodically these ditches need to be dug out and cleared of debris to keep the water flowing towards and through the tide gates, and into the river. The gates themselves also need regular inspection and occasional maintenance and repairs. Beginning in the 1990's, a beaver population established itself in the swampland south east of 'The Island', and has greatly complicated keeping the Farm's drainage system working, and the acreage inside the banks as dry as it once was.



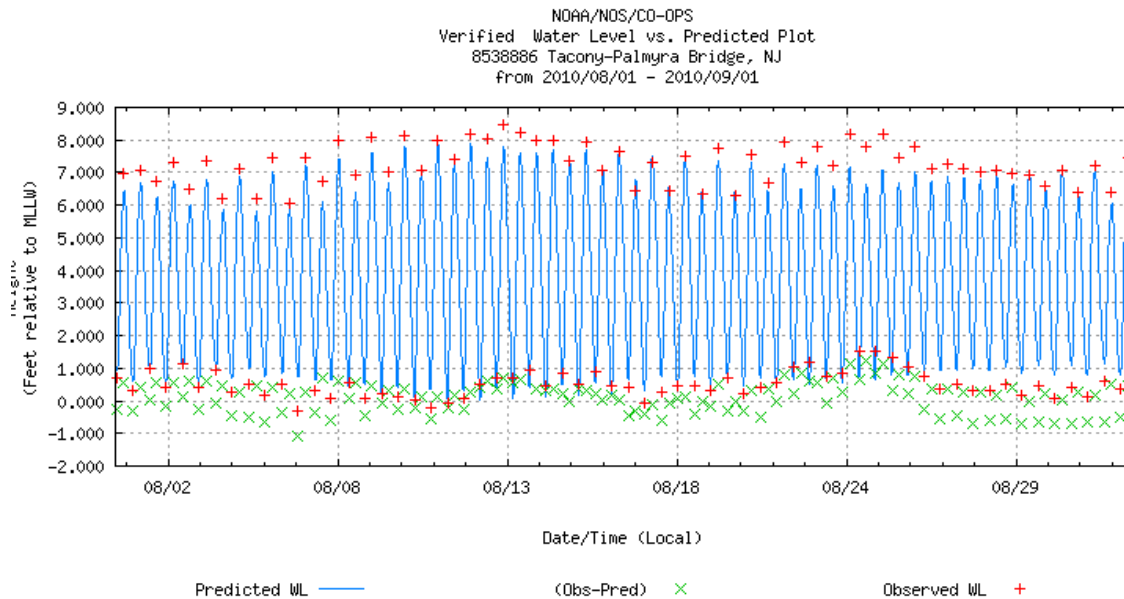
An aerial image of the Farm, prepared by Chuck Mattern in 2006, and updated by him in September, 2011. Wright's Point and Wrights Cove show clearly in the upper left, as does Plum Point in the upper right. The sharp transition from the 1957 'dredger fill' (lighter) quadrangle to the 'swamp' (darker) is clearly delineated at the lower left. The current river bank follows the northern shore of Wrights Cove to the river, up the river in front of the houses to the Water Company right-of-way, and then diagonally inland to a sand bar sticking out into what is now Dredge Harbor. In earlier times, this bank protected additional farmland, and extended all the way to the Rancocas Creek.



For most of the 1900's, the Farm was drained primarily by the 'old sluice' at the head of Wrights Cove. This was probably engineered and built around the turn of the century, and consisted of two large diameter cast iron pipes, with heavy wooden gates. They drained the Farm so well that what is now wetland to the north of the 'back lane' was used as a pasture and was routinely mowed, and one could walk an only slightly damp path from the back of the 'Kriebel House' (now Judson/Rey) to a bridge over the 'main ditch' at the edge of what is now the 'dredger fill'. The silt-filled runoff from the river dredging in 1957 changed the tidal flow in out of Wrights Cove, and resulted in a far bigger build-up of floating debris at the head of the cove. This debris in turn clogged the gates of the 'old sluice' so regularly that they were abandoned around 1975, when a 'new sluice' was built near the navigation light at Wrights Point. It was hoped that it would stay clear of debris in that more exposed location, but it also could not be installed as deep, so it could not drain the Farm as effectively. The corrugated steel pipe of this installation rusted out in due course, and was replaced by the current '2003 sluice', shown in the above photo, taken after the August, 2011 flood. The gate is open wide and water is rushing out even at mid-tide, implying a high level of water inside. Earlier in the year, the far bigger head of water inside the bank following the April, 2011 flood forced the 'old sluice' gates back open for the first time in at least thirty years. Ironically, the unexpected flushing out of the two 'old sluice' pipes left the water level in the swampland inside far lower after that flood than it had been for decades before it.

III. Flooding at the Farm

The Delaware River estuary is subject to tidal flow from the rapids or 'fall line' at Trenton, where it drops off the piedmont, to the Inner Coastal Plain, all the way to Delaware Bay and the Atlantic Ocean. In colonial days, the water levels at typical high tides were probably less than 5 feet above those at normal low tides. Beginning the 1930's, the river channel has been dredged several times to facilitate navigation by larger, deeper commercial traffic. This has increased the volume of water flowing up and down the river on each tide, and NOAA's tidal observation site at the Tacony-Palmyra Bridge now records a typical range of about 6.3 ft, and about 7.7 ft in high astronomical ('moon') tides.



The range of tide levels recorded at NOAA's Tacony-Palmyra observation site during a typical August, (2010 data shown). The jagged line represents predicted tides, based on previous data and known moon phases. The crosses near the top and bottom represent actual recorded data for the same high and low tides.

Flooding, threats of flooding, and stories about flooding have always been a part of life at the Farm. Increasing land development throughout the Delaware Valley over the past 50 years has caused storm water to run off more quickly, which in turn has made flooding in the smaller creeks and streams that flow into the Delaware more frequent. These events have not resulted in the Delaware itself flooding as often as might be expected, however. This may be because the increased flow through the wider, deeper river channel that results in a greater range of water levels with the tides also allows a greater volume of excess storm water to flow downstream without overflowing the banks of the river itself.

It is well established that three natural events all occurring at the same time greatly increase the probability of flooding at the Farm. These triggering events are: First, heavy, soaking rains or melting snows; second, extra high astronomical tides; and third, strong southerly winds, that drive a wind-blown 'tide' up Delaware Bay that creates what amounts to liquid dam near the mouth of the river. This higher baseline level in the lower Delaware reduces the amount of water that can flow out of the valley

from further upstream. If all this happens at high tide, the risk of flooding is high. Because these three events need to happen at the same time, floods at the Farm have typically (but not always!) overflowed the banks for just one tide. Of course, it usually takes a number of tides for all the flood water to drain back out through the sluice gates into the river.

The Delaware has no doubt been flooding occasionally for millennia, but records are scarce until 1900. Since then, there have been 12 floods at the Farm. The first two were thirty years apart, in 1903 and 1933. The third 20th century flood came 17 years later in 1950. The fourth and fifth came just a week apart in 1955, the results of hurricanes *Connie* and *Diane*. There were four more that came in relatively rapid succession in 1973, 1978, 1979, and 1980. Thirty one years later, in 2011, there were a remarkable and unprecedented three floods in that one year, with one in April, another in late August, and yet another in late September.

No doubt each of the floods at the Farm has its own story, but the 1933 flood was especially serious, and well documented. May Taylor recalled in *Gently, Sister, Gently* that in the run up to the "terrible flood" that year, "we had had a very heavy rain for three days, and a lot of wind with it... Howard explained that as long as the wind came out of the northeast we were fine, but if it swung around to the south we might get a little flooding." It rained nearly 4 inches on that third day alone. High tide was just after midnight, and "sure enough, the wind had changed during the night, and we had water all around us."

H. G. Taylor, Jr's account of this 1933 flood was the focus of what became 'The Flood Book', which as mentioned earlier, is currently lost. Luckily, his words were transcribed into *Gently, Sister, Gently*:

"One look out the hall window and I knew that the river was all around us. For 30 years no water had come over the bank and I thought it was coming through somewhere. I was sure that there must be a break, from the high waves I saw, and immediately supposed it was at (Wrights Point), where a big ash tree had been uprooted earlier in the summer, greatly mashing the bank but not lowering it.

Joe (then 19 years old) and I jumped into our bathing suits and started into the water just below the terrace. Carrying a flashlight we started to hunt for the three canoes which we had left turned up in the yard at the foot of the bank. We soon realized that we were going to have a long hunt. The river was pouring over the bank at the end of the path a foot deep- a white layer of water that beat us back and kept us from getting to the top of the bank.

The current in the yard was very strong upstream, and we were sure the canoes must be in the 'clubhouse' yard (now Becki Fregosi's house) or beyond. Joe tried to walk in that direction but as he got closer to the cabin (now the Tatum house) a much stronger wall of water forced him back. He then worked his way through the sugar corn in the Acre Lot (the Tatum yard and garden), while I came up to the barn and went over from there.

I met a terrific current by the corner of the packing shed, but forded my way through it and over across the clubhouse yard, holding the flashlight high and looking everywhere for the canoes. It was very dark, and I could see nothing but water and more water.

Back of the club tennis court an automobile had been left parked for the night. The water then was halfway up the windows and was pouring in through the open glass, up almost to our shoulders. Within an hour they rowed boats over the top of the car and couldn't even tell where it was.

Every little while great black logs of wood and stumps would hit us in the back as they bore down on us in the current, bobbing up and down as though they were alive. The floating obstacles and the deep water made it difficult for us to keep our feet.

Wink (McCarter, a friend and Farm worker) soon joined us and we moved the cows up on the barn floor. (The barn of that day, since burned, had an earthen ramp up into the hay mow). As the water was too deep to take them through the barnyard, we knocked the boards off the pony stall, led them out the entry door on the river side, and around the south end of the barn. Applesauce and Burp (the pony and the calf) followed next, then the horses, which by this time were in water about knee deep (inside the barn!).

The water was up to the top board of the barnyard fence, and floating corn stalks and manure made for mean walking.

We went next to the chicken yard (between the current barn and what is now the horse pasture) and found the hen roosts still a foot above water, which was three feet deep. Going for the brooder houses we found some young chickens floating in the corners, though a few were perched on the window sills. Those floating had wings and necks stretched out, and looked about done for. We put them in crates and carried them up (the ramp) into the barn, where they gradually dried out in the straw. A few chickens were either washed out of the houses or had been roosting outside, for we found several floating about on debris. As we were walking around in water waist deep, a log rolled past Joe with a chicken perched on one end, and a rabbit clinging to the other. He got them both with one grab. We caught another rabbit trying to climb up on a basket under the shed at the barn. High water mark was about three inches over the floor of the entry in the stable. About one ton of feed was in the feed room, thoroughly soaked.

May had been up since three, and while boiling coffee and getting some breakfast and had been watching some of our slopping around. By 5:30 AM we were easily persuaded to come in and warm up for a few minutes.

It was now beginning to get light, and we had a chance to see the high water marks. The water came to within a few feet of the cement path (between the two big houses), but we could still walk it with dry feet. The water was eighteen inches deep where the Nash stood underneath the shed. It was about a foot deep on the top of the river bank in front of the house and just up to the floor of the cabin (Tatum house); nothing inside got wet. In the old fish cabin (on the bank near the big 'eagle tree' at Wrights Point) it was nearly two feet deep, and some weather boards were washed off. There was a lot of damage to the river bank by the washing of the water as it poured over, cutting holes here and there where the sod didn't hold. There was a break in the bank by the cabin, and some nasty gullies below the fish cabin, but the biggest break in our land was at the end of the sand bank next to Bellevue. There the water came across the field back of the woods, cut a gully about twenty feet wide, and carried a good many tons of sand out of the Bellevue field over into our grass field, raising it up a couple of feet. This

part of the bank was probably the last to give way, as was also the big break at the end of the Parry's cross bank just across from our tenant houses. The men now think they remember the roar of the water through this bank about 4:30 AM. At the two tenant houses the water level was over the porches and up to the thresholds, but no water came inside the houses. Evald Chambers(whose house was near the present Water Company building) had two inches of water over his front porch.



The 1933 flood at the tenant house often referred to as 'the Robinson House'. Chuck Mattern has been a long time resident there in recent times.

Just before daybreak the morning of the flood, the high wind broke a limb off the black walnut tree in the front of the house and broke the electric power line. For the next several days we were without lights, refrigeration, running water, and all else that electricity brings."

May Taylor adds in *Gently, Sister, Gently* that "it was several weeks before the water subsided, and the smell was just awful...Just about all our crops were ruined, and had to be abandoned. Howard and Joe picked lima beans from a canoe, and were just able to get enough seed for the next year. "

There was "only a couple of feet" of water in the basement of 'the big house', but May recalled that "the well was flooded, and we had to carry in all our water from the well at Woodside on the upper lane (now the landfill on Taylors Lane beyond the Hoeganaes plant) for several weeks". "Once the worst was over, we could drive in and out at low tide (implying serious breaches in the banks)... We tried to keep a canoe on each side of the water".



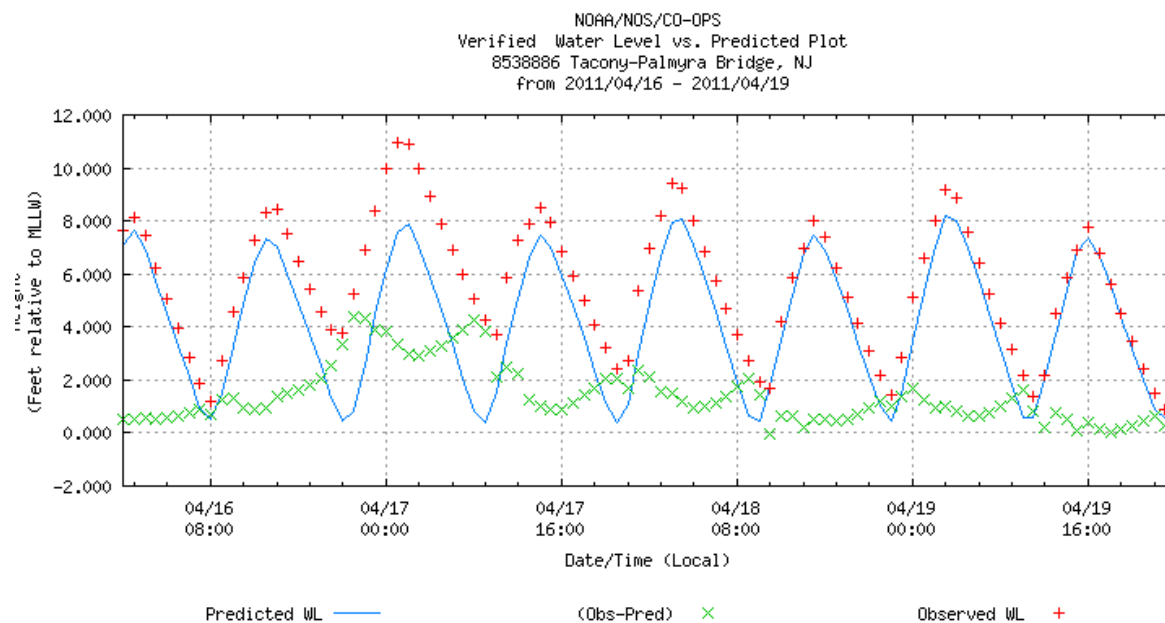
Joe Taylor and 7 year old daughter Anne (Nanna) paddle past the 'Robinson House' in November, 1950.

For the next fifty years, none of the floods at the Farm were as serious or as well documented. The 1950 flood was deep enough to paddle canoes up and down the lanes, and it rated a few photos in 'The Flood Book', but otherwise did not seem especially noteworthy. During the first of the 1955 floods, (Hurricane Connie), the water topped the banks in mid-afternoon, which was huge fun for the kids, but still not so much for the adults. 'The Flood Book' has a snapshot of Howdy (H.G.T. III) with his young nephews Jim Taylor and Jon Kriebel standing just inside the bank (near home plate on the front yard baseball diamond), with water up to their 6-7 year old waists. In the background of the photo, water a few inches deep is flowing over the bank, but no one seems overly concerned. Just a week later Hurricane Diane brought more torrential rains, another south wind, and a second flood. The novelty of paddling boats around in the front yard had not doubt worn off by then, and was replaced by the harsh realities of having to deal with soggy basements and ruined crops yet again.

There was a worrisome rash of flooding in the 1970's, with events in 1973, 1978, 1979, and 1980. None of the events in the 1970's was overly serious, although the spring, 1979 flood did breach the river bank, right in front of the 'big house'. The washout blew sand and gravel 50 yards out into the lawn,

and took heavy equipment and a lot of Joe Taylor's time and management skills to repair. The closely spaced floods in the 1970's understandably raised concerns that the rapid conversion of open space into residential and commercial development throughout the Delaware Valley had made storm water runoff more sudden. This probably has made flooding of smaller creeks and streams more frequent, but concerns about the Delaware faded as there was no further flooding for another three decades.

The fact that there were no floods at the Farm from 1980 until 2011 makes the fact that there were three in less than six months all the more remarkable. Especially extraordinary was the level of the early morning April 17 flood crest, which was higher than any since at least the 1933 flood. Cars were drowned, furnaces ruined, and for two tides the level was as high in the front yard as it was in the river. The entire bank was completely submerged and invisible at high tide, and for the first time in memory, water flowed back out over the bank into the river at low tide. There was significant erosion at the top of the bank in a number of places. Longtime friends of the Farm Tom and Carolyn Bujak did a quick (and critical!) repair under the River House, and some further work was done Easter weekend. A larger group assembled two weeks later for a weekend of riverbank repairs. One lasting change caused by this flood was that pressure from the huge head of water inside the bank blew open the 'old' (early 1900's) sluice gates at the head of Wrights Cove, that had been sealed shut by debris and abandoned in the late 1970's. Ironically, the unexpected flushing out of these two gates left the water level in the swampland far lower after the flood than it had been for decades.



The April 17, 2011 flood crested at about 11.2 feet at NOAA's Tacony-Palmyra Bridge observation site. True to form, it coincided with a full moon, a strong southeast wind, and rainfall for the month that was nearly twice the average for April in the Delaware Valley.

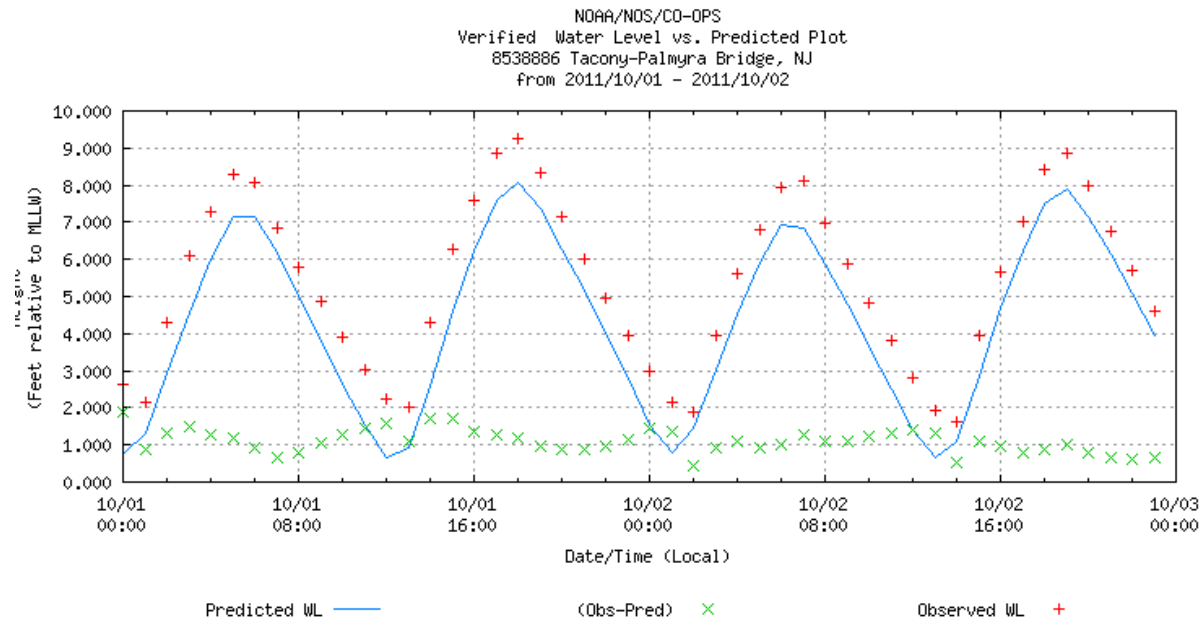


The Fregosi house during the April, 2011 flood. Taken by Tom and Carolyn Bujak as they kayaked across the Tatum's lawn and garden (once known as the 'Acre Lot').



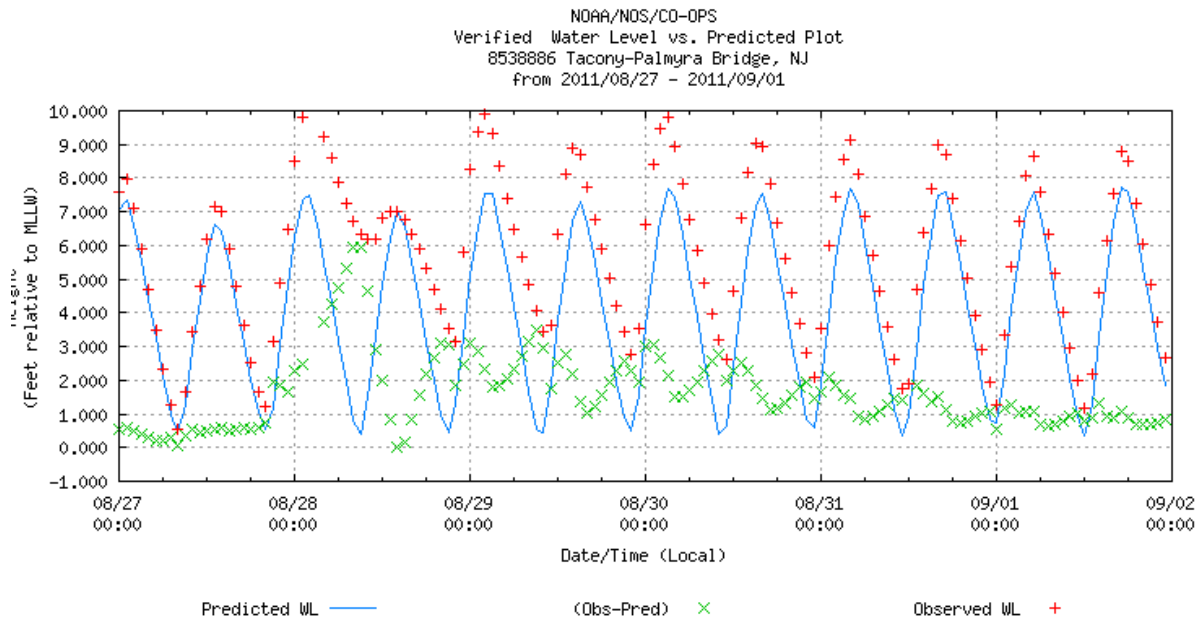
The Tatum house (ne the 'Cabin') in April, 2011, again by Tom and Carolyn Bujak. Note the water up to the windowsill, and that only the very top of the bank is showing.

NOAA's Tacony-Palmyra observation site has been recording and posting river tide level data since 2001, but it was discovered by Lane-iac's in April, 2011 when checking wind direction (and flood probability) at weather buoys further down the river. With hard water level data now so easily accessible, a critical 'flood stage' standard was established later that year, when Jon Kriebel and his younger son Harrison (returning to the Farm to help with river bank repairs) observed the October 1st evening tide to be calmly lapping right to the very top of the bank, but just short of overflowing, at about 9.3 ft.



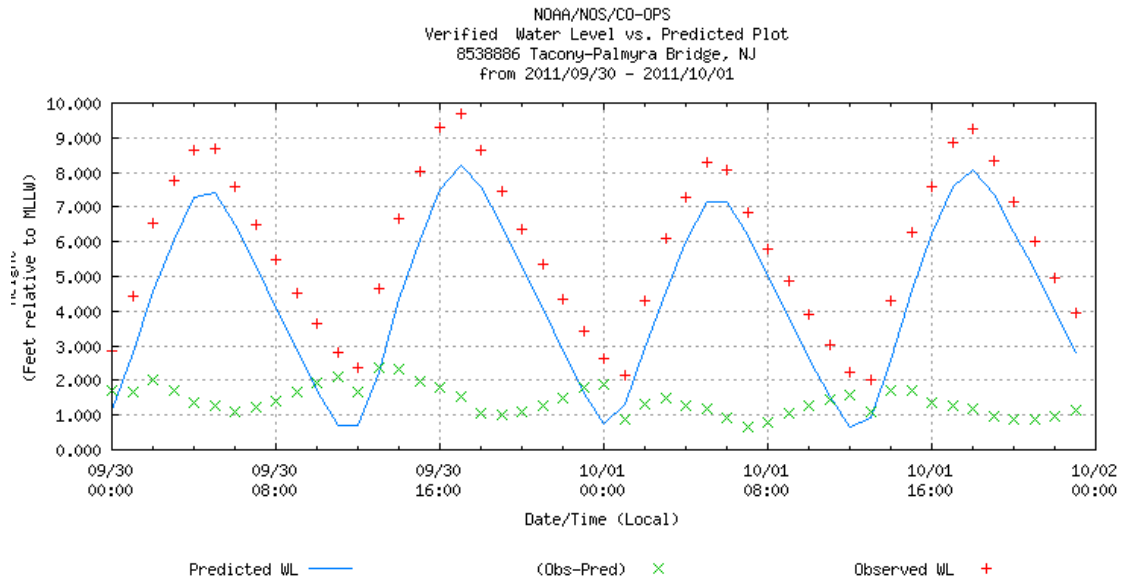
The height of the evening tide of October 1st, 2001 was about 9.3 ft, and fell just barely short of topping the bank. Going forward, this can be a useful standard when gauging the threat of flooding at the Farm.

Hurricane Irene roared up the Mid Atlantic coast at the end of August, 2011, and added yet another huge dump of rainfall to an already historically wet month. In some areas of the Delaware watershed rainfall amounts neared 20 inches for the month, when normal was just 4 to 5 inches. Irene's center tracked over the DelMarVa peninsula, and just east of Delaware Bay, adding a heavy southeast gale to the mix. A new moon tide was the unwelcome third strike, and after 30 years the Farm experienced its second serious flood in just over four months. Irene's first flood tide came shortly after midnight on August 28, at a level a bit under 10 ft. As if any were needed, the next two tides were a confirmation of how strongly wind direction effects river levels. As the hurricane tracked up the Jersey Shore, the winds in the lower Delaware backed from the south and southeast (blowing upriver), to east, to north, and finally, to the northwest, (still strong, but now downriver). Although the 'low tide' at daybreak was barely lower than the normal *high* tide for the date, the strong winds pushed enough surface water downstream so that the mid-day high tide, amazingly, was at a near normal level. Once the northerly wind died, however, there were still two more 10 ft flood tides worth of rainwater that needed to flow out of the watershed. This was the second time four months that there were flood tides on three straight days at the Farm.



Data observed at NOAA's Tacony-Palmyra Bridge site following Hurricane Irene. The first flood tide came just after midnight on August 28, 2011, with gale force southeast winds in Delaware Bay. The following 'low' tide was only about a foot lower than the normal high tide for the date, but because the gale force winds shifted to the north and were then blowing down the river and out of the bay, the level of the next true high tide near noon was no higher than normal for that tide. Once the wind died, however, the massive volume of rainwater dumped by Irene resulted in two more flood tides, in the early morning hours of August 29 and 30.

Unfortunately, the 2011 'Season of the Snorkel' at the Farm was not yet over. In late September, the track of Tropical Storm Lee was similar to that of Hurricane Irene, and this second storm dumped at least as large a deluge of rain. In some areas of the Delaware Valley, rainfall again reached 12-20 inches for the month, instead of the normal 4-5 inches. The resulting massive runoff coincided with yet another new moon phase, and even a modest southerly wind was enough to force the third flood in less than six months at the Farm. Ironically, this occurred on the same weekend as a previously planned gathering of riverbank repair volunteers, making the need for such repairs especially obvious to any that needed convincing.



Tropical Storm Lee produced a new moon flood tide late in the early evening of September 29, 2011. The evening tide of October 1st lapped right to the top of the banks, but not over, and served to establish a reliable 'flood level' standard of about 9.3 ft for the Farm.



A photo by Nancy Kriebel Turner catches a cadre of river bank repair volunteers racing a rising tide on Saturday, October 1, 2001. There was plenty of repair work to do after the third flood in six months, capping off the Farm's 'Season of the Snorkel'

Five areas of the bank that had suffered the worst erosion from the 2011 flooding were improved that weekend, but there were several more areas that still needed attention. The fact that there were no serious breaches in the banks despite three serious flooding events in one season is a testament to the hard work and foresight of those who erected the banks centuries earlier, and to the diligence of multiple generations of family who have maintained and repaired them since. These efforts will have to be ongoing; there might not be another 'flood year' like 2011 for decades, but the Farm needs to be ready. Old Man River will always be there, just over the bank.