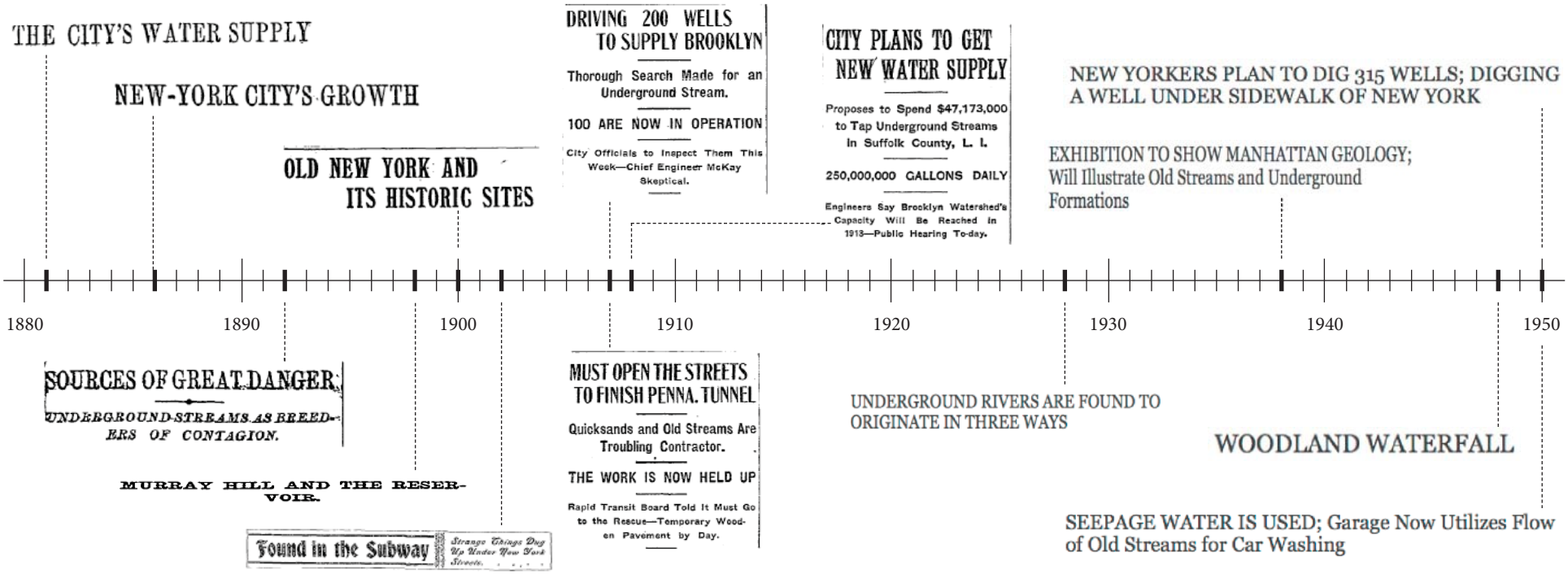
REMNANT WATERWAYS

Where has all the water gone?

New York City was once dotted with streams. These days you'd never know they existed. In this booklet, we aim to answer a question many New Yorkers might never think to ask: Where has all the water gone?

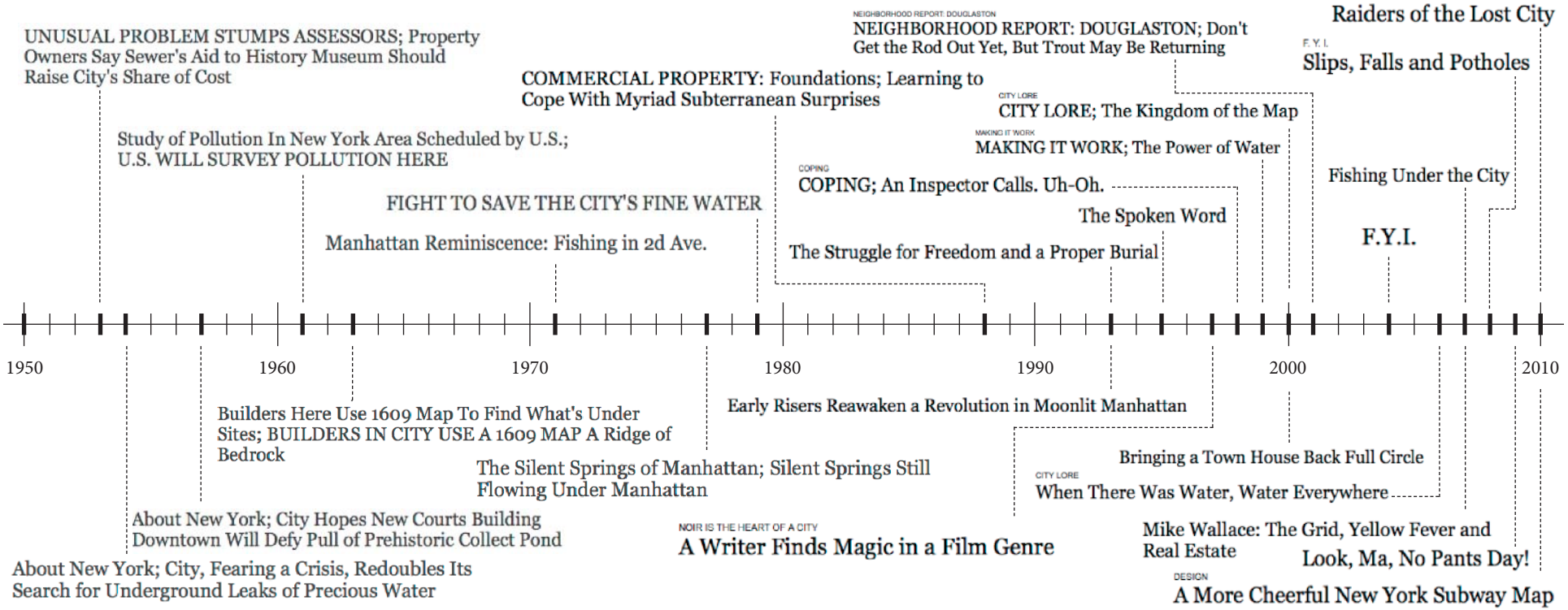
In search of answers, students in two New School classes, Waterlogged and Restoration Ecology, have researched the history of three remnant waterways in lower Manhattan: Minetta Brook, Sunfish Pond and Stream, and the Collect Pond and Stream. Along the way they have researched the ecological and social histories of the sites, gathered and analyzed historic maps and researched precedents that demonstrate strategies other cities have used to uncover buried streams. These three streams played key roles in the early development of Manhattan and continue, in sometimes subtle and unwanted ways, to impact the city fabric and infrastructure.



This booklet accompanies tours tracing the paths of these buried streams, led by students in the two classes during the New School's Water Week in March 2011. Along the way, the students presented the results of their research on the history of the waterways, the impacts these streams and the surrounding geography have had on urban forms, and the restoration case studies.

HISTORIC TIMELINE

In the process of researching buried waterways, the students used the New York Times archive to make a timeline of instances that buried waterways have appeared in the press. This graphic timeline illustrates the frequency of these news stories from 1864 through the present.



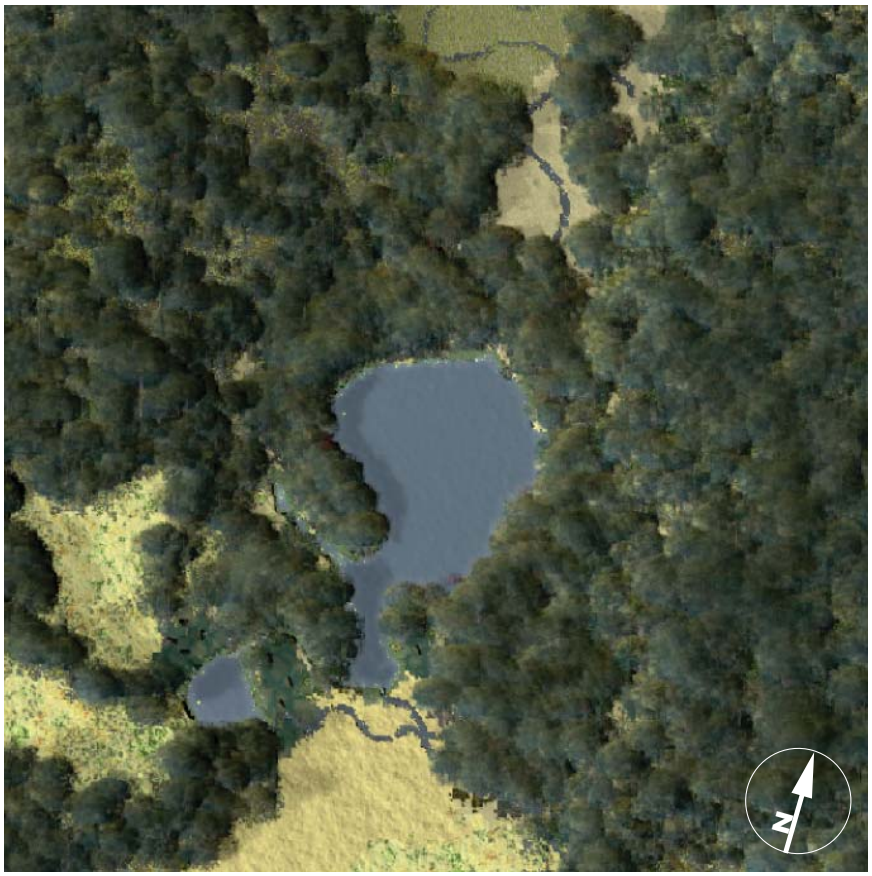
Collect Pond | Tribecca

Ecological History

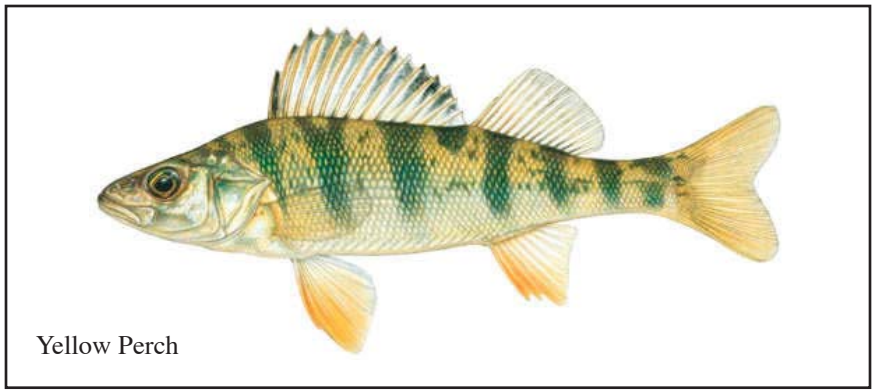
Today when you go down to lower Manhattan between Lafayette and Centre Streets you will find a nice little lot of pavement lined with some trees and benches. If it weren't for the name, Collect Pond Park, you might not realize that you were sitting on top of the filled in remains of the city's first major drinking water supply. You may wonder what this place looked like before it was leveled and filled, what it looked like to the Dutch settlers who first arrived in 1609.

As the eponymous park indicates, the area was once a vibrant coastal plain pond full of plant and animal life and surrounded by dense forests. These freshwater ponds were important centers for many forms of life and tended to aggregate a wide variety of species. For example, while one might expect to find twenty plant species on the land surrounding the pond, there would be around sixty species in the pond itself. These plant species were grouped into marshy species around the edges of the pond, such as cattails, pondweed, and bladderworts, and the aquatic species that lived in the middle of the pond, such as water lilies. Because Collect Pond was relatively large and extremely deep for a such a small pond, with a surface area of around 80m^2 and a depth of 20m, there was a wide range of fish which occupied slightly different niches of the pond's habitat. These fish species included sunfish, alewife, yellow perch, and eels. Among those fish there were also painted turtles, snapping turtles, bullfrogs, as well as newts and salamanders.

One of the amazing things about waterways is that they are not the static things we sometimes think they are. Rivers are constantly changing course and conjoining with other bodies of water. Ponds can be ephemeral, spring fed, or naturally replenished by underground streams. Collect Pond was relatively stable, being fed by underground springs, but it did change over time, mostly by way of nature's engineer, the beaver. Beavers are one of the most important species in freshwater environments. They actively reconstructed the flow of every single waterway in the country, making new ponds that provided habitat for other species, which then eventually filled up and turned into nutrient-rich plains. There were almost certainly beavers building dams on Collect Pond's out-flowing stream, which led to the Hudson River.



A map of Collect Pond as it might have looked circa 1609.
img credit: Mannahatta Project



Yellow Perch

img credit: Maryland DNR

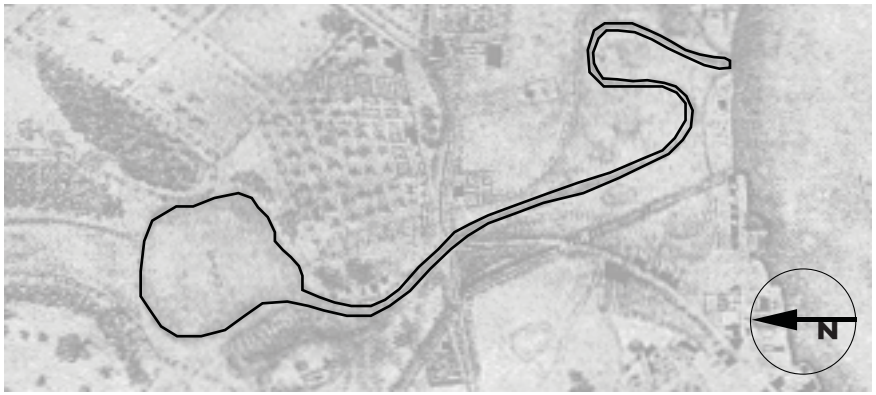
img credit: Wikimedia Commons

Snapping Turtle

img credit: Mayo Park

The forests around the pond would have been mostly dominated by American chestnut, which could grow up to 150 feet tall and have a diameter of 10 feet. Unfortunately, almost none of these trees remain today, due to a fungal epidemic that caused mass extinction in the early 1900's. Along with the chestnut there were maples and hickories. Different tree species thrive in different soils and sunlight conditions. It is impossible to tell by looking at the area now, but there was once a hill overlooking the pond. This hill would have been covered in white and scarlet oak, while the rich, deep soil at the base of the hill would have supported tulip trees, white ash and tupelo. Below the canopy there were blackberries, blueberries, chokeberries, gooseberries and mulberries. All this food drew foraging animals such as grey squirrels, white-tailed deer, raccoon, and bears. These foragers in turn drew predators to the area such as cougars and grey wolves.

Today, a visitor sitting on one of the benches of Collect Pond Park will still see one or two of the native species, like the grey squirrel or a chipmunk, and maybe if they are lucky they will spot a falcon perching in the ramparts of the courthouse, but the vast majority of that original diverse community has been gone for hundreds of years.



Social History

From the Dutch discovery of the island until after the American Revolution, Collect Pond was the main freshwater source for New York City. The site has a rich history, and its creation dates back to the glaciers that helped shape the island that we know today. Collect Pond is what is known as a kettle pond, which means it was created when a large block of ice broke off and was abandoned by a retreating glacier; the action creates a space in outwash before melting away, leaving a gap in the sediment.

Prior to the Dutch discovery of the island, the Lenape Indians had a settlement on the southwestern edge of the pond. With the Dutch discovery of the island, the resources and cultural significance of the pond were soon adopted, and, in the 17th and 18th century, Collect Pond was a popular site for picnics, fishing, and ice-skating. In 1796, John Fitch tested his experimental steamboat in the pond. The glory days of Collect Pond would soon end, however, but the site would continue to be an important part of New York City's identity.

In the early 18th century, city leaders allowed a tannery to set up shop on the edge of the Collect, which would be a major detriment to the pond's ecosystem, due to the toxic chemicals it released. Soon, Collect Pond would become a communal open sewer. In 1805, as a response, the canal that became Canal Street was created in order to drain the waters. By 1811 the pond had been filled in due to its severe stagnation.

With the filling-in of the Collect , the site now had potential for new development, and early in the 19th century the neighborhood of Paradise Square was created. Tenements, churches, and businesses were built where Collect Pond once was. Even though the pond had been filled, however, residents could not escape what once was and the former ecology of Collect began to creep back into their lives. In 1820, Paradise Square began to sink and be overrun by foul odors. Those who had the means left, but immigrant Irish and freed blacks stayed in the tenements. The area, which would become known as "Five Points" in the 1830s, was extremely poor, filthy, dangerous, and riddled with crime. Nevertheless, Five Points and the site of Collect Pond would continue to be important to New York City's history.

The area of Five Points was defined by five streets: Mulberry, Anthony (now Worth Street), Cross (now Musco), Orange (now Baxter), and Little Water Street (no longer existing.) Charles Dickens describes the area in his American

Notes of 1842, noting unpaved alleys filled with knee-deep mud, free-roaming pigs, rotting and sinking houses, and children sleeping on the steps. Not surprisingly, cholera began to plague the neighborhood, and nearly all of the city's cholera outbreaks originated here.

By 1890, the decrepit state of Five Points began to gain public attention, particularly with the publishing of Jacob Riis's How the Other Half Lives. Soon after, the city of New York bought and subsequently condemned nearly all tenements in the area in an attempt to rid the community of crime and filth. In its place, government offices, a reconstructed a city prison known as the Tombs, and the New York Courthouse were built, and the revived area fittingly became known as Civic Center.

On April 28, 1960, the Board of Estimates placed the former site of Collect Pond under the jurisdiction of the Department of Parks and Recreation. Its name, 'Civil Court Park' refers to the judiciary institutions in the neighborhood - Criminal Court, Civil Court, and Family Court. Later, under Commissioner Stern, the site, at least in name, returned to its origins with the naming of 'Collect Pond Park'.

Tracing of all the maps of Collect Pond through history

Restoration Precedents

Jenkins Creek

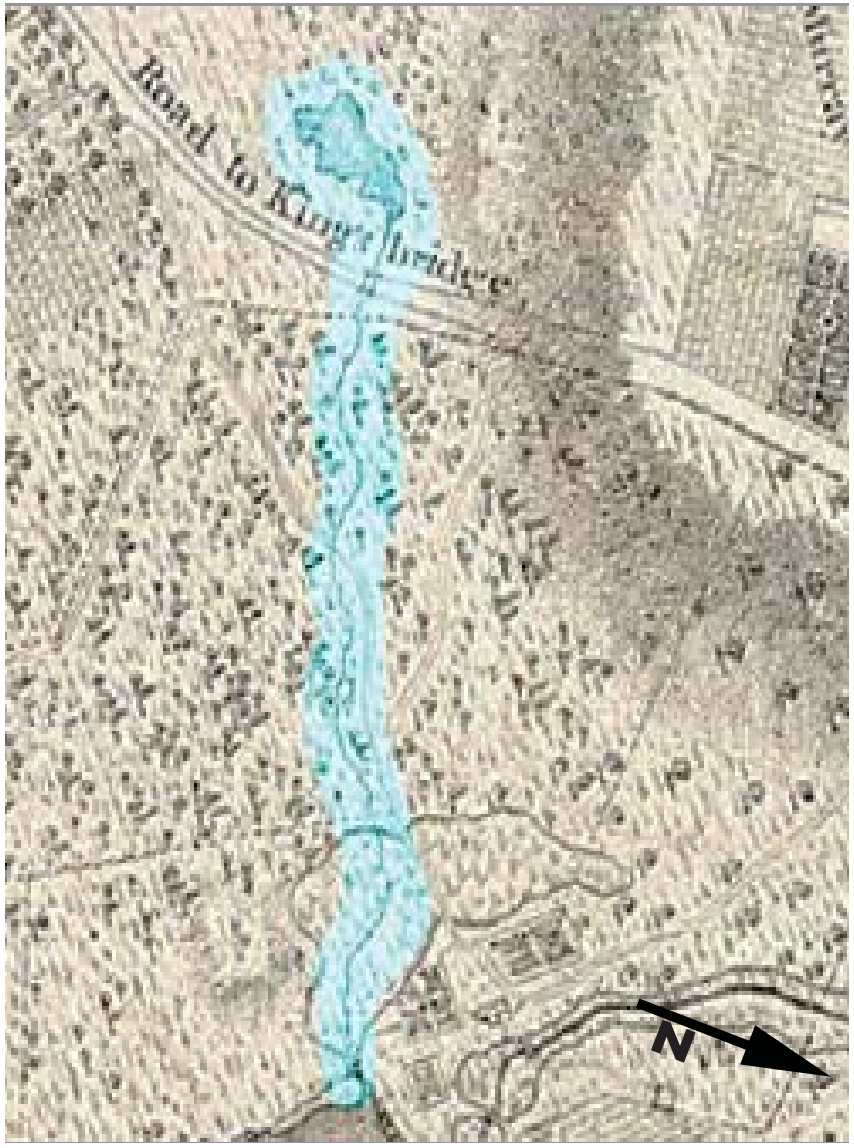
Jenkins Creek was daylighted in two phases that were completed in 1994 and 1996, creating a total of over 1,500 feet of new channel. The excavation of this creek addressed issues of flooding, degraded water quality and enabled migratory fish to access Lake Wilderness (left). Fish access to the lake and upstream habitat was blocked in the 1950s and '60s when portions of the creek were routed through pipes to ease development. Eight hundred feet of the creek, previously piped under a golf course were daylighted and incorporated as a water hazard. A clay layer was placed in the bed of the stream to stop water from percolating out of the streambed. Where known springs occured the clay was omitted, allowing the water help recharge ground water tables. Portions of the project were especially complicated because the stream ran through residential properties. Portions of project funding were allocated for community education and outreach, which taught people why they shouldn't fertilize or dump yard waste close to the stream. The total costs for the project was just over $1 million.

Kissimmee RIver Floodplain

The Kissimmee River floodplain was drained and channelled in the 1960's to mitigate catastrophic flooding. This led to drastic declines in wetlands and their populations of fish and waterfowl. The Kissimmee River Restoration Project was authorized in 1992. Over a third (22mi) of the canal was filled, and capacity was added to the headwater lakes to retain the flood mitigating effects of the channelling. One thing this project recognized very well was the importance of monitoring the effects of the restoration and obtaining baseline levels before the restoration took place. Over 100,000 acres of land were acquired for the project. Native vegetation has been restored on much of the river, dissolved oxygen (necessary for aquatic life) has increased six-fold, eleven species of shorebirds and ducks absent before restoration have returned, and wading bird populations have in some years increased at more than double the predicted rate.

Edwards Dam

The Edwards Dam was built on Maine's Kennebec River in 1837 to ease navigation and generate energy. Prior to the construction of the dam all ten Maine native migratory fish species were present in the Kennebec River. After more than a decade of legal battles the Federal Energy Regulatory Commission (FERC) ordered that the dam be removed in 1997, citing an 1986 amendment that required equal consideration of power and non-power values including wildlife and recreation. The dam's license to operate expired in 1993, and it was removed in July of 1999. Within hours of the dam's removal, islands and rapids not present since the 1800's were once again visible and vegetation returned to the riverbanks within weeks. Alewife, one of the affected migratory fish have rebounded back to a thriving population of more than 2 million in the river. At the site of an old textile mill in downtown Augusta, a riverfront park that increased recreation access to the river was created. This project is seen as a tipping point in the restoration community in the push to remove unnecessary dams, and more than 430 have been removed nation wide since then.



Sunfish Pond, 1767

Sunfish Pond | Murray Hill

Ecological History

Coursing through all ecosystems is water; our ecological history and future are defined by it. In this regard, the island of Manhattan is a microcosm of humanity's existence within the natural landscape. Eons ago, a glacier covered New York out to sea for miles, and as it receded northward across New York, it carved river channels and produced various geological formations. The hills that were created in the process also cut a network of passages, once serving up to 54 distinct ecological communities. In the 1700s, the Lenape Indians resided on the island they named Mannahatta, which translates as 'place with many hills'. Its environment included ponds and streams surrounded by spruce and pine forests and an amazing diversity of native species, including mosses, ferns, grasses, sedges, rushes, wildflowers, trees, shrubs, and vines, as well as fish, mammals, birds, amphibians, and reptiles. Over thousands of years, these native plants adapted to the climate, soils, and environmental conditions of our area. They have developed the ability to thrive in New York's humid summers and freezing winters and to entice local insects, birds, and other animals to pollinate their flowers and disperse their fruits [6].

Native plants are responsible for clean air, pure water, soil stability, flood abatement, and wild animal habitat. Humans depend on the ecological processes that native plants and wildlife provide every day. Thus native plants are the building blocks of our biological diversity and essential to healthy, functioning ecosystems. Throughout Mannahatta, and specifically near Sunfish pond, the plant community may have included red maple, black cherry, sweet gum, white wood aster, sumac, oak, pine, and hickory. From spring to fall, the Lenape lived along the estuary, weaving nets out of tree fiber along the rivers' bays. The Lenape cleared tulip trees with controlled fire, and then hollowed the trees with sharpened rocks to use as canoes. Each spring's ice melt-off left rich deposits of black soil in the rivers' floodplains, allowing the Lenape to plant and harvest fields of maize. They lived in close connection with the river, dependent on its natural cycles. Their homes constructed of wood and bark would eventually decompose back into the ground and provide nutrients for new life. The tribe balanced their human needs for food and nutrition with the survival needs of a variety of animals, both terrestrial and aquatic.

American River Otter

Sweet Gum Tree (leaf)

Sunfish

The Lenape most likely foraged for bristly dewberry, great ragweed, and Indian-tobacco. Fish were also bountiful in Sunfish and the surrounding streams, and likely included American eel, redfin pickerel, alewife, and yellow perch, among others. The Lenape possibly hunted for such species as the eastern mud turtle, spotted turtle, eastern gray squirrel, North American beaver, and northern bobwhite [5].

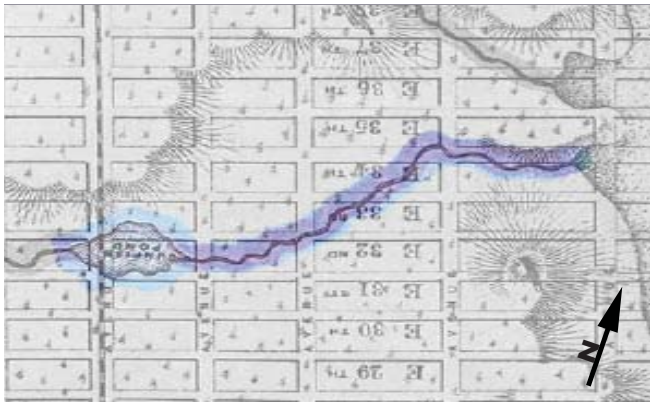
The island was clearly abundant with wildlife, and a diverse array of species lived near Sunfish Pond and throughout Mannahatta. Mammal species around Sunfish Pond may have consisted of vole, deer mice, beavers, flying squirrels, muskrats, eastern gray squirrels, eastern cottontails, eastern chipmunks, raccoons, white-tailed deer, bobcats, grey wolves, minks, North American river otters, and mountain lions [5]. Birds were also plentiful, and species that may have existed in the ecological community around Sunfish included populations of sharp-shinned hawk, wood duck, American crow, common raven, tree swallow, blue jay, American robin, bald eagle, passenger pigeon, green heron, wild turkey, great horned owl, doves, woodpeckers, swallows, warblers, and kingfishers [5].

The ecological community, estimated by Sanderson, consisted of approximately 35% eutrophic pond community, 30% deep emergent marsh, 15% Oak Tulip forest, 10% Appalachian oak-pine forest, and 10% shrub swamp. The pond was about 60% muck and was extremely rich with nitrogen and phosphorus, partially due to Lenape farming practices and the discharge of fertilizers into groundwater or runoff into streams and ponds [5]. Sunfish Pond was subject to long droughts, where it would almost completely dry out; therefore, it is likely that many of the freshwater streams surrounding Sunfish Pond were also affected by these periods of low water [2]. It is likely that species abundance and species richness may have declined during these periods.

References:

[1] Burrows, Edwin and Wallace, Mike. Gotham: a History of New York City to 1898. Oxford University Press: New York, 1999.
[2] Hill, G. and Waring, G. Jr. Old Wells and Water-Courses on the Isle of Manhattan: Parts I and II, Knickerbocker Press, 1897, pp. 191–262.
[3] Sanderson, Eric and Brown, Marianne. 2007. *Northeastern Naturalist*, Vol. 14: 4, pp. 545–570.
[4] Sanderson, Eric and Brown, Marianne. 2007. *Northeastern Naturalist*, Vol. 14: 4, pp. 548.
[5] Sanderson, Eric. "Welikia." [Online]. Available: http://welikia.org [9 February 2011].
[6] "Why Native Plants?" [Online]. Available: http://nycnativeplantgarden.wordpress.com/come-learn-about-the-plants/whynativeplants/ [12 February 2011].

1782



1836

1839

Social History

Sunfish Pond was fed by springs and a brook named “T’oude Wrack”, after an old dutch ship that sank in New York’s harbor.

1700s: During the 1700s, Sunfish Pond was a popular place for people to relax and engage in recreational activities like fishing during warm weather, and ice-skating in winter. Eventually, it became useful as farmland.

Sept. 15 1776: The British first invaded Kips Bay on this date, after a battle on Long Island. General Putnam was sent to Sunfish Creek to rescue 3500 men who were trapped in Manhattan.

1819: Records for 1819 show that Sunfish Pond covered 25th and 26th streets between 4th and 5th Avenues. During this time, the pond started to slow down its productivity. There was no outlet or inlet being fed from the bottom springs of cold water. Also, the same species of fish that were in Collect Pond (eg. perch, sunfish, eels, catfish) were also found in this pond, along with snapping turtles.

1822: Peter Cooper, the American inventor of gelatin, built a glue factory in a meadow opposite of Sunfish Pond.

1838: The House of Refuge, the first juvenile reformatory in the nation, caught fire in present day Madison Square. The water from Sunfish Pond was used to put the blaze out. It is said that the pond was so extensively used that “mud from the pond choked their waters.”

1839: By 1839, Sunfish Pond was so polluted and contaminated from human activity, as well as the glue factory nearby, that it was drained and filled.

1893: Sunfish Pond became the new site of the Waldorf Hotel, which was later moved to East 49th Street and Park Avenue.

1896-1897: Sunfish Creek expanded into Sunfish Pond at Madison Avenue and 32nd Street. The pond then continued to 4th Avenue. Although this had been a famous fishing spot, the pond almost disappeared on several occasions because

of prolonged droughts. The spring that fed into the pond received little spring water making it nearly dry in the summer months. During times of heavy rain however, the creek and pond would overflow and spread toward Murray Hill and Rose Hill.

1907: Buried waterways of Sunfish Pond became an issue during the construction of the "new" Manhattan, including the construction of the Pennsylvania Tunnel. Because of this, Sunfish Pond was consistently brought up in the news. What was once a large brook that fed Sunfish Pond became the main hidden water source that caused leakage in the tunnels.

2011: A building on 100 Park Avenue now occupies what was once the bed of Sunfish Pond.

References:

Dunshee, Kenneth Holcomb. As You Pass By. Hastings House, 1952.
"Sunfish Creek, Manhattan." [Online]. Available: http://lostriversnyc.blogspot.com/2008/08/sunfish-creek-manhattan.html [February 2011].
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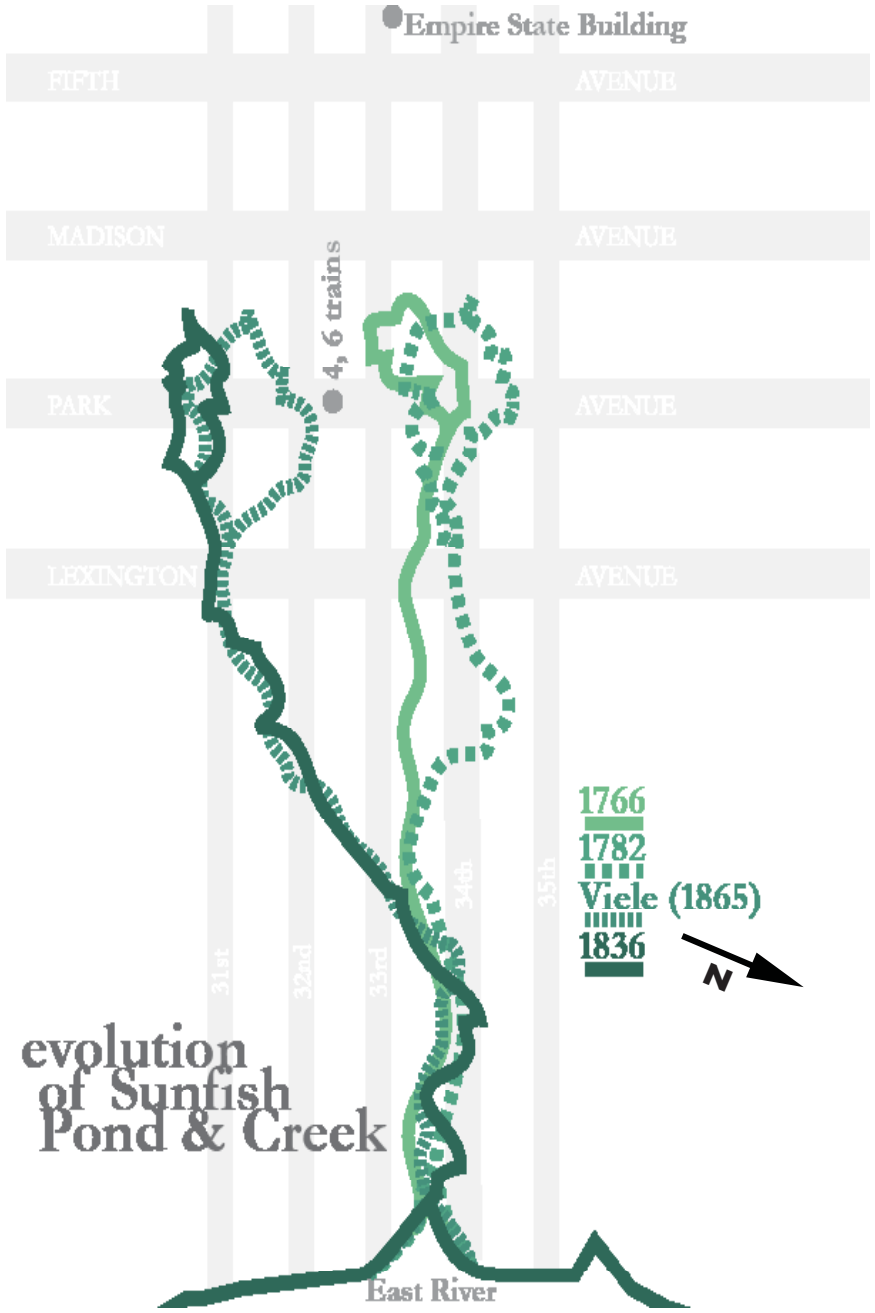


Restoration Precedents

Kilboblin Wetland

In 1995, Kilgoblin Wetland was built as part of a storm sewer improvement project. Located 35 miles northwest of Chicago, in Barrington, IL, the 1.2 square mile watershed ranges from urban to suburban. Three hundred feet of three-foot storm sewer piping was removed for about $55,000. This exposed Flint Creek Tributary that had been buried there for decades. In addition to replacing sewer lines, two acres surrounding the area were also planted with prairie grasses. After the project, records showed that microorganisms within the soil indicated improvements in species diversity and soil quality. The waterway is now visible, and grasses and plants have grown along the banks of the creek. A variety of flowers can be seen in the picture to the left.

Valley Creek

Valley Creek is located in Port Angeles, WA. The project was completed in 1997 with original goals of reducing costs for a local logging business that is near the site, retaining jobs, and creating habitat and recreation. Volunteer groups helped plan the restoration, local firms donated professional engineering services, and the public was also supportive. With construction costs and donated time and labor, the project budget neared one million dollars. Four hundred feet of seawall along the Port Angeles harbor was removed, which excavated a 2.8 acre estuary. Habitat enhancements such as shading logs and root masses were also installed. The creation of the estuary significantly improved biodiversity of the area. After restoration, there was an increase in species abundance and salmon young feeding in the new habitat. Various birds and a viewing tower have attracted visitors.

Jolly Giant Creek

Jolly Giant Creek is located in Arcata, CA. The project lasted from 1991-1997. Its goals were to restore the habitat, create an outdoor classroom, and create a recreational area for residents. It included the removal of 100 feet of culvert as well as concrete. In their places were a sedimentation basin, a 75 feet long curved pond, a new 75 feet stream channel, wads for fish habitation and direct flow, plants for bank stabilization, as well as 100 feet of natural stream channel recovery. A berm as well as small culvert were also installed for storm water detention and regulation and to create a seasonal wetlands. The project has improved flood control, erosion, and has created habits with structural diversity for native organisms. Natural filtration also lowered pollutants and water quality has improved along with an increase in aquatic biodiversity.

Reference:
Pinkham, Richard. 2000. “Daylighting: New Life for Buried Streams.” Rocky Mountain Institute: Old Snowmass, CO.

A map of Minetta Brook and the surrounding area as it might have looked circa 1609 generated by the Mannahatta Project.

An example of the Oak-Tulip Tree forest that used to surround Minetta Brook and much of lower Manhattan. Image: D..J. Evans.

The American Black Duck which, according to the Mannahatta project once inhabited Minetta Brook. Image: Bill Hubick.

Minetta Brook Greenwich Village

Ecological History

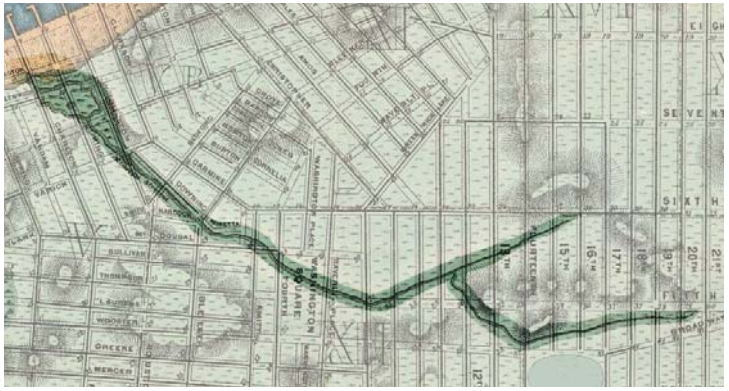
Minetta Brook, originally termed 'Manette' or 'Devil's Water' by the Lenape, the indigenous people of Manhattan island, and later Bestaever's Rivulet by the Dutch, was once a vibrant watercourse that began in the forested, slightly hilly land near what is now 20th Street near Gramercy Park. From there, the brook ran through a dense forest with marshy lowland characteristics, eventually reaching its headwaters in the coastal marshes on the Hudson River near modernday Grand Street. Geologically it is located within the Manhattan Schist, and the rich soils along its banks supported a predominantly oak and tulip tree forest filled with prairie fleabane, starved panicgrass and Virgina creeper.

The banks of Minetta Brook were likely home to communities of small mammals and birds, including various species of mice and voles, such as the sharp-shinned hawk, the red-tailed hawk, and the American black duck. The brook itself was also home to various fish such as brown bullhead, chain pickerel, ninespine stickleback, and hogchokers, which can still be found in the Hudson River. It is unlikely that the island's indigenous Lenape people lived directly along the brook; however it is apparent they used many of the river's resources.

Trails used by the Lenape for foraging intersected the brook. The Lenape likely fished in the area for perch, sunfish, and American eel, and gathered various berries and nuts from the surrounding forest.

The Chain Pickerel which once lived in the waters of Minetta Brook
Image: Joseph Tomelleri

Map of Greenwich Village, in which Minetta Brook is referred to as “Bestaever’s Rivulet”, circa 1760.



Map of Minetta Brook circa 1865, by Egbert Viele.

Satellite image of the area surrounding Minetta Brook, present day.

Social History

The site of the buried Minetta Brook is located in lower Manhattan. The original water stream began approximately at Gramercy Square at 20th Street and flowed through what is now West Houston Street, traveling beneath most of Greenwich Village and finally emptying into the Hudson River. A large portion of the stream runs through Washington Square, then past Minetta Street and Minetta Place.

The site of Minetta Brook has seen many inhabitants throughout the centuries. The first inhabitants of Minetta were the native American Lenape. At this time the stream was filled with trout and surrounded by dense forest. In the early 1600s, Dutch colonists settled the area, where they named Minetta ‘Mintje Kill’, or ‘small stream’. By the mid-seventeenth century, former slaves of the Dutch and their families established their own community with farms and homes. Throughout the eighteenth and early nineteenth century, the area became known as “Little Africa” as freed African-Americans purchased property. The stream was finally moved underground by the 1830s as city infrastructure was beginning to develop at the time when slavery in New York was abolished.

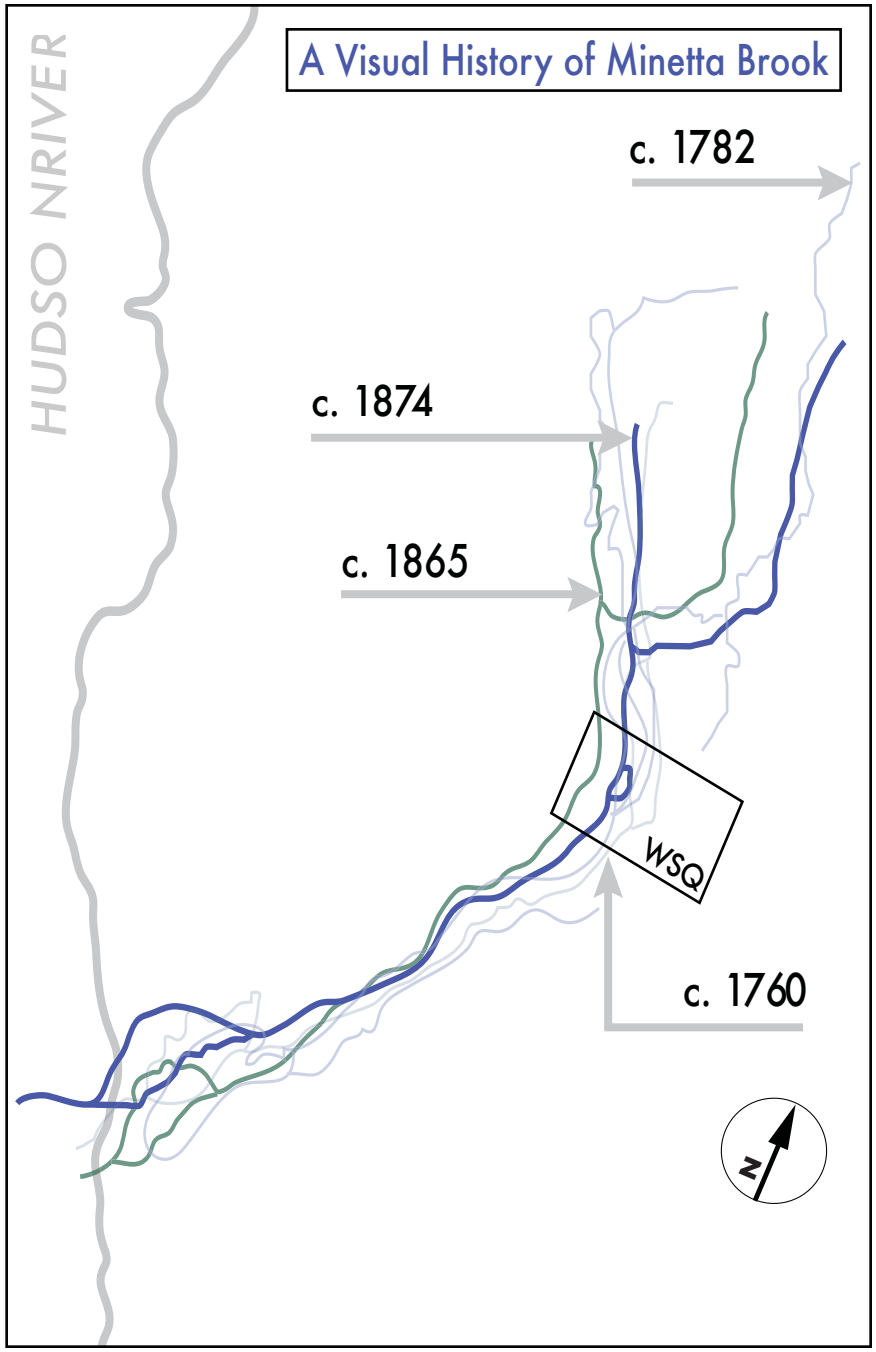
By the late nineteenth century, the area housed entertainment opportunities that catered to different vices and attracted a variety of ethnicities and cultures. Minetta was considered one of Lower Manhattan’s more dangerous slum populations, with nightly knifings at brothels and speakeasies, and these activities continued into the 1920s.

Many of the townhouses and apartments that stand in the area date back to the nineteenth century. Tax and census records for these homes survive from as far back as 1825. Most of the brook has been covered over, though it is claimed that a small number of residences throughout the West Village have Minetta’s water still flowing beneath their basements. This can cause floods, especially during heavy rains. In one specific building on Fifth Avenue, the lobby features a transparent tube that supposedly contains murky water from Minetta, which bubbles up occasionally.

There are three small city parks filled with trees and gardens within the Minetta site: Minetta Triangle (located at the northeast corner of Minetta Street and Sixth Avenue), Minetta Green (located at the southeast corner of Minetta Lane

and Sixth Avenue) and Sir Winston Churchill Square (located at the corner of Downing Street and Sixth Avenue). Since the early nineties, these three parks have undergone multiple revitalization projects, with the installment of artistic collages and artifacts highlighting the history of the buried stream.

The area of the Minetta Brook site in Greenwich Village is bustling, filled with rich culture, pre-Civil War architecture and beautiful hidden alleyways. But what was once a feisty bubbling brook now stands as a faded memory.



Restoration Precedents

Arcadia Creek, Kalamazoo, MI, USA

The daylighting of Arcadia Creek was undertaken by the city as an effort to curb flooding in a crowed business district with inadequate culverts and storm drains. The results of this construction resurfaced sections of the stream that lead into a stormwater pond with a fountain. Arcadia creek now runs freely through an open park, with grassy slopes leading right down to the edge. Responses to this project have been positive. The park is now a central attraction for the town. The goal of preventing flooding was accomplished, and the surrounding park now generates $12 million a year in concert and fair fees, paying back the cost of the construction and annual maintenance fees.

Darbee Brook, Roscoe, NY, USA

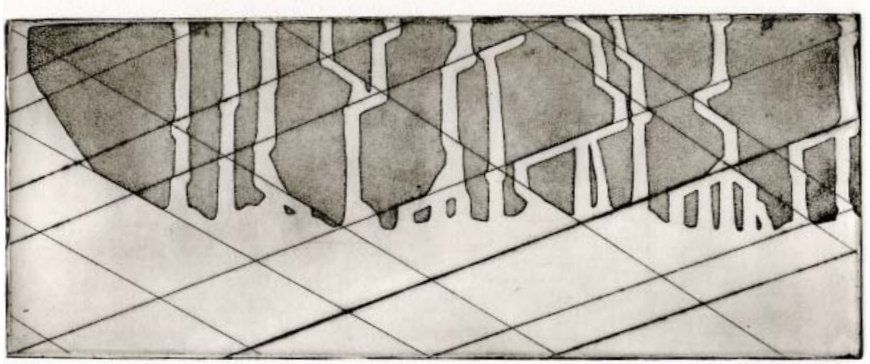
Darbee Brook was confined to a culvert in the 1960s to make room for playing fields at a public middle school. However, a harsh winter caused the pipes to freeze and crack, causing a collapse and flooding of the field. The culvert was filled in, and the stream rerouted to a new pathway using permeable surfaces, allowing the stream to regain its natural role in aiding storm surges. The brook now looks like it once used to, a small waterway surrounded by trees, mosses and shrubs, providing a living classroom for the students of Roscoe Central School. The students now have a variety of plants and other living organisms to study right in their backyard. The stream's function as a fish passage to a larger river in the Catskills has also been restored. The project cost one-fifth as much as replacing the broken culvert would have.

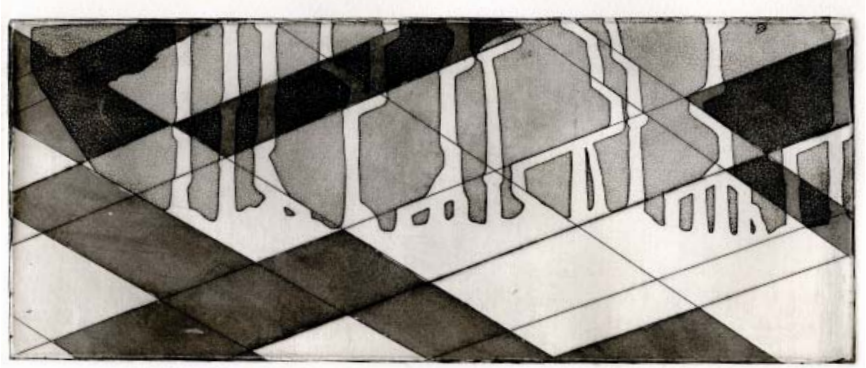
Codornices Creek, Berkeley, CA, USA

Codornices Creek stretches 2.9 miles, draining from the Berkeley hills into the San Francisco Bay. Codornices Creek is a perennial stream, supporting native fish populations. The creek flows through the city of Berkeley and the town of Albany. While most of the upper portions of the creek remain open, what used to flow into tidal salt marshes in the Berkeley flatlands was paved over for the purpose of further development. Restoration of the creek began in 1994. A channel was dug to the north of the concrete pipe encasing the creek. This section was completed within a year, with positive results leading to further restoration projects. Subsequent restoration efforts have focused on native riparian planting, trail restoration, and environmental education. Continual restoration efforts in Codornices Creek have shown a marked improvement, supporting higher numbers of endangered steelhead trout. Crayfish and other invertibrates, as well as gophers, egrets, and doves can now be seen at the creek.

Print Works

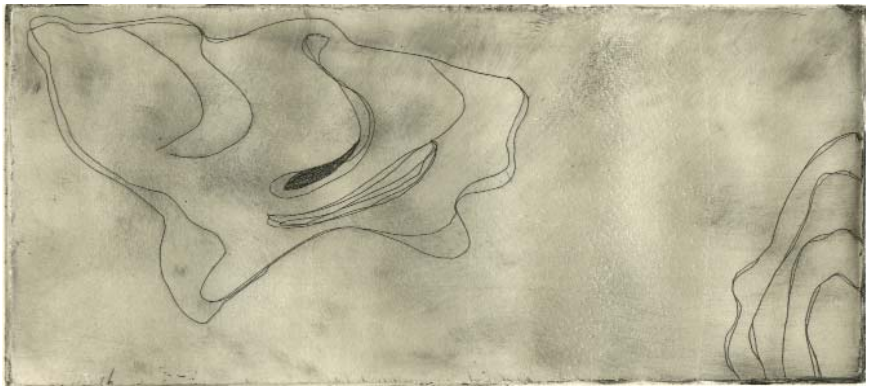
A component of the Waterlogged class used printmaking to explore ideas related to layering and flow in city conditions. The movement of elements—people, water, air, sound—create currents through the landscape that are changed and interrupted as they react to the physical disruptions created by city infrastructure. The prints are based on a series of urban observation drawings in which students documented these less representational elements of the landscape. These drawings served as an analogous departure point for altering their plates. The images displayed here emerged through the process of exploring the collision of flows and urban form.





The etching process took my plate in a completely unexpected direction. The initial idea was to study interaction within the grid form. What resulted from the initial etching of the grid onto the plate transformed the vision I began with and pushed me towards exploring the process of erosion. Alternating between rigid geometric strokes and natural, uncontrolled marks I began to mirror the process of deconstruction of the grid by gradually erasing lines.

- Mikaela Kvan

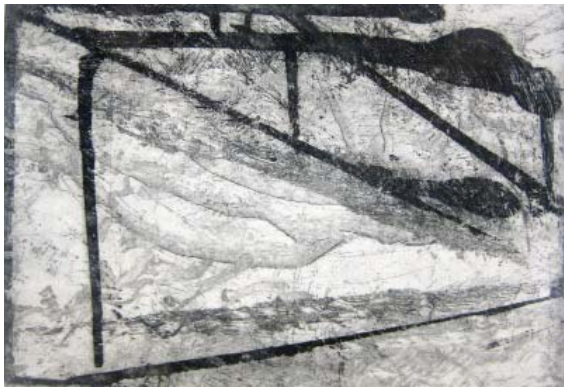


I would like to make the shape of my plate a bow with a constraint in the middle that is shaped like a grid to represent flow and ebb and constraint and release. Some other words I would like to play with are decompose, bind, filter, tether, and release. This is inspired by my observations at Minetta Street and at Mc-dougle and 3rd where a tiny street intersected with two bustling streets creating a tiny street that seemed bound compared to the rest of the grid creating an ebb and flow of people and traffic on the street.

- Eva Neves

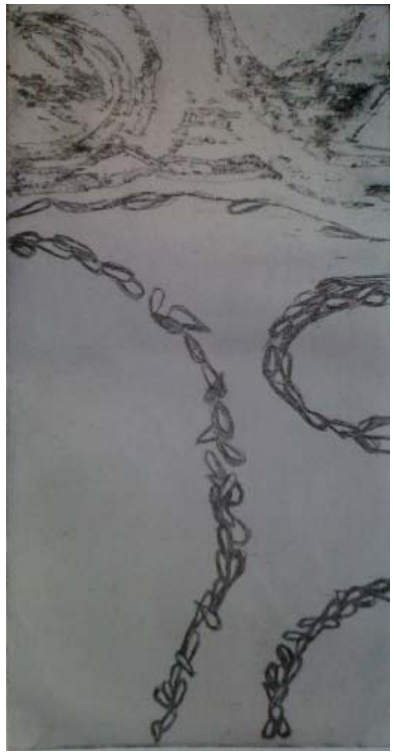
Broad Street has a strong slope downwards to the river. Above is a ceiling of randomly lighted windows. Out to the East River is the only real opening to the sky and is where people disappear into and where cars appear out of. Upon approaching the water, the street hits a horizontal of traffic. The various layers include both cars on South St. and those entering the South St. Viaduct, bikes and pedestrians, and even helicopters flying in over the East River. Much of my process in printmaking revolved around setting down hard-ground, and then either using sugar lift, or gamsol to soften, break apart, and manipulate the surface. With gamsol on hard-ground, I was able to work with various gravities — manipulating 'water' flow by either turning and tilting the plate or by setting up constraints that directed flower more specifically. This process left the determining gravity (the orientation of the print) open to interpretation.

- Colin Macfadyen



This series of prints were created in hopes of exploring the intersecting pathways of my surroundings. In attempt to capture paths that were both recognizable trails as well as fleeting ones such as flight patterns, I decided to sit in front of my window on the eleventh floor. Sandwiched between the ground and the sky, the layered pathways started to emerge and intersect one another illuminating the extent to which both people and birds are shaped by our urban landscape.

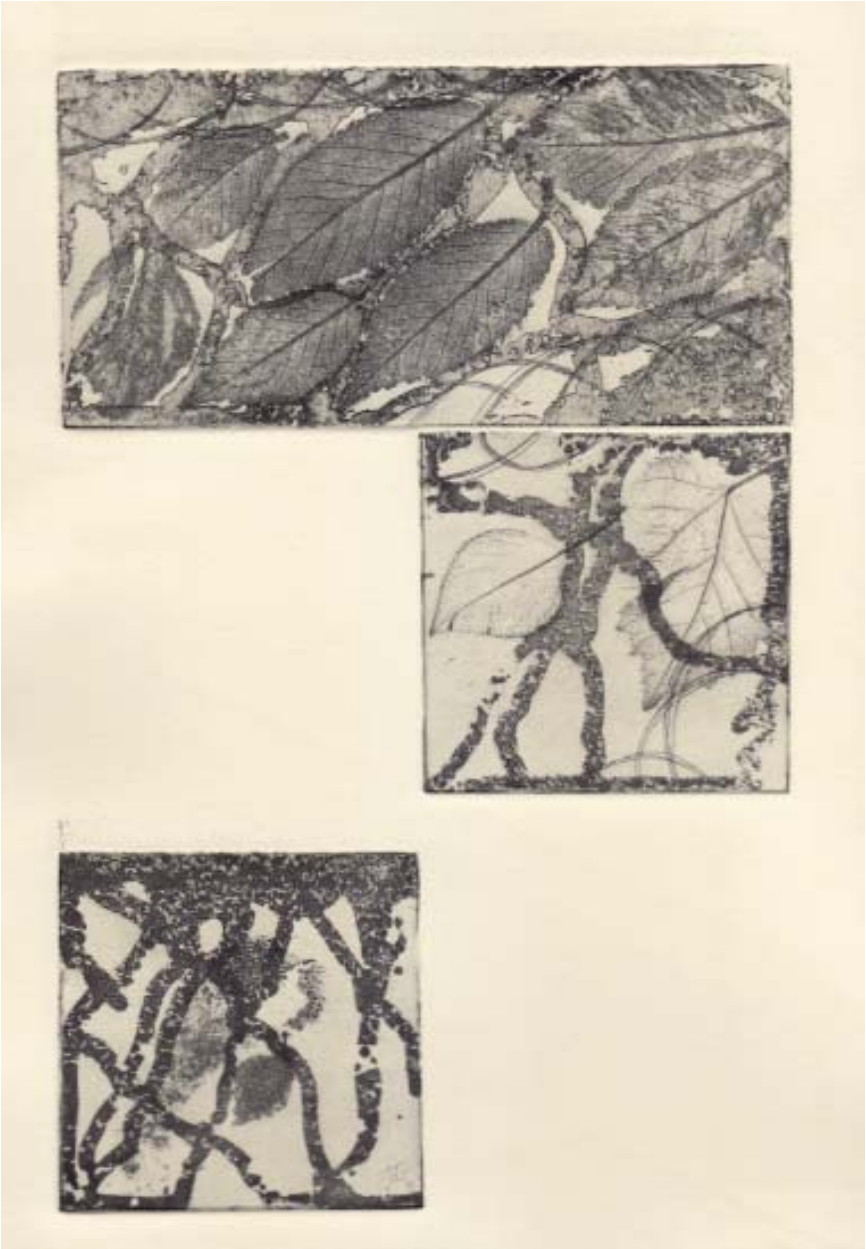
- Caitlin Webb



converge diverge intersect restrain release meander fade

Parallel sidewalks border a road flowing towards a turning point at the end of a narrow street, congested with cars looking for diverse cuisines on either side. Aimed at the same general direction is the elevated path of the LIRR. Riders and pedestrians criss-cross to and from the same points within their bounded paths, while simultaneously creating shifting boundaries for cars and for each other. Repetitive sounds of train tracks, car engines, station announcements are interrupted by occasional street chatter and loud heels on the cement and cobblestone pavement. The point of convergence seems to be beyond a brand-new development called “NEW WORLD MALL.” This narrow street is not ready for more people as cars and pedestrians barely navigate past each other now without brushing, but relentless commercial development projects are slated for the coming years. The interactions between paths are slated to become chaotic, overrun by traffic, not only at the intersection of Prince Street and 40th Rd, but throughout this lovely little town called Flushing.

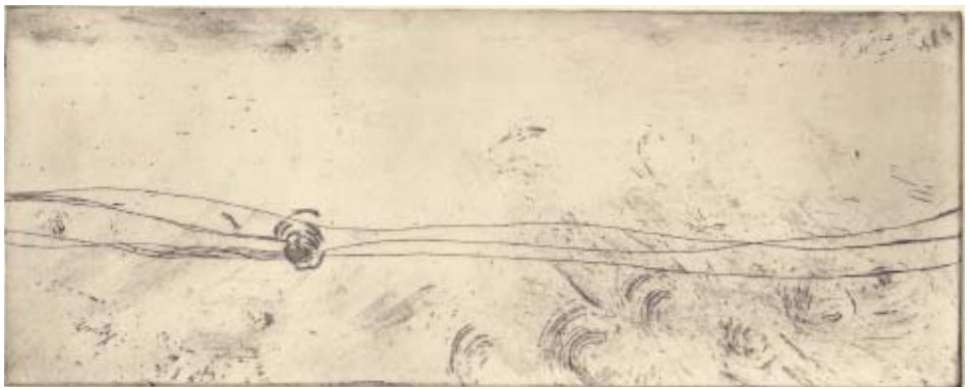
Rena Lee

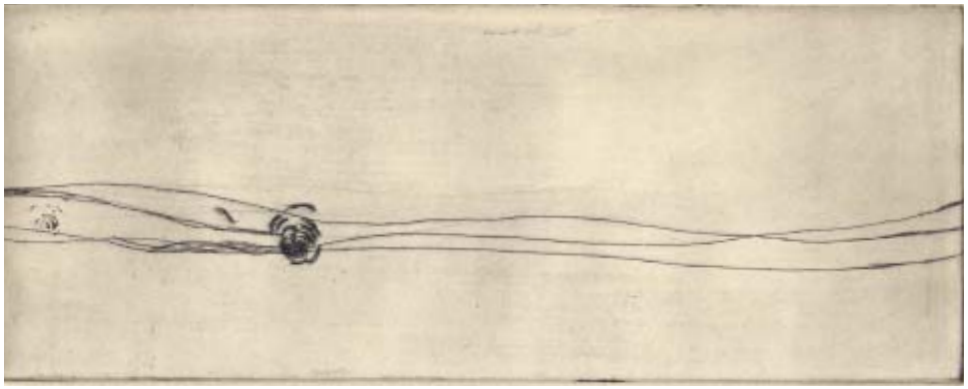


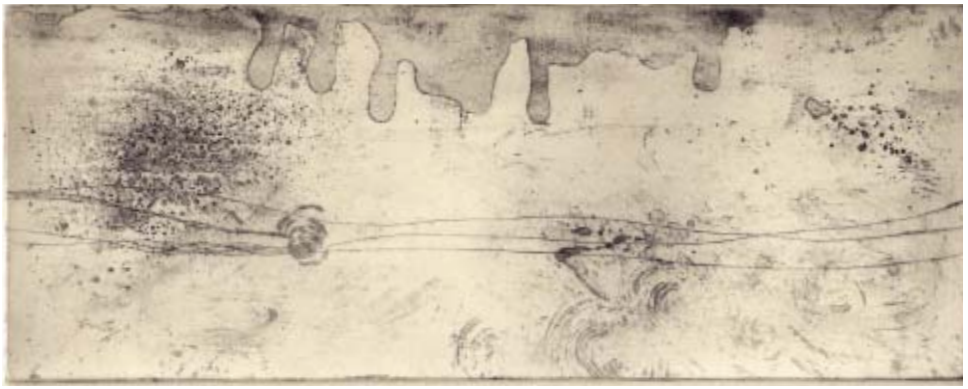
erode disrupt overlay

The Brooklyn Bridge Park consisted of many different textures. Since it is a spot where concrete, stones, water, wind, trains and planes get combined, I thought it would be a rich area for observations. In terms of geometry, I think using undefined shapes and lines would imitate the movements I saw and felt in the site. For example, wave lines and maybe punctured holes can help me express the wind and the water.

Carmen Li



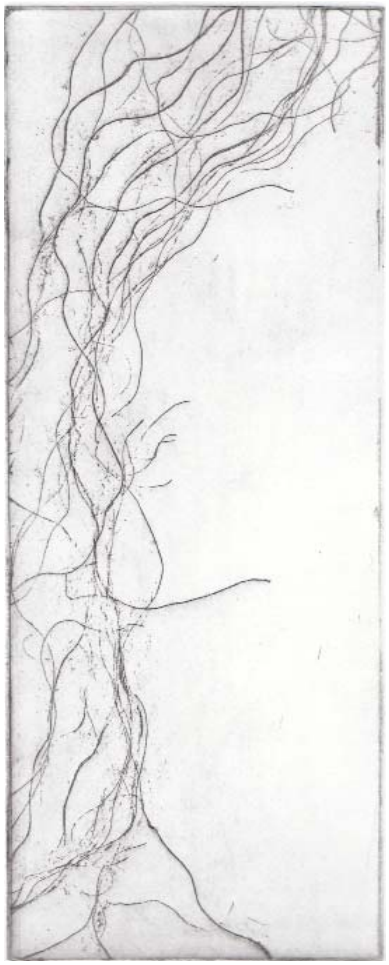


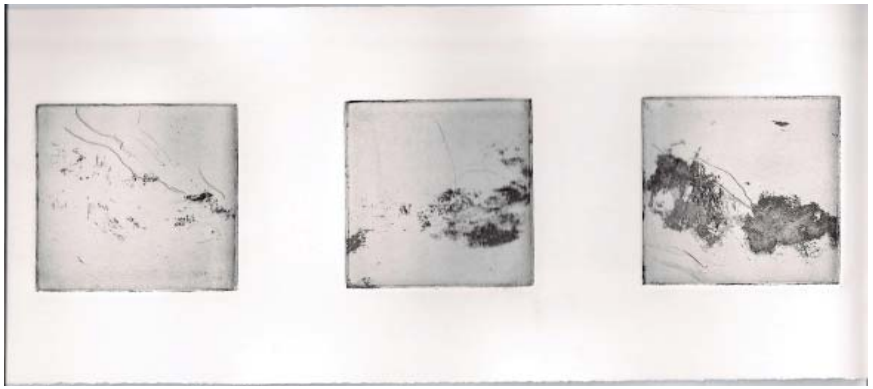


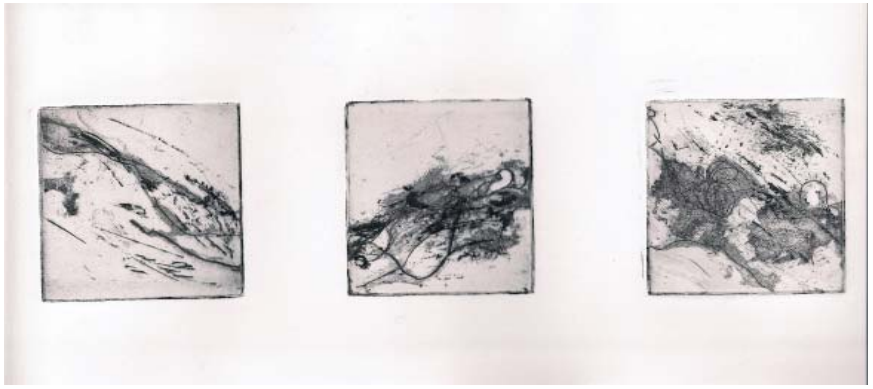
intersect disrupt divert

On most major streets in the city, there are many layers of movement that constantly weave and intersect with each other while in flux. Traffic moves in more than one direction; people both follow flows and divert from them. Furthermore, these flows are regulated by disruptions otherwise known as traffic lights. By exploring different patterns of movement, it is easy to see that each layer contributes to a larger network that is the urban environment.

Marco Rangel







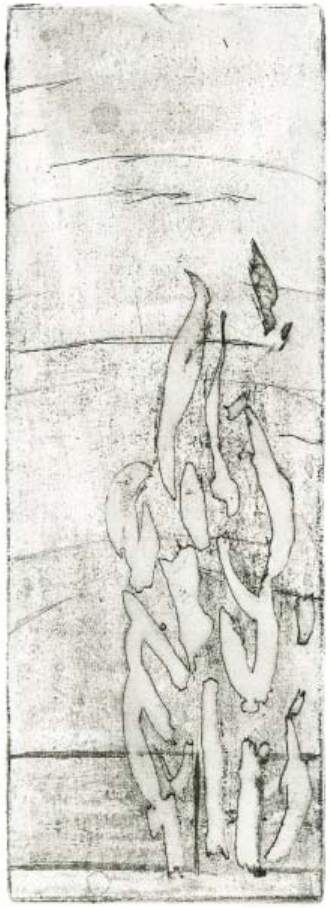
The spaces between the plates can serve as a metaphor for the passing of time, and of hidden elements that get forgotten with history, as well as a reference to the physical, as bridges spanning a body of water separating it into sections.

The printing process is similar to geological time, layers corrosion and wear make a complete image after the many steps of process line up on top of eachother. This series focuses the concepts of Wear, Erosion, Accumulation, Trapping and Scraping, because of the endless flow and motion over a surface of water through time.

Hannah Kramm

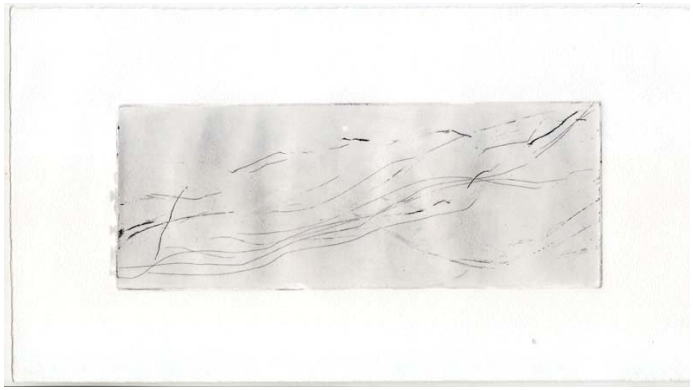
In these prints, I've tried to illustrate the action of water surging up through the ground into a tree as the space it has to grow widens. With each iteration, more vertical space fills with new kinds of activity, developing the theme of growth constrained and released. When allowed enough space, plants can reach potentials often unseen in urban environments, and these prints attempt to show how much of that potential is intertwined with the free flow of water.

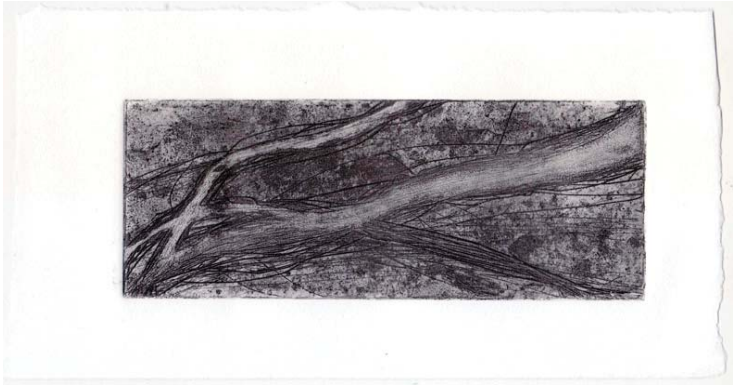
Lou Wright

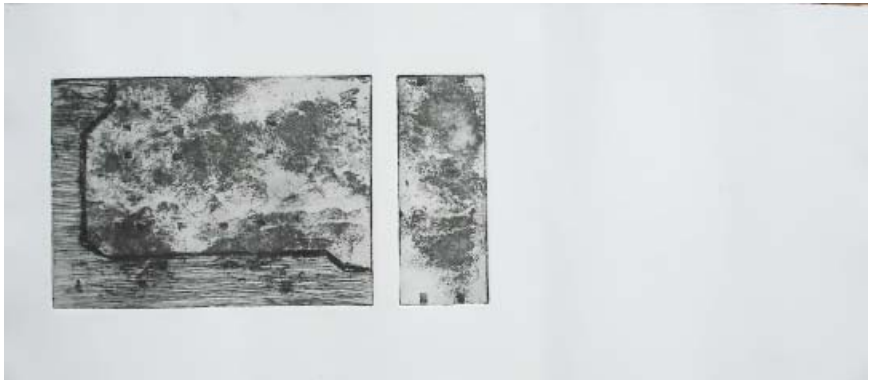


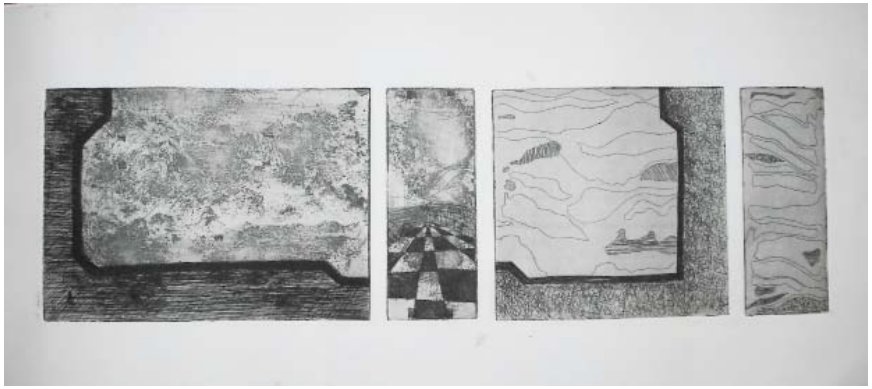
My prints are an exploration of landscape formation, specifically the geologic processes that shape them. I started by thinking about the Pleistocene period in geologic history, a time defined by the massive glaciers once covering our continent. These glaciers scraped rock formations, setting a course for landscapes as we know them today. I will attempt to mimic this process of erosion to transform the landscape of the plate.

Erica Schapiro-Sakashita









I was exploring the compression and expansion of people commuting. I think that the Staten Island ferry terminals are unique moments in a New York commute that not every one gets to experience. Gathering in a central location to collectively board a boat is a very different experience than boarding a train that makes many period stops where smaller amounts of people board the train.

Kelli Jordan

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Ecological Restoration: Richard Karty, postdoctoral fellow in Environmental Studies.

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A continuation of this work can be seen on the class blog:
www.nycwaterlogged.blogspot.com