The **Gowanus Canal**, also known as the **Gowanus Creek Canal**, is a canal in the New York City borough of Brooklyn, geographically on the westernmost portion of Long Island. Connected to Gowanus Bay in Upper New York Bay, the canal borders the neighborhoods of Red Hook and South Brooklyn to the west and Park Slope to the east; likewise, Gowanus Bay borders the neighborhoods of Red Hook to the north and Sunset Park to its south. There are five east-west bridge crossings over the canal, located at Union Street, Carroll Street, Third Street, Ninth Street, and Hamilton Avenue. The Gowanus Expressway (Interstate 278) and the IND Culver Line of the New York City Subway, an above-ground section of the original Independent Subway System, pass overhead.

Once a busy cargo transportation hub, the canal's fate has mirrored the decline of domestic shipping via water. A legacy of serious environmental problems has troubled the area from the time the canal was first built out of the local tidal wetlands and fresh water streams. In recent years, there has been a call once again for environmental cleanup. In addition, development pressures have brought speculation that the wetlands of the Gowanus should serve waterfront economic development needs which may not be compatible with environmental restoration.

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### History and overview

#### Mill creek

The Gowanus neighborhood was originally a tidal inlet of navigable creeks in original saltwater marshland and meadows teeming with fish and other wildlife. Henry Hudson and Giovanni da Verrazzano both navigated the inlet in their explorations of New York Harbor. The first land patents within Breukelen (Brooklyn), including the land of the Gowanus, were issued by the Dutch Government from 1630 to 1664. In 1639, the leaders of New Netherland made one of the earliest recorded real estate deals in New York City history with the purchase of the area around the Gowanus Bay for construction of a tobacco plantation. The early settlers of the area named the waterway "Gowanes Creek" after Giouwane, sachem of the local Lenape tribe called the Canarsee, who lived and farmed on the shorelines.[1]

Adam Brouwer, who had been a soldier in the service of the Dutch West India Company, built and operated the first gristmill patented in New York at Gowanus (on land patented July 8, 1645, to Jan Evertse Bout). The tide-water gristmill on the Gowanus was the first in the town of Breukelen and was the first mill ever operated in New Netherland.
(located north of Union Street, west of Nevins Street, and next to Bond Street). A second mill (Denton's Mill, also called Yellow Mill) was built on Denton's mill pond, after being granted permission to dredge from the creek to the mill pond once located between Fifth Ave and the present day canal at Carroll and Third Street. On May 26, 1664, several Breuckelen residents, headed by Brouwer, petitioned director general Peter Stuyvesant and his Council for permission to dredge a canal at their own expense through the land of Frederick Lubbertsen in order to supply water to run the mill. The petition was presented to the council on May 29, 1664, and the motion was granted. Another mill, Cole's Mill, was located just about at present day 9th Street, between Smith Street and the Canal. Cole's Mill Pond, located north of 9th street, occupied the present location of Public Place. Slave labor was used to excavate the marshland.[2]

In 1700, a settler, Nicholas Vechte, built a farmhouse of brick and stone now known as the Old Stone House, which later played a critical role in the 1776 Battle of Long Island, when American troops fought off the Redcoats long enough to allow George Washington to retreat. This house sat at the south eastern edge of the Denton's Mill pond. Brower's Mill (also known as Freeks Mill, located at the present day intersection of Union and Nevin streets) can be seen in drawings depicting the "Battle of Brooklyn".

Throughout this period, a few Dutch farmers settled along the marshland and engaged in clamming of large oysters that became a notable first export to Europe. The six-foot (2 m) tides of the bay forced salt water up into the creek's meandering course, creating a brackish mix of water that was ideal for the bivalves, which often grew much larger than today but gradually shrunk through a form of negative artificial selection. By the middle of the 19th century, the City of Brooklyn was the third most populous, and fastest growing, city in America and had incorporated the creek and farmland into a greater urban fabric with linear villages flourishing along the shore.[1]

**Canal**

The mills on the Gowanus were also home to public landing sites, connecting the water route to the old Gowanus road. As the local population grew and 19th century industrial revolution reached Brooklyn, the need for larger navigational and docking facilities grew. Colonel Daniel Richards, a successful local merchant, advocated the building of a canal to benefit existing inland industries and drain the surrounding marshes for land reclamation that would raise property values.[3] In 1849, the New York Legislature authorized the construction of the Gowanus Canal by deepening Gowanus Creek, to transform it into a mile and a half long commercial waterway connected to Upper New York Bay. The full dredging of Gowanus Creek could not begin until a further act of the legislature in 1867. After exploring numerous alternative (and some more environmentally sound) designs, the final was chosen for its low price tag. United States Army Corps of Engineers (ACOE) Major David Douglas was hired to design the canal, which was essentially complete by 1869. The cost of the construction came from assessments on the local residents of Brooklyn and State money.[4]

Despite its relatively short length, the Gowanus Canal was a hub for Brooklyn's maritime and commercial shipping activity. Factories, warehouses, tanneries, coal stores, and manufactured gas refineries sprang up as a result of its construction. Much of the brownstone quarried in New Jersey and the upper Hudson was placed on barges with lumber and brick and shipped through the canal to build the neighborhoods of Carroll Gardens, Cobble Hill, and Park Slope. In addition, the industrial sector around the canal grew substantially over time to include: stone and coal yards, flour mills, cement works, and manufactured gas plants, tanneries, factories for paint, ink, and soap, machine shops, chemical plants, and sulfur producers, all of which emitted substantial water and airborne pollutants. The canal was the first site where chemical fertilizers were manufactured. [5]

With as many as 700 new buildings a year constructed, the South Brooklyn region grew at a remarkable rate. Thriving

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industry brought many new people to the area but important questions about wastewater sanitation had not been properly addressed to handle such growth. All the sewage from the new buildings drained downhill, into the Gowanus. The building of new sewer connections only compounded the problem by discharging raw sewage from neighborhoods even farther away into the Canal. By the turn of the century, the combination of industrial pollutants and runoff from storm water, fortified with the products of the new sewage system, rendered the waterway a repository of rank odors, euphemistically called by wise-cracking locals "Lavender Lake". After World War I, with six million annual tons of cargo produced and trafficked through the waterway, the Gowanus Canal became the nation's busiest commercial canal, and arguably the most polluted. The heavy sewage flow into the canal required regular dredging to keep the waters navigable.

With much fanfare the US Army Corps of Engineers completed their last dredging of the canal in 1955 and soon afterward abandoned their regular dredging schedule, deeming it to be no longer cost effective. Brooklyn's fuel trade was already converting from coal and artificial gas to petroleum, which was served by the wider and deeper Newtown Creek, and natural gas, which arrived by pipeline. With the early 1960s growth of containerisation, New York's loss of industrial waterfront jobs during this period was evident on the canal and, with the failure of the city sewage and pump station infrastructure along the canal, Gowanus was used as a derelict dumping place. Remaining barge traffic mostly carried fuel oil, sand, gravel and scrap metal. At this point, the issue of revitalizing of the Gowanus area was raised. In 1975 the City of New York established a Gowanus Industrial Renewal Plan for the area, which remains in effect until the year 2011. Since 1975, the surrounding community has been calling for the City, State, and Federal governments to bring the full power of the Clean Water Act to bear on the environmental conditions left behind in this once thriving urban/industrial waterway.

**Degeneration**

At the time it was built, several designs for the canal were proposed, some with lock systems that would have allowed daily flushing of the whole waterway. But these designs were considered too expensive, and as a result the Gowanus Canal was constructed with significant design flaws, but within budget. There was no through-flow of water and the canal was open at only one end, in the hope that the tides would be enough to flush the waterway. But with the canal's wooden and concrete embankments, the strong tides of fresh diurnal doses of oxygenated water from New York Harbor were barred from flowing into the 1.8 mile (3 km) channel. Water quality studies have found the concentration of oxygen in the canal to be just 1.5 parts per million, well below the minimum 4 parts per million needed to sustain life.[6]

With the high level of development in the Gowanus watershed area, excessive nitrates and pathogens are constantly flowing into the canal, further depleting the oxygen and creating breeding grounds for the pathogens responsible for the canal's odor.

The opaqueness of the Gowanus water obstructs sunlight to one third of the six feet needed for aquatic plant growth. Rising gas bubbles betray the decomposition of sewage sludge that on a ripe, warm day produces the canal's notable stench. The murky depths of the canal conceal the remnants of its industrial past: cement, oil, mercury, lead, PCBs, coal tar, and other contaminants. In 1951, with the opening of the elevated Gowanus Expressway over the waterway, easy access for trucks and cars catalyzed industry slightly, but with 150 thousand vehicles passing overhead each day the expressway also deposits tons of toxic emissions into the air and water beneath.[6]

There is an urban legend that the canal served as a dumping ground for the Mafia. In Jonathan Lethem's *Motherless Brooklyn*, a character refers to it as "the only body of water in the world that is 90 percent guns." In *Lavender Lake*, a 1998 documentary film about the Gowanus Canal by Alison Prete, two cops discuss the recent discovery by fishermen of a suitcase taken from the waterway that was full of human body parts.

**Flushing the canal**

The first step to ameliorate pollution in the canal was the construction of the Bond Street

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sewer pipe line in the 1890s that carried sewage out into the harbor, but this proved inadequate. In the first attempt to improve flow at the northern, closed end of the canal, the "Big Sewer" was constructed from Marcy Avenue in Prospect Heights, down Green Ave to 4th Avenue and into the canal at Butler Street. This sewer design was featured in Scientific American for its innovative construction method and size. The area this sewer ran through was known as "The Flooded District," and it was believed that this new sewer would serve two purposes: to drain the flooded district, and to use the flow of that excessive water to move the water of the upper Gowanus Canal. Headlines in the Brooklyn Daily Eagle newspaper declared it an engineering blunder shortly after its construction. The Big Sewer still exists under the streets of Brooklyn today.

The existing method to control the pollution of the isolated Gowanus Canal was the installation of the Flushing Tunnel on June 21, 1911, which for a time supplied clean water to the upper reaches of the canal through the brick-lined 1.2 mile (1.9 km) tunnel via Butler Street to Buttermilk Channel between lower Brooklyn and Governor's Island. Unfortunately, this too failed. Aside from numerous operational glitches, a long series of problems and mistakes occurred throughout the 1960s, culminating when a city worker dropped a manhole cover that severely damaged a pump system already suffering from the effect of the corrosive salt water. The Clean Water Act had not yet been passed, and the City, stretched for funds at the time, did nothing to address the issue. As a result of the unrepai red damage to the Flushing Tunnel, and the long stretch of economic recession, the waters of the Gowanus Canal lay stagnant and under-used for years.

According to the New York City Department of Environmental Protection (DEP), plans to reactivate the Flushing Tunnel pump were proposed in 1982. But, due to bureaucratic delays, the DEP did not take up the project until 1994. The Flushing Tunnel was finally reactivated in 1999. The new design employed a 600 horsepower (450 kW) motor, that pumped an average rate of 200 million gallons a day (9 m³/s) of aerated water from Buttermilk Channel of the East River into the head end of the canal. Although water was circulating through the tunnel, it can only be pumped 11 hours a day, due to tidal forces. Water quality has now improved, at least the quality of water samples taken when the Flushing Pump is operating.[7] Another attempt to control pollution, the construction of the $230 million Red Hook Water Pollution Control Plant in 1987, had similar unsatisfactory results. The Red Hook Treatment plant collected waste from the existing Bond Street sewer that had been dumping into the harbor, but did not take up any additional waste that still spills into the canal from the sewer system's 14 Combined Sewer Overflow (CSO) points. Technology has yet to keep up with the combined sewage overflows of the Gowanus Canal.

**Environmental and economic developments**

In early 2006, the problem of wastewater management arose during a controversy over a planned Brooklyn Nets Arena in nearby central Brooklyn. The project would include a basketball arena and 17 skyscrapers. The resulting sewage would flow into antiquated combined sewers that can overflow when it rains.[8][9] The Gowanus Canal has 13 combined sewer overflow points; the fear is that the additional wastewater from the arena would lead to more frequent overflows in the canal.

In 1999, Assemblywoman Joan Millman allocated $100,000 to the Gowanus Canal Community Development Corporation (GCCDC) to produce and distribute a bulkhead study and public access document. The following year, GCCDC received $270,000 from the New York City Department of Parks and Recreation to construct three street-end public open spaces along the Gowanus Canal through the city's Green Street program. An additional $270,000 was funded by Governor George E. Pataki to create a revitalization plan in 2001 and then allocated $100,000 in capital funds in 2002 to implement a pilot project on the shoreline. In 2003, Congresswoman Nydia Velázquez allocated an additional $225,000 to create a comprehensive community development plan. Today this organization relies on community volunteers to maintain and clean these Green Street Projects. The community lacks a community centered redevelopment plan.[10]

In 2002, the US ACOE entered into a cost-sharing agreement with the DEP to collaborate on a $5 million Ecosystem
Restoration Feasibility Study of the Gowanus Canal area to be completed in 2005, studying possible alternatives for ecosystem restoration such as dredging, and wetland and habitat restoration. Discussions turned to breaking down the hard edges of the canal in order to restore some of the natural processes to improve the overall environment of the Gowanus wetlands area. The DEP also initiated the Gowanus Canal Use and Standards Attainment project, to meet the City's obligations under the Clean Water Act. As of the summer, 2009, the joint NYC/Army Corp Feasibility study has not been completed. The City and the Army Corp relationship has not been productive and is indicative of how poorly the NYC and the Army Corp can cooperate in a Gowanus cleanup effort. [1]

As the industrial Brooklyn cityscape evolves, new development plans have been debated for the Gowanus Canal and the land abutting it. The adjacent neighborhood to the east (4th Avenue) was rezoned for high density residential use with a strong commercial component. With brownfield redevelopment incentives offered by the State of New York, developers look to this land as another place to build, with substantial help of public money.

With the popularity of the location, some community groups, led by a funeral director in the area, have raised the dream of Brooklyn's own Grand Canal of Venice tourism.

Paving the way for recreational use of the canal has been the Gowanus Dredgers Canoe Club (founded in 1999), and The Urban Divers Estuary Conservancy (founded in 1998), two organizations that are dedicated to providing waterfront access and education related to the estuary and bordering shoreline of the canal. During the 2003 season, over 1,000 individuals, including more than 200 youths, participated in Dredger Canoe Club programs, logging over 2,000 trips on the Gowanus Canal. The NY Harbor report for that same year showed the Gowanus to have the highest level of pathogens in the entire harbor.

A 9.4 acre (38,000 m²) U.S. Postal Service site on the east side of the Ninth Street canal crossing became available for commercial development. Development groups have not taken their eye off a whole range of possible projects for the site. It has been proposed as the Brooklyn Commons, an entertainment and retail complex featuring a multiplex cinema, a bowling alley, shops and restaurants. After controversy, a lawsuit, and a rival proposal for an IKEA store, a large Lowe's store was built and opened on April 30, 2004, with an adjacent public promenade overlooking the canal. The IKEA company, previously rejected from the Ninth Street location for traffic congestion, opened on the south end of Red Hook on the harbor waterway. That project was objected to by community organizations in the Red Hook and Gowanus neighborhoods.

Another site at Smith and 4th street was taken by the city in 1975 and designated a Public Place, for use as "public recreation space". Despite this legal standing of the Public Place, developers have continually proposed using this site for other possibilities. National Grid is accountable for a cleanup of the pollution left behind on the site after years of coal gas manufacture. Upon completion of this cleanup the site was to be turned over to the parks department. Developers however believe it should be used for a large scale housing project. There is much concern in the community over the possible loss of this much need recreation space.

FROGG, Friends & Residents of Greater Gowanus, and a group of artists carved out a niche in the Gowanus area. The Gowanus Artists are a group of over 100 local visual artists that hang out and paint in the Canal's parks, on its bridges, and in their nearby studios. On the last weekend of every October, they open up their studios for the Gowanus Open Studio Tour, expanding also into Park Slope's Brooklyn Lyceum (227 Fourth Avenue) and Southpaw (125 Fifth Avenue) venues. [10]
In 2005, folk singer Steve Suffet released "Down the Gowanus," a whimsical song about the characters who once populated its environs, on his "Now the Wheel Has Turned" CD.

In November 2006, HABITATS, a festival dedicated to "local action as global wisdom" celebrated the Gowanus Canal through environmental conferences, collaborative art, educational programs and interactive walks around the area. The canal has been the home to various arts organizations. The Issue Project Room once organized art events, and The Yard, an outdoor concert space, opened in the summer of 2007 near the Carroll Street bridge. In 2008, a local all-girl Brooklyn country band, The Havens, released the song 'Gowanus Canal' on their 'Devil Days' CD. An old-timey glorification of illicit activities around the Gowanus Canal.

In February 2009, the city of NY granted a zoning change to the developer, Toll Brothers Inc., allowing for a 480 unit, 12 story, super-block residential project, the first permitted along the toxic waterway.

In April 2009, the Canal was proposed as an EPA Superfund cleanup site. The NY State DEC sent a letter to Washington DC EPA requesting their help to address the environmental problems of the canal. In May 2009 the City stepped forward to oppose the Superfund Listing and offered, for the first time, to produce a Gowanus cleanup plan that would match the work of an EPA Superfund cleanup but with a promise to accomplish it faster. The city projects that they could now achieve a faster cleanup than the EPA because they would fund their cleanup through tax payer dollars from the state and city levels, while the EPA would seek their funding from the polluters.

References

3. New York City Landmarks Preservation Commission, Carroll Gardens Historic District, 1973
7. New York City Department of Environmental Protection, City Activates Gowanus Canal Flushing Tunnel, Publication 99-28, New York: April 30, 1999
9. The Great Stink: When England was disgusting (and why America’s rivers still are)

External links

- Army Corp of Engineers Press Release (PDF)
- Gowanus Artists
- Gowanus Canal Community Development Corporation
- Gowanus Dredgers Canoe Club
- The Gowanus Canal at southbrooklyn.net
- The Urban Divers Estuary Conservancy


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