

FRESHKILLS PARK (STATEN ISLAND, NY) AS AN EXAMPLE OF A POLLUTED AREA'S TRANSFORMATION INTO A PUBLIC SPACE

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Summary

Staten Island is one of the five boroughs of the New York City. The borough of Staten Island differs from the other districts for being much more rural, agricultural and full of green areas. The picturesque landscape of the meadows named Fresh Kills is located in the middle of the Island. The name 'Fresh Kills' comes from the landfill's location, along the banks of the Dutch name Fresh Kills estuary, in Western Staten Island. Since 1947, this place has been used as a garbage dump for the New York City metropolitan area. During the next fifty years, this area formed an artificial mound of waste occupying a surface of 2200 acres (890 ha). In 2003, the authorities of the City of New York decided to close the landfill and transform the Fresh Kill landfill into a recreational park, for future generation to use. Because of a very complicated system of recuperation, the park's opening is scheduled for 2030. However, some of the parts of the Park are open to the public now. After completion, the Fresh Kills Park will be the largest park in New York City. It will be three times bigger than Central Park.

Keywords

ecology • landfill • energy biogas utilization • recreation park

1. Introduction

Staten Island is one of the five boroughs of the New York City, located near the narrows of New York Bay (Figure 1). Staten Island's area is mostly rural and full of green areas. There are numerous functioning, coexisting farms, however S.I is dominated by single family housing. The borough is coexistent with Richmond County since 1683 and still holds this name. The free NYC Staten Island Ferry connects the borough to Manhattan. Brooklyn is connected to the Island via the Verrazzano-Narrows Bridge, built in 1964 (Figure 2). The idyllic living conditions on the Island were disturbed by the landfill, located in the western part of the Fresh Kills area. After many years, it became the main landfill for New York City (Figure 3). Half a century later, the 'artificial mountains' created from waste, are 890 ha large. The Fresh Kills landfill was closed in 2001 and reopened after September 11, 2001, collecting debris from the World Trade Center Disaster.



Source: author's study

Fig. 1. New York City. The five boroughs of New York City



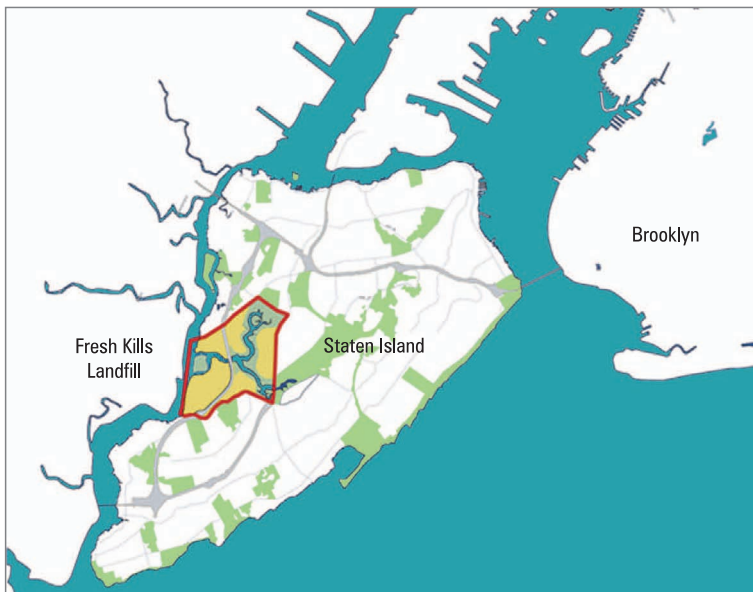
Source: author's archive

Fig. 2. The view from St. George Hill (Staten Island)



Source: author's archive

Fig. 2a. The sailors homes at Snug Harbor



Source: author's study

Fig. 3. The location of Fresh Kills Landfill

1.1. The history of Staten Island

The Island was inhabited by the people 13 000 years ago. In several places archaeologists have discovered tools belonging to the Clovis culture.¹ In the period before European settlement, the Island was inhabited by the native Lenape tribe. They left paths, these became roads and were later transformed into the streets: Richmond Ave and Amboy Road.

The first written information about Staten Island can be found in the diary of Giovanni Verrazzano, who anchored his vessel on the island's shores, for one night, 1520. In 1609, English traveler Henry Hudson named the island Staaten Eylandt (States Island). The Dutch colonists, who lived in Lower Manhattan since 1650 (New Amsterdam) wanted to conquer the Island. At first, they met strong resistance from the Lenape tribe. They finally established a colony in 1661 named Staaten Island. The South Beach area was the location of the first settlement.

In 1667, the Island returned to British rule and changed the name to Staten Island. In 1683, it became the administrative district, called Richmond County.

The inhabitants were mostly farmers, who cultivated the land until the mid-twentieth century. We can get to know how they lived, if we visit a farm and town museum complex called Richmond Town [Historic Richmond Town], dating from the period of British rule on the Island. It consists of more than 30 historic buildings from the late-seventeenth to the early-twentieth centuries (e.g. a house, school and church from 1695 and St. Andrew's Church from 1709). Staten Island played an important role during the American Revolutionary War. George Washington expecting the attack from Britain from the sea side and collected his army on Staten Island. In 1898, the Island became the fifth borough of the Great New York City, as a Richmond County.

Because of its location, the Island has not developed as quickly as others New York City boroughs. Even now, the only way to reach the Island by car is via the Verrazzano Narrows Bridge. The connection between Lower Manhattan and Staten Island is maintained, twenty-four hours daily by ferry (Staten Island Ferry). It crosses the distance between Manhattan and Staten Island in twenty minutes.² The last station is St. George Ferry Terminal. St. George Hill is the most developed part of the Island and its administrative center. The historical building of City Hall and the buildings of Courts (built in the neo-classical, Palladian style) dominated this area. The housing of St. George's Hill is built in the old Victorian style in the nineteenth century, by the ship's captains. Some of them have little towers with balconies to view the bay³. They display the wealth of architectural details.

¹ The Clovis culture – prehistorical culture of Paleo-Indian. The name came from the Clovis place (in New Mexico) where archaeologists found the tools used by these people. They belong to the people living in the American Continent 13 000 years ago. Researches said, that people from Clovis culture are similar to 80% of the Native Indians population from South and North America (Anzick boy).

² From the Staten Island harbor and Ferry Terminal the tourists can see the beautiful skyline of Manhattan. This route is a favorite way for the tourists, to visit New York City.

³ As in Amsterdam, the wives of sailors stood on the balconies, waiting for ships coming to the port.

Nearby is located Snug Harbor, a former place for “retired and aging” sailors.⁴ The five Greek Revival style buildings at Snug Harbor are regarded as “the most ambitious monument of the classical revival in the United States, and the “most extraordinary” style of the Greek temple-style in the country (Figure 2a). The Sailor’s Snug Harbor, after many hardships, was finally converted to the Snug Harbor Cultural Center. In 2008, the Cultural Center and Staten Island Botanical Garden merged, to become The Snug Harbor Cultural Center and Botanical Garden.

1.2. State of research

The Fresh Kills Landfill (Figure 4) was created in 1948 because of the initiative by Robert Moses [Wilczkiewicz 2013], who was the commissioner of the New York City’s Parks for many years. Moses, as a space planner for New York City was an author of the report from November 1951 known as Report to Mayor Impellitteri and the Board of Estimate [Fresh Kills 1951]. In this document he introduced the project of management of the land-fill in the Fresh Kills and attached terrains. He proposed using these land as a temporary measure. The goal was to improve the land for future developments. Moses also proposed the construction of the West Shore Expressway (the only one item from his plans to be realized). In this document, he tried to convince the authorities, by arguing for the benefits of his plans.



Source: https://en.wikipedia.org/wiki/Fresh_Kills_Landfill

Fig. 4. The barges with garbage waiting for unloading

⁴ Snug Harbor was founded after the death of a Revolutionary War soldier and ship master, captain Robert Richmond Randall, who wanted to build an institution to care for “aged, decrepit and worn-out” seamen. Sailor’s Snug Harbor was finally opened in 1833, the country first home for retired merchants seamen. At its peak, in the late 19th Century, about 1000 retired sailors lived at Snug Harbor.

The most important scientific paper (from the landscape architecture discipline) dealing with Staten Island is a comprehensive study of the Island, written by Ian McHarg and presented in his book *Design with Nature* [1992]. McHarg,⁵ professor of Pennsylvania University and ecologist, said: “I believe that ecology provides the single indispensable basis for landscape architecture and regional planning. I would state in addition, that it has now and will increasingly have a profound relevance for both city planning and architecture (...). Ecology is the only bridge between the natural sciences and the planning and design professions, the proprietor of the most perceptive view of the natural world which science or art has provided” [2002, p. 39]. He laid the foundations for space planning and landscape architecture. At this time (late seventies), space planning, land composition and educational role of monuments in landscape architecture were entirely new concepts.

Ian L. McHarg, in *Design with Nature* examines the land in an innovative way. The study shows the bedrock geology, hydrology, soil drainage environments and more.⁶ Also, he specified the urbanization areas: residential suitability and terrain unsuitability for urbanization. He characterized the St. George area as a good place for habitat. For the most part the Staten Island is not suitable for urbanization because of the poor quality of the soil. The land consist mostly of marshes. In the area of the spring Fresh Kills, he proposed the nature reserve. Earlier this area was a habitat for birds and animals.

The location of the future park is of interest to the author of the article. She lived in Staten Island for three years (2005–2008) and visited the future park area many times since. She has visited Staten Island, researching the changes to the ecology near the landfill and also the change of property prices on the Island since 1994. The author has evaluated the scale of devastation to the terrain and the efforts recently taken by the authorities of the City to revitalize this area. Also, the author knows the study for Staten Island written by Ian McHarg, who called this place (the landfill area) the most precious place in the New York City. In the article [Wilczkiewicz 2012] the author wrote about the project of the Park, in the Fresh Kills area. Moreover, in her book, she criticized the poor planning decision regarding the landfill location [Wilczkiewicz 2013, p. 185]. The area of the Fresh Kills springs was always recommended as suitable for a recreation function, parks and beaches. Since the City Hall Authority was the owner of land, the goal seemed very easy to accomplish. The inhabitants of Staten Island and New York had to

⁵ “Ian L. McHarg was born in Scotland in 1920, fought in World War II, then studied Landscape Architecture and City Planning at Harvard University from 1946 to 1949. After graduation, he worked and taught in Glasgow and Edinburgh (Scotland) then returned to the United States in 1954 as an assistant professor of City Planning at the University of Pennsylvania. At the time of his arrival, the Department of Land and City Planning, founded in 1950, was the most exiting planning program in the country. His book, *Design with Nature*, led to fundamental changes in the teaching and practice of landscape architecture” [Spirn 2000].

⁶ A comprehensive discussion of the Staten Island study (by Ian McHarg) is provided in the book by A. Bohm [2006, p. 88].

wait for the decision almost forty years. The article is based on the information collected at the Staten Island Museum⁷ and study for historical buildings⁸ located in the Staten Island.

2. Landfill for New York City metropolitan area

In 1948, at the area of the Fresh Kills springs, the landfill was open [Stamp 2012]. In the beginning it existed as temporary necessity. Later, it became the only landfill collecting the waste from all of the New York agglomeration. At the peak of operation, the landfill received and disposed of waste (organic and non-organic, unsorted) at the rate of 650 tons daily. The artificial mounts created from waste became the highest points on the East Coast. It rose to 800 meters above sea level.

Since 1960, it has provided a collection point for three different areas. There were: Plant 1, Plant 2 and Brookfield Avenue. The Plant 1 and Plant 2 areas were accessible by sea. Everyday, barges full of waste (mostly from Manhattan and Brooklyn) came to the shores of the Fresh Kills, then with elevators (*clamshell bucket*) they were reloaded onto vehicles at the landfill. Some of the barges were equipped with their own elevators. To make the trip possible and to use Plant 2 (located on the other side of the Fresh Kills Creek) a wooden bridge was built. This solution allowed to collect the garbage on the East Side of Richmond Avenue. Opening the new area on Richmond Avenue, made it possible to transport the garbage by trucks. The homeowners from Richmond Avenue immediately started selling their homes.

The operational hours on the landfill were from 8:00 AM to midnight. The time between midnight and 8:00 AM was for conserving and maintenance of the equipment used on the landfill. The West Shore Expressway (Road 404 highway) crossed the whole area of the landfill. The passengers cars could see the massive mountains, formed from waste, on both sides of the road. They traveled through the area with closed car windows. The waste odor from the landfill penetrated into the cars to remain there even after they left the land fill area.

Animals became the major problem. The landfill became the home to abandoned wild dogs. They created the packs and were dangerous for the people working on the landfill area. The population of rats rapidly started to grow and spread throughout the Island. Attempts were made to eliminate them by adopting common methods (traps, poison), but a new generation of rats was resistant to them. There were prior settlements of the birds in this area. The falcons, hawks and owls started to fight with the rats, without any results. Staten Island was on the threshold of environmental disaster.

⁷ Staten Island Museum consist of two branches: one is located in the historic district St. George, the second is at the Snug Harbor Cultural Center.

⁸ During her stay in the Staten Island, the author lived in a historical apartment at 30 Daniel Law Terrace. (Ambassador Apartments, arch. Lucian Pisciat, built in 1932. See Olszewski [2013, p. 220, il. 21].

In the years 1993–1999 true exodus of the human population from the Island began. Due to the odor homeowners tried to sell their properties at half price and yet hardly anyone was interested. The market for Real Estate in the borough of Staten Island came to a standstill. In March of 2001, the authorities of New York City finally decided to close the landfill. It was re-opened in September 2001 to collect the debris from World Trade Center disaster. At the same time the authorities initiated the program for the revitalization of the former landfill.

3. The process of revitalization of the Fresh Kills area

The City Hall Administration appointed two City Departments to cleanse the Fresh Kills landfill area: the New York City Department of Sanitation and the Department of Parks and Recreation. Their plan worked: since 2001, animals returned to the landfill, birds, squirrels and bees. The survey from 2007 shows the presence of raccoons, mice, cats and even the white-tail deer, who migrated from New Jersey. The mountains of waste were stabilized and covered with six layers of insulations (Figure 5). Despite the fact, that the waste was separated from the ground by the insulation layers, the landfill still produced methane, due to precipitation contamination. The worst was the stinking liquid, the „tea” produced by soaked waste. This liquid soaked into the ground and polluted the water from the Fresh Kills creeks.

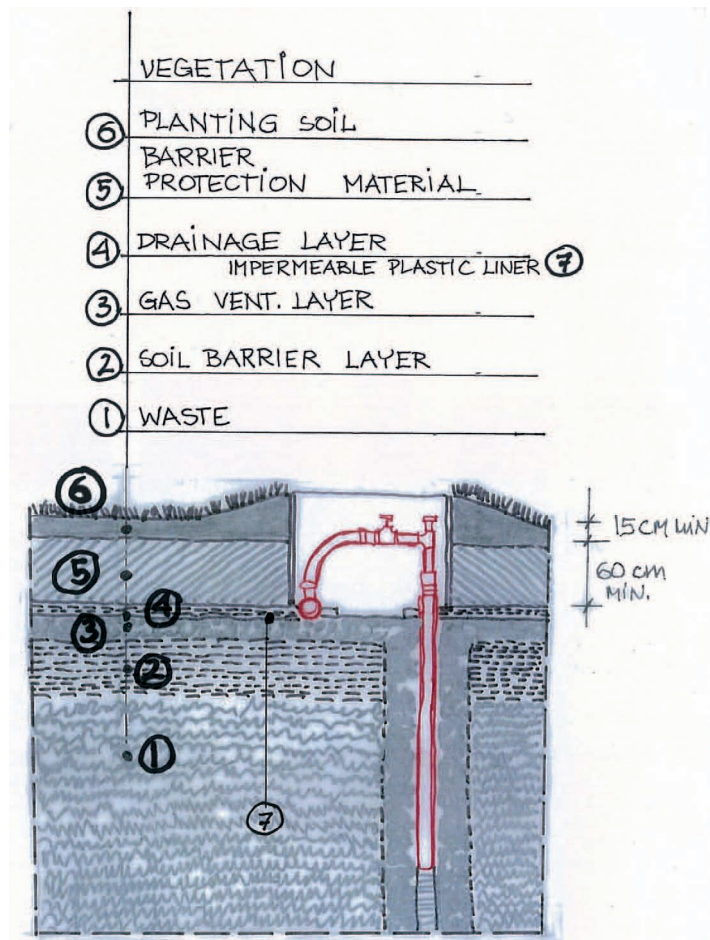
The area of the landfill was covered by the orthogonal net of ‘wells’ (Figure 6). Landfill gas is comprised of methane, carbon dioxide, water and other organic compounds. The landfill gas system (LGS) on the site collects and controls gas emissions through a network of wells, connected by the pipes below the surface. It conveys the gas through a vacuum. Once collected, the gas is processed to pipeline quality (for domestic energy use) at an on-site recovery plants. Gas emissions, non-methane organic compounds (NMOC) and other hazardous pollutants are reduced by almost 100%. The gas and its odor are prevented from entering the atmosphere. This active gas collection and recovery system is in place to prevent the migration of gas, off-site (Figure 7). After recycling in the stations, the gas goes to the National Grid Company and is sold for 12 million dollars a year.

4. The project of the Freshkills Park

In 2001, the City of New York led by the Department of City Planning and supported by New York Department of State’s Division of Coastal Resources announced the competition entitled: Fresh Kills – Landfill to Landscape (Figure 8).

Field Operations, with a team led by James Corner⁹ won the competition. On his first visit to Fresh Kills, Corner found himself „just blown away by the beauty and scope of the place” [Morrone 2013, p. 135]. Following the competition, Field Operations drafted a master plan that became the basis for the subsequent design. The park is to be a model of sustainable strategies on a small and large scale (Figure 9).

⁹ James Corner is a well know as a designer of the High Line Park in New York City.

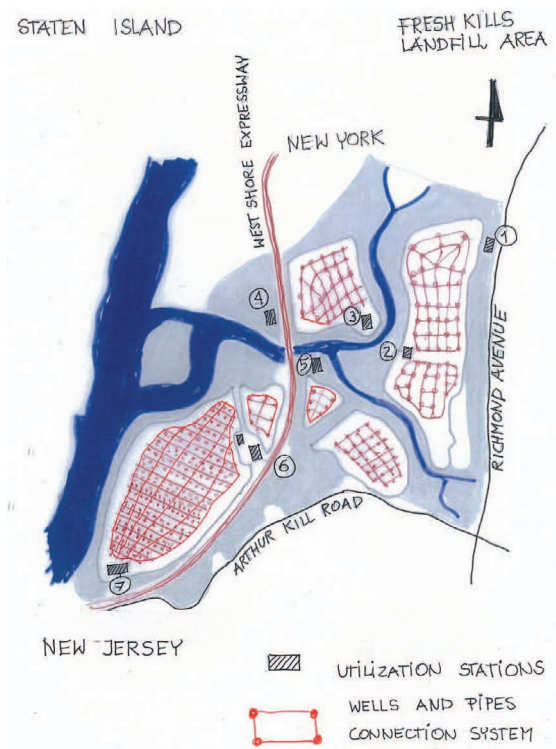


Source: author's drawing

Fig. 5. System of evacuating gas from landfill. A section through the well

In 2006, NYC Parks Department assumed responsibility for implementing the project using the (Draft) Master Plan as a conceptual guide. The basic framework of the plan integrates three separate systems – programming, wildlife and circulation – into one cohesive and dynamic unit. While the full build-out will continue in phases over the next 25 years, development in the next several years will focus on providing access to the interior of the site and showcasing its unusual combination of natural and engineering beauty [Stamp 2012]. In this particular case, the preservation of wildlife can be considered as a recuperation of the wildlife, destroyed by the landfill. It should be coming back to this site.

The aim of the engineers is not only the conversion of the former landfill into green areas but also the creation of a place with a wide range of recreational opportunities,



Source: author's drawing

Fig. 6. The placement of methane collection station. The network of wells



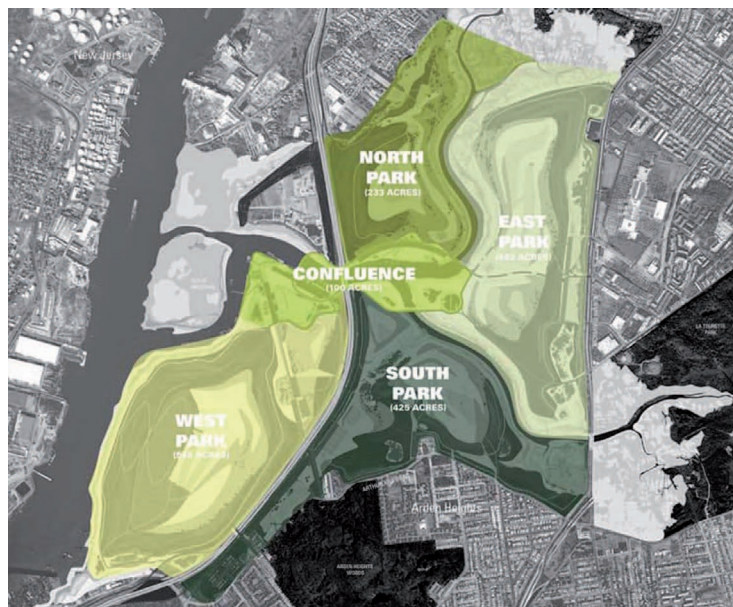
Source: author's archive

Fig. 7. The view of the well



Source: <http://www.nyc.gov/freshkills>

Fig. 8. The area of the Fresh Kills Park



Source: <http://www.fieldoperations.net/project-details/project/freshkills-park>

Fig. 9. The five districts of the future park. Master Plan (draft) author: landscape architect James Corner)

including many uncommon in the city. At 2200 acres (890 ha) Freshkills Park will be almost three times the size of Central Park and the largest park developed in New York City in over 100 years.

The Freshkills Park will consist of smaller annexes, suitable for the people living at the borders of the park. They will be able to use their facilities for day-to-day activities. Now under construction, The New Springville Greenway, connected by pedestrian paths with Richmond Avenue, the main road of Staten Island. In the near future, inhabitants can expect the opening of the North Park and South Park. This will be an extraordinary connection between the beauty of nature and artificial landscape, consisting of springs meadows and open views of the skyline of New York City.

The Freshkills Park consist of the five areas. The first is The Confluence – considered the “nucleus” of the park, the main place of four parts of the park, a crossroad connected with the West Shore Highway (the main access for tourists) and a place for vehicles coming to the park by the water. The remaining parts are: North Park, South Park, East Park and West Park.

The Freshkills Park Alliance [FreshkillsPark], a not-for-profit organization, is working as a partner with the City of New York to develop Freshkills Park. The Alliance helps ensure the park’s evolution and continuing operation by raising the necessary financial resources, promoting environmental research and ecological restoration.

The Freshkills Park is a platform for generating knowledge applicable to a broad range of urban environmental issues, at this site and others. They cover the gamut of reforestation, habitat restoration, soil production, water quality, alternative energy generation and even attitudes toward park usage. While part of the park is under construction, other areas will remain undeveloped. The city hopes to capitalize on this available, undeveloped land by collaborating on research plots and permitting access that is restricted to scientists, technicians and students. Initial projects are already underway with the United States Forest Service and CUNY’s College of Staten Island (CSI).

5. Conclusions

During the last twenty years the author has analyzed a dichotomic attitude of New York City authorities towards the area in question. On the one hand, they allowed the creation of the mountains of trash, on the other hand the combined efforts of scientists, ecologists and non profit organizations are trying to resolve the ecological problem. The landfill was in operation for fifty years for different reasons. Some of them were political and the author doesn’t need to discuss them.¹⁰ We can only regret how weak and unprotected the scientific realm is when compared with the aggressive world of business. Ian McHarg formulated his theory in the Seventies, when the landfill was working day and night.

¹⁰ The Fresh Kills was a part of the investigation called *Operation wasteland* – which was open in NYC at the end of twentieth century. The details of operation are described in R. Cowan and D. Century [2002].

The artificial landscape, which was created without architects, is now waiting for proper management (Figure 10). The Master Plan will convert the artificial mounds into a park [FreshkillsPark]. Freshkills Park is one of the major tourist plans to activate the borough of Staten Island. Currently, the shore near Staten Island Ferry Terminal is under construction and three large projects are implemented. The first is a vast shopping center adjacent to the Ferry Terminal. The second is a Ferris wheel to rival the wheels of London, Paris and Berlin. The two major tourist attractions are connected by an existing walkway along the NYC bay overlooking the NYC skyline. The last project is part of the St. George waterfront development project (light house point), a new hotel.



Source: author's archive

Fig. 10. The path of the Park 2015

In the future they will provide transportation between the Ferry Terminal and the Freshkills Park, at the South End of the Island. Staten Island is becoming an interesting place for tourists tired of an overcrowded Manhattan.

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