Safety and Feasibility of Swimming at Ossining Beach

Today, Ossining's waterfront is defined by utility - the train station and its parking lots, boatyards, Sing Sing Correctional Facility, industrial businesses. Amidst this, Henry Gourdine Park and Louis Engel Park are beloved community spaces that offer valuable resources and programs to the public at large. These spaces are the legacy of the waterfront that existed here for decades before 1970, when the waterfront included a public beach, known for a period of time as the Police Academy League (PAL) beach. This beach was alive and thriving, a popular place where children and families could swim.

According to Ossining Village Historian Dana White, racism played a key role in the closure of the beach in the late 1960s. The beach was beginning to be desegregated at the time of its closure, and it was widely rumored that the floating dock was set on fire in protest of the integration. After the floating dock that resided there was deliberately sunk, the beach remained closed at least in part due to the perception that the dock presented a dangerous underwater hazard. More than 50 years later, the community is interested in re-opening the beach, either seasonally or for events. This document summarizes the real and perceived challenges, vision, and history of the effort.

Riverkeeper's Water Quality Program has been monitoring water quality at Ossining Beach since 2006. In 2015, Ossining High School received funding to purchase testing equipment to process water samples on a weekly basis in non-winter months. The lab

equipment was paid for in part by money made available by New York State Sen. David Carlucci. Now four years later, the sampling by OHS in partnership with Riverkeeper continues to provide valuable information about water quality at the site. Data from other sources provides further detail on the site's suitability for swimming.

Underwater Hazards

In 2015, a dive team from the Croton-on-Hudson Police Department surveyed the water and found no debris present. This assessment was a successful joint effort by the Town of Ossining, the Village of Ossining, Riverkeeper, the Ossining Boat and Canoe Club, and SeaTow Central Hudson. Given the lack of underwater hazards, scientists and local officials alike are working together to see what needs to be done to reopen the beach.

Water Quality - Fecal Indicator Bacteria

Despite the proximity of the Ossining Wastewater Treatment Plant, data collected by Ossining High School students and Riverkeeper show that most samples meet water quality criteria recommended by the Environmental Protection Agency (EPA) for safe swimming.

To meet the criteria for swimmable water, bacteria levels in the samples cannot exceed certain amounts. There are three thresholds used to describe bacteria levels: geometric mean, Statistical Threshold Value and Beach Action Value.

The geometric mean (GM) is a weighted average of the bacteria levels in samples. The EPA recommends sampling on a weekly basis, and the GM of samples should not exceed 30 cfu/100 mL to be considered safe for swimming. The Beach Action Value is the level at which the EPA recommends that managers close a beach, and is 60 cfu/100 mL for a single sample.

In most years, fewer than 20% of samples have exceeded the Beach Action Value, but the proportion varies, and has reached as high as 44% for the OHS sampling in 2018. (Figure 1).

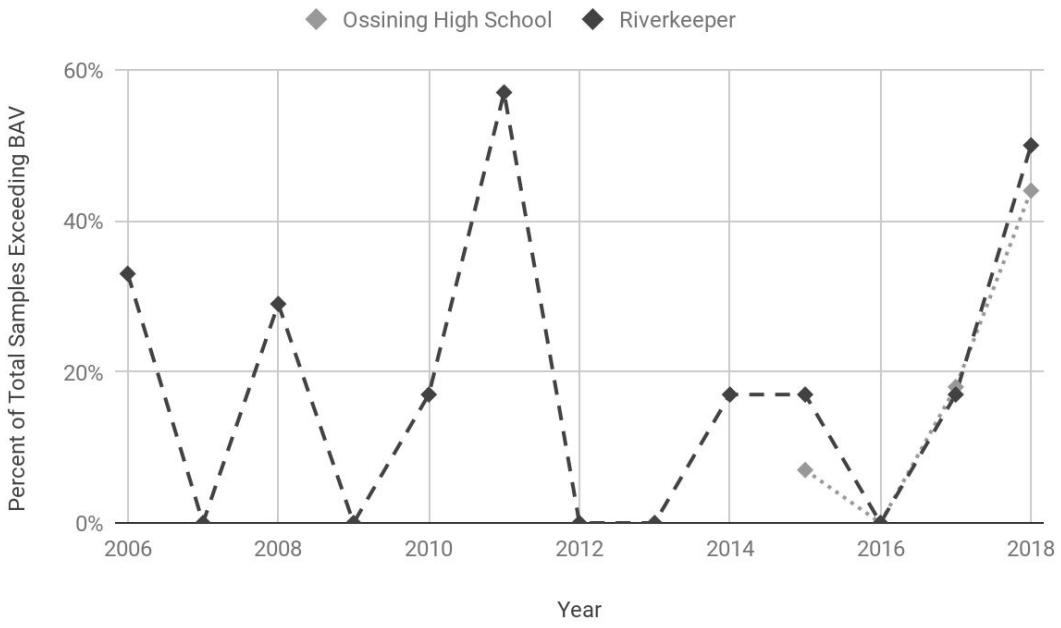

Figure 1: The percentage of samples exceeding the Beach Action Value by year at Louis Engel Park. Orange represents data collected by Ossining High School onshore while blue represents data collected by Riverkeeper offshore.

Riverkeeper's water quality monitoring data throughout the Hudson River Estuary shows that, broadly speaking, wet weather tends to increase contamination. This is also true at Ossining Beach (Figure 2), although exceedances of the EPA BAV threshold have also occurred during dry weather. Scheduling the use of the beach around seasonal weather patterns, and closing in instances of significant rain, could be undertaken to protect public safety.

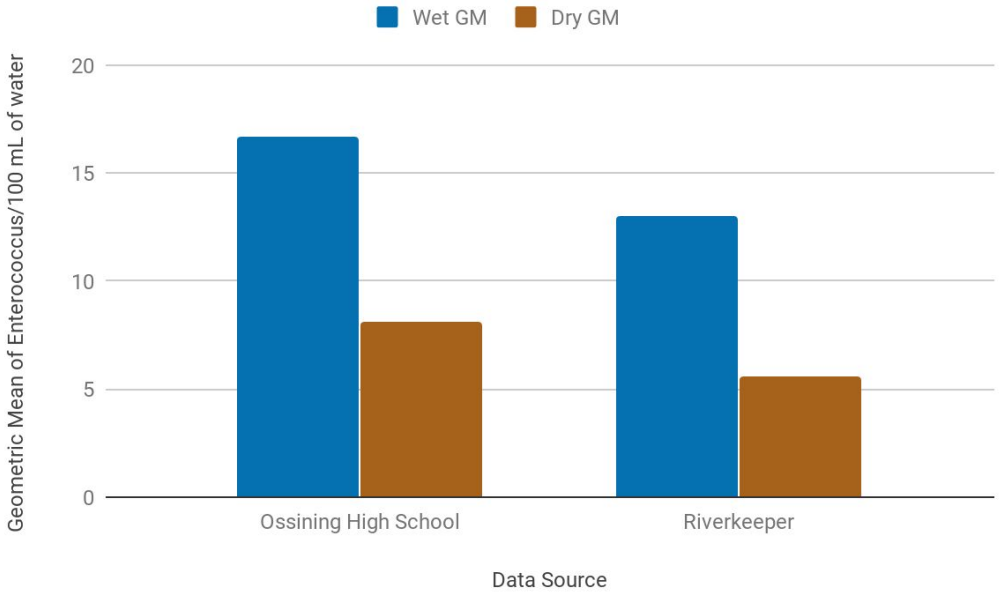

Figure 2: The geometric mean of *Enterococcus* per 100 mL of water during wet (blue) and dry (grey) conditions. The EPA criterion is 30 cells per 100 mL of water. Wet weather is defined as 0.25" precipitation or more on the day of sampling and three days prior. Ossining High School Data were collected starting in 2015, while Riverkeeper data were collected starting in 2006.

The statistical threshold value (STV) criterion is 110 cfu/100 mL of water, and the location is considered to need water quality improvements if 10% or more of the samples exceed the STV. The shoreline samples taken by OHS from 2015-2018 show that the site meets this EPA criterion, with approximately 7% of samples exceeding 110 cells/100 mL of water (Figure 3). Riverkeeper's data show that 5% of samples exceed the STV in dry weather, and 20% exceed in wet weather (12% overall, which exceeds the STV criterion). Concentrations of bacteria measured on these occasions can exceed the STV by 10-40 times, and these incidents of high-level contamination have been observed more frequently at Ossining Beach than at Kingston Point or Croton Point beaches. This suggests strongly that rain triggers contamination that can pose a health risk. Rain may cause contamination in a number of ways, including sewage system leaks or overflows; runoff of dog, goose or other animal wastes; and resuspension of contaminated sediment. Reducing impacts from rain-related runoff can improve water quality, and in the meantime, the beach could be managed to restrict access when risk is greater.

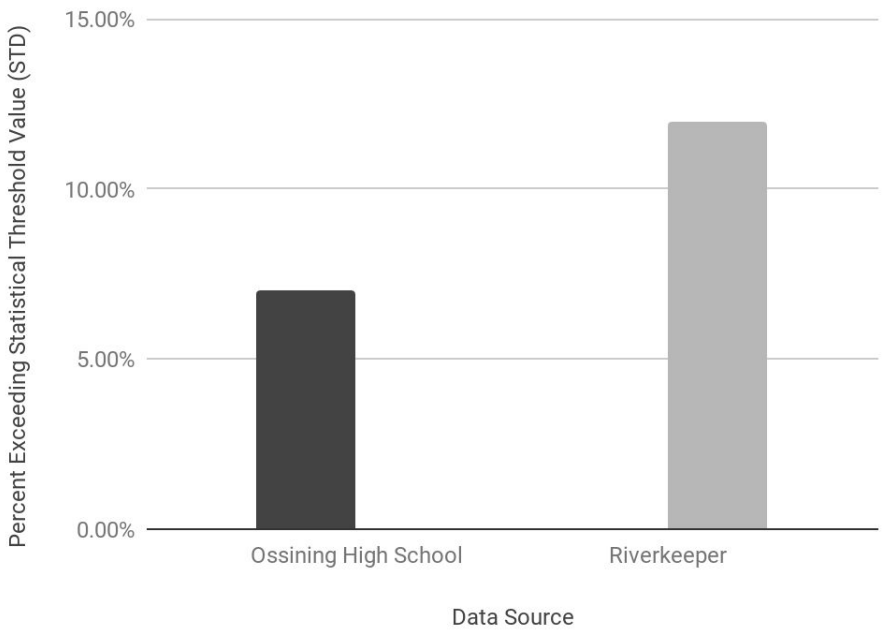

Figure 3: Percent of Ossining High School (orange, 2015-2018) and Riverkeeper (blue, 2006-2018) samples exceeding the EPA Statistical Threshold Value. The EPA considers a beach unsafe if more than 10% of samples are above the STV.

Summary of Water Quality Data:

Sampling Project	**Beach Action Value**	**Geometric Mean**	**Statistical Threshold Value**
What it measures	Suggests % of samples that would result in open beach days.	Measures "average" water quality.	Measures frequency of higher-magnitude contamination events.
Thresholds	Should not exceed 60.	Should not exceed 30.	No more than 10% should exceed 110.
Riverkeeper, 2008-2018	82% under 60	8.1 (passes)	12% (exceeds)
OHS, 2015-2018	84% under 60	10.5 (passes)	7% (passes)

Water Quality - NYS Department of Health Standards

The New York Department of Health (NYDOH) sets standards that complement EPA guidelines for safe swimming. DOH criteria include standards for proximity to wastewater treatment plants, water clarity, and soil composition.

Westchester County's Ossining Wastewater Treatment Plant (WWTP) is approximately 500 feet away from the beach, according to the Hudson River Estuary Program's 1999 beach report, and the outfall pipe itself is another 800 feet (approximately), based on verbal information provided by Town of Ossining and Westchester County staff. Thus, although the treatment facility is nearby, its outfall pipe is farther from the beach than the 750 feet required by NYS DOH.

Discharges from WWTPs are overseen by NYS Department of Environmental Conservation through the State Pollution Discharge Elimination System (SPDES) program. WWTPs are required to obtain a permit, which outlines limits on discharge volume and concentrations of potential contaminants. The proximity of a WWTP to a swimming site is very important because although normal discharges of treated effluent should not pose a risk to swimmers, upsets to the WWTP process can result in discharges that can pose a risk to human health. A predictive model can be developed to ensure the beach is closed when bacteria levels are unsafe; however, a plan must also be developed for the WWTP operators to notify beach managers if effluent may pose a risk to swimmers.

Water Quality - Turbidity

Water clarity has also been monitored at Louis Engel Park by both Riverkeeper and Ossining High School. Riverkeeper has also measured water clarity at Croton Point Park Beach, an official Westchester County Beach, since 2009. Water clarity is often tested using a black and white tool known as a Secchi disk. The lowest depth at which it can be seen is measured.

The average Secchi disk depth for Ossining was 79.5 cm, and the average for Croton Point was 87.3 cm from 2009 to 2018. The NYS DOH suggests a depth of at least 192 cm is ideal, but beaches may still be cleared for swimming despite a lack of water clarity. Croton Point Park for example, is still open to the public despite its turbidity being below the recommended criterion. Ossining Beach has clarity values similar to that of Croton Point Park beach.

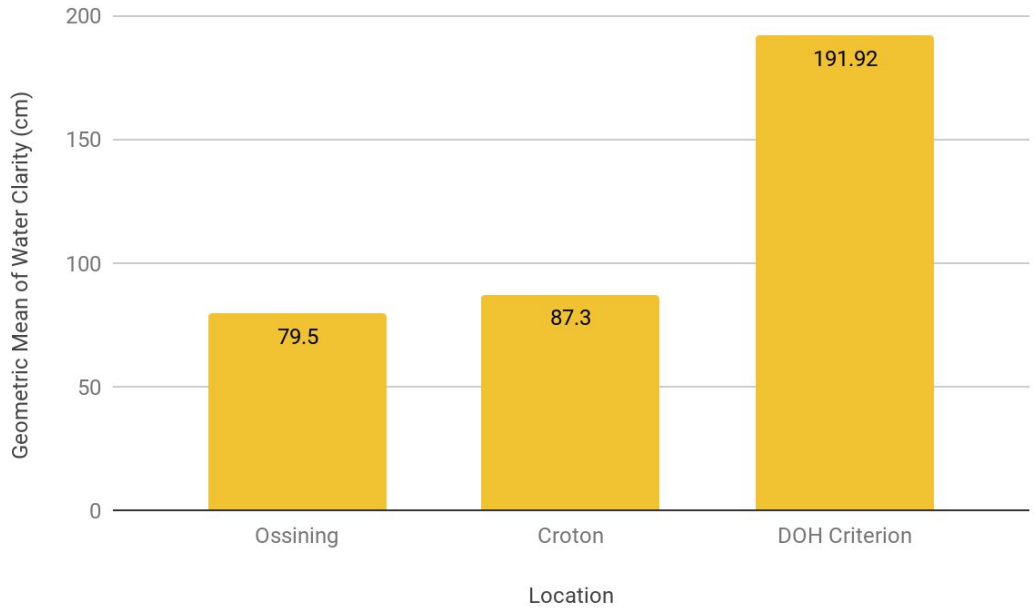

Figure 4: Water clarity (turbidity) at Croton Point Park and Ossining Beach compared to Department of Health criteria, measured in centimeters using a secchi disc. The greater the number, the clearer the water. Water at Ossining Beach is only slightly less clear than at Croton Point Park, but neither meets DOH criteria. Data is based off of monitoring by Riverkeeper from 2009-2017.

Other concerns and requirements include the water's fetch (length of water over which a given wind has blown) and the currents near the beach. Winds and current at this site are similar to Croton Point Park, which is a popular swimming beach. Although there are occasions where small boat traffic and winds from the northwest cause choppy wave condition, the southern bay at Louis Engel Park is well protected from waves and currents from the south by the peninsula housing the prison facilities according to a 2005 report by the NYS Office of Parks, Recreation and Historic Preservation and NYS Department of Environmental Conservation. The Department of Environmental Conservation reported that Croton Point has a channel current of 1.4 feet per second (fps), while in Ossining the channel current at the Park is 1.5 fps.

Comparison

Levels of fecal indicator bacteria and turbidity at Ossining Beach are comparable to those at area beaches already open to swimming (Figure 5).

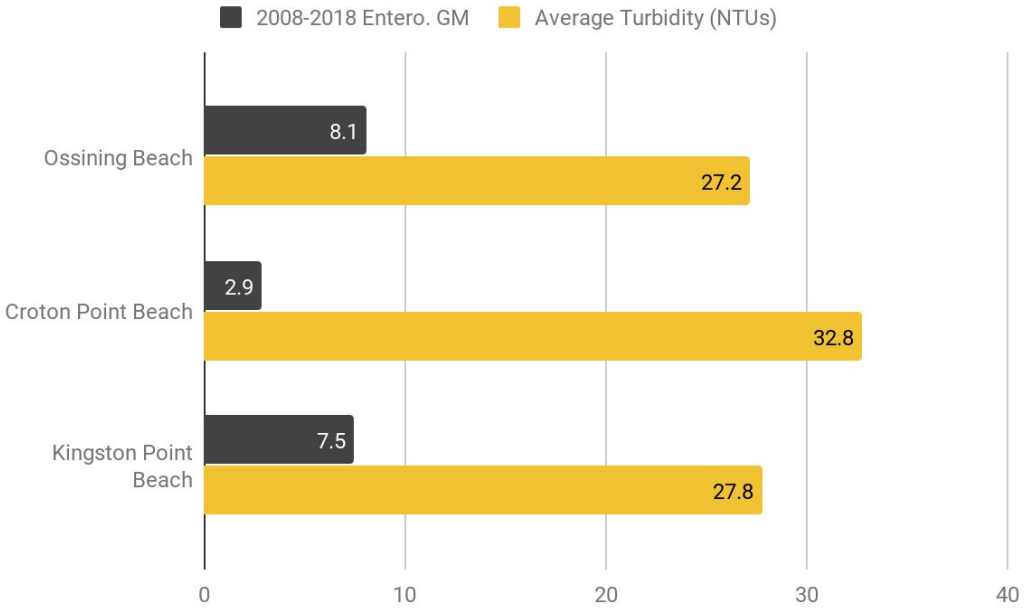

Figure 5: The geometric mean of enterococcus per 100 mL of water from 2008-2018 and turbidity at Ossining Beach, Croton Point Beach, and Kingston Point Beach. Data is from monitoring by Riverkeeper.

Cost

A number of costs will be associated with opening the beach, including insurance, lifeguards, policing and lifeguard expenses, amenities construction, maintenance, and safety equipment including lines with floats. Utilities costs are also of note, but unpredictable. Opening the site exclusively on a temporary or scheduled basis should reduce utilities and maintenance costs.

Odor and Other Concerns

Though not a safety concern, a distinctive sewage odor can sometimes be smelled near the treatment plant. Although it is unlikely that the odor is a result of discharge to the river, some swimmers may be reluctant to accept the beach as a result of the smell. The 2005 NYS report stated, “if airborne odor control becomes more effective, and the limited upland space can be resolved, Louis H. Engel Jr. Park would be a good swimming site.”

Other concerns include a need for community support of the project, limited upland space, and the past industrial use of the site. There is a tower and planned museum that could serve as a tourist attraction. The 2005 NYS report mentions that boaters sometimes get too close to swimming areas and become entangled in the protective

lines at Croton Point Park. There will be a need to ensure boaters remain separate from swimmers.

The beach at Louis Engel Park has great potential to grow as an asset for the Ossining community if it is reopened for swimming. The site's proximity to the Metro-North train station means this beach could be one of the most accessible points along the Hudson River. Particularly given the circumstances surrounding the beach's closure decades ago, reopening Ossining beach to provide space for people of all backgrounds to swim in the Hudson River would be an environmental justice victory in Ossining. Reopening the beach would also honor the memory of Henry Gourdine, a long-time Hudson River fisherman and African-American who meticulously built his own boats and was famous for his knowledge of the river. He lived on the Ossining waterfront for decades. Reopening a beach adjacent to the park in his name could introduce countless people to the river he loved.

The Town of Ossining is currently pursuing funding to create a plan for Louis Engel Park and Beach. Support from local organizations, leaders, and the community in Ossining will be critical in this ongoing process. Riverkeeper and Ossining High School will continue monitoring water quality at the beach and educating the public about the history and health of Ossining Beach.

Figure 6: Photo of Ossining High School Students taking a 100 mL sample of water to test for Enterococcus bacteria on August 15, 2018 .

Related Materials

NYS Office of Parks, Recreation and Historic Preservation and NYS Department of Environmental Conservation, Swimming in the Hudson River Estuary: Feasibility Report on Potential Sites, 2005. https://www.dec.ny.gov/docs/remediation_hudson_pdf/swimhudsonfearpt.pdf

If you have any questions or concerns, feel free to contact one of the people below:

Contacts

Nicholas Mitch (Riverkeeper) - nmitch@riverkeeper.org
Jen Benson (Riverkeeper) - jbenson@riverkeeper.org
Artie Carlucci (Ossining High School) - acarlucci@Ossining.k12.ny.us