

SECTION 7

ALTERNATIVE SWIMMING FACILITY OPTIONS

7.1 BEACH PROTECTION SYSTEMS

Potential Hudson River estuary swimming areas, primarily those sites located in the northern Class C section and southern estuary sites around Manhattan, may be affected by particulate matter and associated contaminants and pathogenic organisms, which could impair the health and safety of swimmers particularly after it rains, when sewers in some places can overflow. One technique currently used to maintain safe-swimming conditions at swimming facilities is a beach protection boom such as the Beach Protection System (BPS™) manufactured by Gunderboom, Inc., a custom-designed fabric boom, which is deployed around the perimeter of the swimming area to protect water quality and mitigate safety hazards from floating matter such as drift wood. The Gunderboom BPS™ is currently deployed at beaches in several tidally influenced locations including Sea Cliff Village Beach, Sea Cliff, New York.

In March 1994, an article in the Journal of Environmental Health (Guido et al. 1994) reported on the Westchester County Health Department's evaluation of a Gunderboom Beach Protection System™ (BPS™) at the Village of Mamaroneck in Westchester County. The boom installed at Mamaroneck Harbor Beach on Long Island Sound in 1992, reduced total and fecal coliform bacteria counts by 62%. Lawler, Matusky and Skelly Engineers LLP (LMS) evaluated the use of a Gunderboom Marine Life Exclusion System™ (MLES™) at the Lovett Generating Station on the Hudson River (LMS 2001) as a means of lowering ichthyoplankton entrainment in the cooling water intake. The report concluded that use of the Gunderboom MLES™ resulted in a significant reduction of entrainable organisms. The Lovett evaluation program has been instrumental in the development of a boom anchoring system capable of maintaining the boom in the tidal portion of the Hudson River and in confirming the effectiveness of an air burst cleaning system.

While beach protection systems such as the Gunderboom BPS™ would still require testing for use at selected Hudson River swimming sites, it does offer a technology which could maintain swimming waters at considerably higher quality than the surrounding river water, and also significantly reduce the potential impact on swimmers from boat wakes and tidal currents.

7.2 FLOATING POOLS

Floating pools were investigated as a possible solution for locations where natural beaches are unavailable or unacceptable for public swimming. Historic records from the 19th Century and early 20th Century were examined, which revealed that floating pools were once extensively used for public swimming in the Hudson River around Manhattan Island, drawing millions of swimmers annually (Figure 7-1).

Although it is unlikely that the 19th Century design would be acceptable today, it is possible that a smaller floating pool can be designed for use in the Hudson River on New York City's

waterfront, and possibly for other Hudson River locations that do not have favorable prospects for beaches. One concept would involve cribwork supported by flotation, open to the flow of river water. The pool would be totally dependent on river quality conditions. Swimming “cribs” suspended on piles are currently used for the group camps located on Harriman State Park lakes and are an example of this design concept, though they are smaller than what might be needed on the Hudson. A Hudson River floating “pool” (crib) would need to be designed to maintain correct water depth within all tidal ranges. A docking site with sufficient depth to accommodate all tide levels and wave conditions would be needed for this floating vessel. Winter storage would also be required. Support facilities could be located on the shore, a pier or on the floating structure. Utility connections to shore could be relatively simple.

The advantage of this design is that the public would actually swim in the river, though inside of a protected structure. Given good river water conditions and good circulation, water treatment would not be required. The disadvantage of this design is that contamination in the river would shut the facility down, and turbidity could impair operations or the aesthetic condition of the water in the pool.

Another version of this floating pool/crib could include a geotextile fabric (Gunderboom – like fabric) envelope surrounding the crib. The highly porous material would generally have sufficient interchange with the ambient water to maintain satisfactory water quality conditions and geotextile fabric would help filter the water, thus achieving a more aesthetically pleasing swimming experience. A pump could be incorporated in the design to aid water circulation if required. This system would also maintain good circulation even at slack tide. This option would reduce some of the uncertainty pertaining to water conditions.

A floating pool would face substantial regulatory hurdles due to potential impact on aquatic habitat (see section 6.4 Permit Needs). The viability of this concept merits further discussion and analysis with state and federal regulators.

7.3 HUDSON RIVER PARK PLAN REVIEW

The General Project Plan for development of Hudson River Park in Manhattan and the parks’ existing conditions were reviewed as part of this study. Hudson River Park development plans include two possible beach areas, one south of Pier 76 and one on the south side of the Gansevoort Peninsula. In addition to the beach sites, Hudson River Park also has several sites that could be developed to accommodate floating pools.

Coordination with the Hudson River Park Trust, the entity with jurisdiction over park properties, as well as modification of the park General Project Plan and approvals from the NYSDEC and USACE would be required before plans for floating pools within Hudson River Park could proceed. In addition, New York City regulations currently preclude the siting of bathing beaches along the Hudson River from the Harlem River to the Battery.

Other solutions will be required if swimming projects in the Hudson are to be advanced in this high demand area. The possibility of protecting a swimming site from pollutants from periodic

combined sewer overflow may be accomplished through the use of a geotextile fabric filter, such as the “Gunderboom”. The use of these innovative techniques to protect swimming sites during their operating season needs to be researched at this location, and the New York City Health Department would need to be contacted to determine if such alternative approaches could meet City regulations and standards. Possibly one initial component of this analysis would be to protect one or more small test areas on an experimental basis to see if suitable water quality can be maintained with the help of this type of seasonal protective barrier.

SECTION 8 ADDITIONAL STUDIES NEEDED

This Feasibility Study has determined that the development of public swimming facilities is a viable option at various locations along the Hudson River. The study also identified several specific sites where development of a beach is likely feasible, either in the near term or after specific issues are addressed. In some cases, further research of study is needed. The following is a listing of actions that may help to advance the development of swimming facilities along the Hudson River.

- Though erosion and sand deposition play important roles at all existing and potential Hudson River beaches, some swimming sites require special attention to this issue at this time. Among the existing beaches, Ulster Landing County Park has experienced this problem to the point that it must be addressed in the near term. Since beach erosion management requires analysis and remediation techniques that are uniquely focused on this resource, it may be practical to address the needs associated with this popular Hudson River swimming site as a part of any assessment of this issue at some of the new Hudson swimming sites proposed in this study. At Ulster Landing County Park as well as any other site, care needs to be taken to ensure preservation of the natural beauty and scenic character of the site.
- Due to the limited availability of site-specific water quality data, a comprehensive water quality survey is recommended for any site designated for development as a public swimming facility to determine the feasibility of developing that site from a water quality perspective.
- Two potential swimming sites, the Town of Bethlehem's Henry Hudson Town Park in Albany County and Schodack Island State Park in Rensselaer County, are in Class C waters, which would need to be reclassified to B in order for a beach to be established at these locations. This process would be initiated once a decision is made by NYSDEC or a third party to seek establishment of a beach there. A study of water quality would be undertaken to represent conditions during an entire summer swimming season, or year round. In addition, this water quality analysis should include an assessment of the additional capital requirements which would be needed at local treatment plants and CSO discharges and a review of opportunities to fund needed improvements as part of an overall public swimming initiative. Permit conditions for nearby sewage treatment plants will need to be analyzed.
- The vertical stone wall along the Nyack Beach shoreline requires significant maintenance in the near future. The southern 150 feet of this wall is protecting an open blacktop area, which offers little activity. A redesign of this section of the Park to eliminate part of the seawall, restore a groin, and restore the beach slope upland may bring a larger "beach" back to Nyack Beach in an area more suitable to the public. It is recommended that removal of a portion of the sea wall be evaluated as part of any planned maintenance of the sea wall.
- Hudson River Park. Tests of geotextile filtering materials will be needed to determine if

water quality issues, in particular combined sewer overflows, can be solved in this area with filtering fabric enclosures until such time as planned State investments in water quality improvements are completed. Additionally, a floating pool concept could be explored, but perhaps would encounter environmental constraints, which need to be investigated.

SECTION 9 REFERENCES

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