

## **Chapter 5.1: Project Description for the South Beach Drainage Plan**

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### **A. WATERSHED DESCRIPTION**

South Beach Watershed is the easternmost of the three Mid-Island watersheds. It is east of and adjacent to the New Creek watershed and is generally bounded by Medford, Fingerboard, Narrows Roads, and the Staten Island Expressway to the north, Lily Pond Road to the east, Burgher and Seaview Avenues to the west and Lower Bay to the south (see **Figure 5.1-1**). The watershed covers about 1,267 acres (2.1 square miles) of which about 40 acres is Bluebelt property (including lands that have been acquired or to be acquired), the majority of which is in the lower watershed including a large wetland and pond in the area bounded by Quintard Street on the west, Father Capodanno Boulevard on the south, Sand Lane on the east, and various streets on the north.

The South Beach watershed is mostly developed and the predominant land uses and zoning districts are residential with commercial uses and districts concentrated along Hylan Boulevard. The current development pattern results in an impervious coverage over about 33 percent of the watershed. The Staten Island Railway runs east to west across the northern portion of the watershed. Parkland is primarily in the lower watershed and includes portions of Ocean Breeze Park and the Franklin Delano Roosevelt (FDR) Boardwalk and Beach Park along the Lower Bay. In the upper watershed there is City parkland on the northeast side of Brady's Pond.

The topography of the watershed causes stormwater to flow from north to south. The upper watershed is characterized by Staten Island's terminal moraine, with elevations well over 100 feet above sea level. There are no remaining open stream corridors in the upper watershed, though remnant channels exist in a few locations. Existing surface water features of the upper watershed are Brady's Pond and Cameron's Lake. Brady's Pond is privately owned while Cameron's Lake is DEP Bluebelt property. Also in the upper watershed is Whitney Woods, which is a small, wooded site, located west of Cameron's Lake, where stormwater collects. This property is in the process of being acquired with funds from elected officials for inclusion in the Bluebelt.

The lower watershed is generally flat and at very low elevation—within five feet or less of sea level.

### **B. PROPOSED AMENDED DRAINAGE PLAN**

#### **STORMWATER MANAGEMENT PLAN**

##### *PROPOSED STORM WATER MANAGEMENT PLAN BUILD-OUT*

The proposed amended drainage plan includes storm sewers to collect runoff with BMPs at the points of discharge, with one new outfall to the Lower Bay from SBE-1C is proposed while two outfalls, one at Sand Lane and the other at Quintard Street, would have added barrels to accommodate projected increased flows under the proposed amended drainage plan (see **Figure 5.1-2b**). Total length of the proposed storm sewers is approximately 177,500 linear feet (about 33.6 miles). In addition, the proposed project calls for the continued operation of approximately

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52,800 linear feet (about 10 miles) of existing storm sewers including three existing outfalls to the Lower Bay. These existing outfalls would remain under the proposed amended drainage plan with tide-gate controlled outlets from Sand Lane, Lily Pond Road, and Quintard Street. One-way-flap tide gates in these outfalls allow discharge from the trunks to the Lower Bay when the water surface elevation in the sewers is above the tide. However, to prevent tidal inflow to the sewers, these gates close shut during high tide events.

**STORMWATER DRAINAGE PLAN OBJECTIVES**

As described in greater detail in Chapter 1.1, ‘Project Description of the Overall Program,’ there are a number of objectives to the proposed project including: to provide a comprehensive stormwater management plan that reduces local flooding through the installation of stormwater collection sewers and BMPs in a watershed that is largely unsewered; to reduce local flooding through lower watershed BMPs that are designed to detain storm flows that otherwise cannot drain to the Lower Bay during high tide events when the outfall tide gates are closed; to amend the current drainage plan so that street elevations remain as close to the existing street grade as possible; and to provide ecological enhancements in Bluebelt wetlands that are used for BMPs.

**PROPOSED BEST MANAGEMENT PRACTICES**

The proposed watershed BMPs are listed in **Table 5.1-1** and the locations are shown on **Figure 5.1-1**. A more detailed description of the proposed BMPs is provided below.

**Table 5.1-1  
Proposed BMPs in the South Beach Watershed**

<b>BMP Number</b>	<b>Size (ac)</b>	<b>Location</b>	<b>Drainage Area (ac)</b>	<b>Description</b>	<b>Function/Objective</b>	<b>Ownership/Jurisdiction</b>
SBE-1A: Quintard Street	18.6	Northeast of Quintard Avenue ROW, between Father Capodanno Boulevard and Patterson Avenue	586.0	Extended Detention Wetland	Stormwater detention and water quality enhancement	DEP Bluebelt/ DPR
SBE-1B: Sand Lane	23.2	Northwest of Father Capodanno Boulevard, between Sand Lane and McLaughlin Street	384.0	Extended Detention Wetland	Stormwater detention and water quality enhancement	DEP Bluebelt
SBE-1C: McLaughlin Street	0.6	Southeast of end of McLaughlin Street	1.5	Extended Detention Wetland	Stormwater detention, water quality enhancement and new ocean outfall	DEP Bluebelt, DPR
Proposed Lower Bay Outfall	±0.6	Between SBE-1c and the Bulkhead Line	1.5	Outfall to Lower Bay	Convey stormwater from the watershed to Lower Bay	DEP/NYCDOT/ DPR
SBE-2A: Windermere Road	0.2	East of Windermere Road, between West Fingerboard Road and Clove Road	60.0	Outfall and Forebay (Cameron’s Lake)	Velocity attenuation and sediment capture	DEP Bluebelt
SBE-2B: Allendale Road	0.2	West of Allendale Road, between West Fingerboard Road and Beverly Road	1.3	Outfall and Forebay (Cameron’s Lake)	Velocity attenuation and sediment capture	DEP Bluebelt
SBE-2C: Normalee Road	0.2	Normalee Road ROW, between end of Normalee Road and Allendale Road	65.0	Micropool Outlet/Riser Box (Cameron’s Lake)	Improved conveyance and sediment capture	DEP Bluebelt
SBE-3: Whitney Woods	1.2	Intersection of Whitney Avenue and Woodlawn Avenue ROW’s	10.8	Extended Detention Wetland	Stormwater detention and perimeter treatment	DEP Bluebelt

**Note:** DEP Bluebelt includes lands acquired by DEP or to be acquired.

**Source:** DEP, Hazen and Sawyer, January 2011.

### *BMP SBE-1A: Quintard Street*

BMP SBE-1A would be primarily located on Bluebelt property (lands acquired or to be acquired), with a few parcels also under the jurisdiction of DPR. This site is bounded by Quintard Street and Ocean Breeze Park to the southwest, Father Capodanno Boulevard (and BMP SBE-1C) to the southeast by McLaughlin and Vulcan Streets to the northeast (as well as the rear yard of residential properties fronting on Pearsall Street, and Patterson Avenue), and Lava Street and Agnes Place to the northwest (see **Figure 5.1-3** and **Figure 5.1-3b**). The principal objectives for this BMP are to provide some relief storage for high level flows from the Quintard Street trunk sewer and to provide a receiving area for drainage from local streets. The BMP consists principally of a large extended detention wetland that would be inundated during storm events thereby providing stormwater management, water quality and ecological benefits. The BMP would occupy about 18.6 acres and would handle storm flow inputs from a drainage area of about 586 acres (including the drainage area served by the Quintard Street trunk sewer) with drainage outlets proposed from Quintard, Lava, and Pearsall Streets. The outlet from Quintard Street trunk sewer would be created by installing a flow splitter in the existing Quintard Street trunk sewer that would divert stormwater to the proposed BMP. From that flow splitter, high-level flows in the trunk sewer would be diverted during extreme storm events into the BMP, thus preventing surcharging of storm sewers when the tide gates are closed. Thus, the storage volume to be provided at this BMP is critical to reducing local flooding.

Forebays, a key design feature of BMP SBE-1A, would be installed at each of the three proposed storm sewer outlets to the BMP. They would attenuate the incoming stormwater flows from the local sewers and capture sediment. The proposed BMP would also feature a permanent pool with extended detention (providing about 30 acre-feet of detention to a depth of 4.25 feet during large storm events) with a low flow channel to provide the conveyance function between the forebays and the BMP outlet. The outlet for BMP SBE-1A would be via a micropool and outlet pipe into the existing Quintard Street trunk sewer and would have a 200-foot-long weir and micropool to allow debris to settle out. A low-flow orifice would establish the permanent pool elevation for the BMP. The ultimate outlet for this BMP is the Lower Bay via the existing trunk sewer, which runs through Ocean Breeze Park and across Father Capodanno Boulevard. In addition, a low landscaped berm would be constructed around the northern border of the BMP to a height of approximately 6 to 36 inches above existing grade for the purposes of hydraulically separating this BMP from BMP SBE-1C, while containing storm flows within the BMP and protecting adjacent properties. Because of the lower elevations of McLaughlin Street, the berm along the northern perimeter of BMP SBE-1A is essential to hydraulically separate BMP SBE-1A from BMP SBE-1C (see the description below).

Maintenance access for the forebays at Mallory Avenue and Vulcan Street would be from the adjacent paved streets. Access to the forebay and micropool, both off of the mapped but unbuilt right-of-way of Quintard Street, would be via an existing dirt road that begins where the paved portion of Quintard Street ends at Patterson Avenue.

Currently the site of the proposed BMP is largely dominated by a common reed monoculture. It is proposed to improve the ecological and habitat values at this site through the proposed BMP landscaping that would increase wetland acreage (by about 4.6 acres) through the removal of fill as well as expand the open water system and create a improved wetland habitat by introducing a wide range of wetland plants for the purposes of diversifying and enhancing natural resource values and reducing the dominance of common reed monocultures at this site. Chapter 1.1, “Project Description of the Overall Program,” provides a description of the ecological design

objectives that are common to the proposed lower watershed BMPs. The proposed BMP would also reduce the potential spread of brush fires that occur periodically in the common reed monoculture.

### *BMP SBE-1B: Sand Lane*

BMP SBE-1B would be located entirely on DEP Bluebelt property (lands that have been acquired or to be acquired). The proposed BMP site is bounded by McLaughlin Street to the southwest and Father Capodanno Boulevard to the southeast. To the northeast, the site is bounded by rear yards of residential properties fronting on Quincy and Oceanside Avenues and Sand Lane. To the northwest, the site is adjacent to residential rear yards and Lansing Place, Wentworth Avenue and Andrews Street (see **Figures 5.1-3** and **Figure 5.1-3b**). This proposed BMP would occupy about 23 acres and would handle storm flow inputs from a drainage area of about 384 acres (including the contribution from the Sand Lane trunk sewer) with drainage outlets proposed from the ends of Andrews Street, Wentworth Avenue, Orlando Street, and Oceanside Avenue and Quincy Avenue (which would provide flow from the Sand Lane trunk sewer through a flow splitter).

The principal objectives for this BMP are to provide some relief storage for high-level flows from the Sand Lane trunk sewer and to provide a receiving area for drainage from local streets. The BMP principally consists of a large extended detention wetland that would be inundated during storm events, providing stormwater management, water quality, and ecological benefits. The proposed area of extended detention would incorporate the existing ponds shown in **Figure 5.1-3**. Forebays would be installed at each of the five proposed storm sewer outlets to the BMP to attenuate the incoming stormwater flows from the local sewers and capture sediment. The BMP would also feature a permanent pool with extended detention (about 30 acre-feet of detention to a depth of 4 feet during large storm events) with a low flow channel providing the conveyance function between forebays and the BMP outlet. The outlet for BMP SBE-1B would be via a micropool and outlet pipe into the proposed trunk sewer in Father Capodanno Boulevard, which in turn flows to the existing Sand Lane trunk sewer. Downstream of the tide gate chamber, outflow from this BMP would be conveyed to Lower Bay via the existing Sand Lane outfall. The BMP outlet into the sewer would be equipped with a 50-foot-long weir and a micropool to capture debris. A low-flow orifice would establish the permanent pool elevation for the BMP. In addition, a low landscaped berm would be constructed around the southwestern border of the BMP (to a height approximately 6 to 36 inches above existing grade) for the purposes of hydraulically separating this BMP from BMP SBE-1C, while containing storm flows within the BMP and protecting adjacent properties.

Maintenance access for the five forebays would be from the adjacent paved streets, and access for the micropool and outlet structure would be from a maintenance access way to be built atop the outlet pipe that would connect to Father Capodanno Boulevard.

Currently the site of the proposed BMP is largely dominated by a common reed monoculture, with fill material, two ponds, and little topographical variation. The ecological and habitat values at this site would be improved through the proposed BMP landscaping that would increase wetland acreage (by about 4 acres) through the removal of fill as well as expand the open water system and create a improved wetland habitat by introducing a wide range of native wetland plants for the purposes of diversifying and enhancing natural resource values and reducing the dominance of common reed monocultures. Chapter 1.1, "Project Description of the Overall Program," provides a description of the ecological design objectives that are common to the

proposed lower watershed BMPs. The proposed BMP would also reduce the potential spread of brush fires that occur periodically in the common reed monoculture.

### *BMP SBE-1C: McLaughlin Street*

BMP SBE-1C would be located on Bluebelt property (acquired or to be acquired) with a portion of the site on property under the jurisdiction of DPR. The proposed BMP site is located at the south end of the built segment of McLaughlin Street (see **Figure 5.1-3** and **Figure 5.1-3b**). This proposed BMP would occupy about 0.6 acres and would handle storm flow inputs from a small drainage area that is otherwise too low to drain into BMPs SBE-1A or SBE-1B. The principal objectives for this BMP are to be a receiving area for drainage from one local street by means of a small extended detention wetland with wetland shelves that would be inundated during storm events thereby providing stormwater management, water quality and ecological benefits. Central to the BMP would be the permanent pool and a low flow conveyance channel. A forebay would be installed at the end of the McLaughlin Street pipe to attenuate the incoming stormwater flows from the local sewers and capture sediment. In addition, the outlet would be equipped with a micropool to allow space for debris to settle and be removed by DEP maintenance forces. A low berm would be constructed around the BMP (to a height approximately 6 to 36 inches above existing grade) to hydraulically separate this BMP from the adjacent BMPs, while containing storm flows within the BMP and protecting adjacent properties. The proposed BMP outlet would flow into a proposed outfall to the Lower Bay (see the description below). The proposed outfall to the Lower Bay would run under DEP Bluebelt property, to the unbuilt Andrews Street right-of-way, across Father Capodanno Boulevard and across DPR property along the beach before ending in the Lower Bay (see the description below). Maintenance access for the forebay would be via the paved stub end of McLaughlin Street. Access for the micropool and outlet structure would be via a maintenance accessway built atop the outlet pipe that would connect to Father Capodanno Boulevard.

Currently the site of the proposed BMP is largely dominated by a common reed monoculture. It is proposed to improve the ecological value at this site through the proposed landscaping that would draw from a diverse planting palette to enhance the natural resource values through habitat diversity and reducing the predominance of common reed. Chapter 1.1, "Project Description of the Overall Program," provides a description of the ecological design objectives that are common to the proposed lower watershed BMPs.

### *BMPS AT CAMERON'S LAKE*

#### *BMP SBE-2A: Windermere Road*

BMP SBE-2A would be sited on the Cameron's Lake Bluebelt property. Located on the west shore of the lake off of Windermere Road, this proposed BMP would be a forebay situated at a relocated storm sewer outlet into the lake. That outlet handles drainage overflow from Brady's Pond, a privately owned water body to the north. The proposed forebay is 0.2 acres in size would receive drainage from a 60-acre area (see **Figures 5.1-5** and **5.1-5a**). The proposed BMP would replace the current outlet that is a deteriorated, partially submerged pipe extending across private property at the corner of W. Fingerboard Road and Windermere Road. The proposed forebay would attenuate the incoming stormwater flows and capture sediment thereby providing water quality benefits for Cameron's Lake. In addition, the proposed design includes bank stabilization in the vicinity of the BMP as well as an accessway for maintenance. Construction access from Windermere Road would remain post-construction and provide the maintenance access to the BMP for both regular maintenance as well as inspections.

### *BMP SBE-2B: Allendale Road*

BMP SBE-2B would occupy about 0.2 acres on the Cameron's Lake Bluebelt property. Located on the east shore of the lake off of Allendale Road, this proposed BMP would also be a forebay situated at a refurbished outlet that conveys stormwater into the lake. This outlet drains about 1.3 acres of storm sewers in a number of City streets. A small storm sewer is currently situated at this location and handles a number of catch basins in Allendale Road. Under the proposed BMP design, that existing outfall would be replaced with a new pipe, headwall, and BMP (see **Figure 5.1-5**). The proposed forebay would attenuate the incoming stormwater flows and capture sediment thereby providing water quality benefits for Cameron's Lake. In addition, the shoreline around the BMP would be stabilized with a maintenance accessway. The BMP would include the removal of fill and restoration of a wetland immediately south of the forebay. Construction access from Allendale Road would remain post-construction to provide maintenance access to the BMP for both regular maintenance as well as inspections.

### *BMP SBE-2C: Normalee Road*

BMP SBE-2C would occupy about 0.2 acres on the Cameron's Lake Bluebelt property. Located at the southern end of the lake, this proposed BMP includes a riser box outlet structure that would convey overflow from the lake to the storm sewer system. This structured outlet would provide a controlled overflow from the lake and would be designed to maintain the current water surface elevation (at 84 feet). The proposed riser box would include a micropool where debris would be captured before entering the sewer system. This proposed outlet would replace an existing undersized outlet located at the corner of Windemere Road and Clove Road. In addition to being undersized, that outlet is very difficult to maintain because of its inaccessibility on private property. In addition to providing a new and more accessible outlet structure, the proposed outlet is expected to allow for improved water quality in the lake because there will be more circulation in the lake from one end to the other (see **Figure 5.1-5**). Flows into the riser box would then be conveyed west via a sewer in Normalee Road, which in turn connects to an existing storm sewer in Clove Road. Construction access from Normalee Road would remain post-construction to provide access for regular maintenance and inspections.

### *BMP SBE-3: Whitney Woods*

BMP SBE-3 would be located on Bluebelt property referred to as Whitney Woods. Situated at the intersection of Woodlawn and Whitney Avenues, and including two mapped (but unbuilt) streets, the habitat north of Whitney Avenue is characterized by lower quality wetlands dominated by Japanese knotweed, an invasive exotic plant. The habitat south of Whitney Avenue is characterized by a mature woodland. The principal design objective for this 1.2 acre BMP is to function as a receiving area for drainage from local streets through a small extended detention wetland with wetland shelves that would be inundated during storm events thereby providing stormwater management, water quality and ecological benefits. The proposed BMP includes an extended detention wetland, primarily on that northern side of Whitney Avenue where the invasive weeds would be removed (see **Figure 5.1-6**). The proposed BMP would receive drainage from an 11-acre area via a storm sewer discharging at the stub end of Woodlawn Avenue. An outlet stilling basin at the discharge point would reduce velocities of incoming flows and capture sediment for removal by DEP Bluebelt field management forces. An intermittent channel in the middle of the extended detention wetland would connect the outlet stilling basin to the micropool. The outlet for the extended detention wetland would consist of a micropool and riser box at the stub end of Whitney Avenue where water now accumulates and drops into the existing storm sewer grate. That existing grate is subject to clogging by leaves and

other debris. The proposed micropool would reduce such clogging by providing a place where that material and debris could settle out and be removed by Bluebelt maintenance forces. Flows entering a riser box would then be conveyed west via an existing sewer in Whitney Avenue that in turn connects to an existing sewer in Parkinson Avenue. The structured outlet would provide a controlled flow of stormwater from the BMP and maintain its hydrology.

The proposed plan for the BMP would preserve the higher-value woodland at the site while targeting the excavation and clearing of areas dominated by invasive species (e.g., Japanese knotweed). The site perimeter would also be secured, and any encroachments removed.

Construction access from the stub ends of Woodlawn Avenue and Whitney Avenue would remain post-construction and provide access to the BMP for both regular maintenance as well as inspections.

#### *DRAINAGE PLAN IMPROVEMENTS AROUND BRADY'S POND*

Brady's Pond is a privately owned water body in the upper watershed near the intersection of Steuben Street and the Staten Island Expressway. DPR's Brady's Pond Park occupies the northeast corner of the pond shoreline and the immediate upland. Two storm sewers drain into the pond—one collects drainage from the Staten Island Expressway and is under the jurisdiction of NYSDOT; the other, off of Steuben Street, is maintained by DEP. The NYSDOT drain is equipped with an oil/grit separator, designed to improve water quality before discharge into the pond.

Under the proposed project, the DEP drain would be eliminated through the installation of storm sewers, thereby reducing contaminants that flow into the pond. Any proposal to remove the existing outfall to the pond would not move forward without first undertaking a thorough analysis of the potential impacts on the pond water quality and hydrology and, as necessary, providing stormwater flows that support the water quality and surface water elevations of the pond.

To further reduce pollutant loadings, the proposed amended drainage plan calls for storm sewers in City streets around the pond to direct storm water away from the pond to the extent possible. Three streets, however, are so sharply pitched toward the pond that gravity flow storm sewers cannot be designed to convey water away from the pond. These streets are Overlook Terrace and the stub ends of Hillcrest Terrace and Hillcrest Court. For these street segments, the drainage plan proposes no storm sewers. Instead, storm water would flow, as it does currently, down the gutters of these streets to the pond, uninterrupted by any intersections. Proposed catch basins at the bottom of the streets next to the pond would accept surface flow. The discharge points could be equipped with outlet stilling basins for sediment capture. An alternative to outlet stilling basins are infiltration basins that would collect the roadway runoff and allow for infiltration with underdrains that discharge into the pond; infiltration basins would provide additional filtering. Final design of the discharge mechanism would be determined by DEP based on site conditions.

#### *LOWER BAY OUTFALLS*

One new outfall is proposed as part of the South Beach drainage plan. It would drain the McLaughlin Street BMP SBE-1C and would be located completely on City property including DEP Bluebelt lands, Father Capodanno Boulevard (a City street), and the FDR Boardwalk and Beach Park (City parkland).

The proposed new outfall is necessary because low-lying streets in this sub-drainage area can only be drained with an outfall that is hydraulically separated from the rest of the drainage system. That outfall would be a 24-inch diameter pipe installed between BMP SBE-1C and the bulkhead line along the Lower Bay shoreline. In addition to the proposed new outfall, the outfalls from Quintard

Street and Sand Lane would have second barrels added that are 15 feet and 13 feet wide, respectively, to handle the increased flows projected under the proposed amended drainage plan. These added outfall barrels would be installed adjacent to the existing outfalls. Both existing outfalls also cross under Father Capodanno Boulevard and the DPR parkland.

Final engineering designs, which would include grading and topography, would more definitively establish the areas affected by the installation of the proposed outfalls. Because these outfalls involve the use of public parkland, the proposed designs would also be subject to DPR review and approval. DEP would also need to map 35-foot sewer corridors across DPR property to ensure future access for maintenance purposes for the new outfall. In addition, these outfalls would require permits from NYSDEC and USACE.

### *MODIFICATIONS TO STREET GRADES*

The proposed project would require the modification of street grades along certain street segments in order to provide positive drainage in the stormwater collection system and adequate street cover over the sewers. The street segments affected by these proposed modified street grades are presented in **Figure 5.1-7**. Along these street segments, the maximum change in grade would increase from between 6 inches and up to 24 inches above the existing street grade (the greater increases would be nearer the BMP outlets).

It is standard procedure to raise streets in low-lying areas in order to provide proper cover over the proposed storm sewers, and the City has done this on many projects. As part of the capital project design, site specific survey would be performed to determine the actual street elevation conditions for each individual project and all design techniques would be utilized to limit the raising of street grades to the maximum extent possible. During this process, DEP and DDC, the agency that would manage the project through design and construction, would meet with each individual homeowner prior to construction to limit the impacts of street grade changes and to assist homeowners in developing the best drainage solution possible.

### *PROPOSED STREET DEMAPPINGS*

A number of segments of mapped but unbuilt streets are proposed for demapping in order to accommodate construction of the BMPs and to consolidate Bluebelt property acquisitions and land transfers (see **Table 5.1-2**). ULURP actions are required to formally demap these unbuilt streets and would be implemented by DEP at a later date.

### *PROPOSED EASEMENTS*

There are no easements across private property necessary to implement the proposed South Beach drainage plan.

### **SANITARY SEWERS**

The proposed amended drainage plan also includes sanitary sewers (see **Figure 5.1-2a**). Implementation of future capital projects within the watershed would complete any remaining segments of sanitary sewers in accordance with the proposed amended drainage plan. The remaining sanitary sewer segments to be installed are limited and widely scattered throughout the watershed. Once installed, individual sanitary connections would then be made by lot owners who would need to decommission their septic systems. In addition, the proposed sanitary sewer plans call for increasing the size of some existing sewers from 8-inch to 10-inch in compliance with the current standard for minimum sewer size.

**Table 5.1-2**  
**Mapped but Unbuilt Streets**  
**To be Demapped Under Proposed Project (South Beach Watershed)**

BMP	BMP Location	Street Segment to be Demapped
SBE-1A	Quintard St.	Patterson Av. between Winfield St. & Pearsall St.
		Unpaved portion of Mallory Av. between Vulcan St. & Lava St.
		Quincy Av. between Pearsall St. & McLaughlin St.
		Quincy Av. between Quintard St. & Vulcan St.
		Quintard St. between Patterson Av. & Father Capodanno Blvd.
		Unpaved portion of Vulcan St. from Father Capodanno Blvd. to Patterson Av.
		Unpaved portion of Winfield St. between Patterson Av. & Father Capodanno Blvd.
		Reynard St. between Vulcan St. & McLaughlin St.
		Oceanside Av. between Vulcan St. & McLaughlin St.
SBE-1B	Sand Lane	Unpaved portion of Oceanside Av. between McLaughlin St. & Sand Lane
		Andrews St. from Quincy Av. to Oceanside Av.
		Quincy Av. between Andrews St. & Wills Place
		Unpaved portion of South Beach Lane from Lansing St. to end
		Wills Place from Quincy Av. to Oceanside Av.
		Wentworth Av. between Oceanside Av. & Quincy Av.
SBE-1C	McLaughlin St.	Unpaved portion of McLaughlin St. between Oceanside Av. & Father Capodanno Blvd.
SBE-2C	Cameron's Lake	Unpaved portion of Normalee Rd. between Clove Rd. & Allendale Rd.
SBE-3	Whitney Woods	Unpaved portion of Whitney Av. between Parkinson Av. & Woodlawn Av.
		Unpaved portion of Grasmere Av. between Grasmere Court & Leslie Av.

**Source:** DEP Staten Island Bluebelt Unit, January 2011.

The proposed amended drainage plan also calls for the relocation of two sanitary sewers where large extended detention ponds would be created as parts of BMPs SBE-1A and 1B. These sewers would have to be relocated or otherwise they would be submerged within the BMP and, therefore, very difficult to maintain or replace, when necessary. Both are in the mapped but unbuilt bed of Quincy Avenue, one between Wills Place and Wentworth Avenue and the other between Vulcan and Quintard Streets. Under the proposed amended drainage plan, the first segment, starting at Wills Place, would be relocated to the edge of the BMP along the rear lot lines of houses fronting on Lansing Street and then along the edge of Wentworth Avenue before reconnecting to the existing sanitary sewer. The second segment, starting at Vulcan Street, would be rerouted along the northeastern edge of the BMP, towards the southern edge near Father Capodanno Boulevard, and then back along Quintard Street edge of the BMP to reconnect with the existing sewer.

With the completed sewer network, all collected sanitary wastewater within this watershed would be provided secondary treatment at the Oakwood Beach WWTP prior to discharge to the Lower Bay.

### C. DRAINAGE PLAN CONSTRUCTION PHASING

Due to the interconnected hydrology of the watershed, constructed improvements, such as sewers or BMPs, have the potential to impact downstream hydrology and potential flood risk. This is particularly the case if additional conveyance is provided without increased flood storage. Given these important phasing considerations, construction is anticipated to proceed as follows.

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In the lower watershed, adequate detention must be provided before the relief sewers connect to the trunk sewers in Sand Lane and Quintard Street. The detention in SBE-1A and -1B would provide the relief against surcharging and allow the sewers to be built in low-lying neighborhoods near the wetlands. The McLaughlin Street BMP (SBE-1C) must be constructed along with SBE-1A and -1B. Therefore, the recommended construction sequence is to first build the entire SBE-1 complex (i.e., SBE-1A, -1B, -1C). Once this is complete, the tributary storm sewer network could be completed without concern that the drainage system would not function as designed. The upper watershed BMPs SBE-2 through SBE-3 would serve independent drainage areas and may be constructed at any point. \*