A. INTRODUCTION

The subject of this Fair Share Analysis is the proposed construction of the Sims Municipal Recycling of New York, LLC ("Sims") Materials Recovery Facility (MRF). The proposed MRF would be located on the 30th Street Pier in the South Brooklyn Marine Terminal (SBMT) in the Sunset Park section of Brooklyn. The City's Criteria for the Location of City Facilities (the Fair Share Criteria) are applied when the City proposes an action that involves the siting of a new facility, a "significant" expansion or reduction in the size of an existing facility, a substantial change in the facility's use, relocation of a facility, or closure of a facility that is not replaced at another location. The proposed project would result in the construction of a new MRF—a new facility—and thus requires application of the Fair Share Criteria.

This Fair Share Analysis addresses the criteria established in the New York City Department of City Planning (DCP) document entitled "Fair Share" Criteria: A Guide for City Agencies. These criteria are intended to guide the siting of city facilities, and further the fair distribution of city facilities among communities. This analysis addresses Article 4 and Article 6, Sections 6.1, 6.2, 6.3, and 6.4, of the Criteria, which are the sections relevant to the siting or expansion of a regional waste management facility.

B. DESCRIPTION OF THE PROPOSED MRF

Sims is seeking a city-leasing agreement with the New York City Department of Small Business Services (SBS) for the use of the 30th Street Pier, located in Sunset Park, Brooklyn, as an MRF. The site (Block 662, part of Lot 1) is within the SBMT and is located west of Second Avenue roughly between 29th Street and 31st Street along the Gowanus Creek inlet. The site comprises approximately 499,000 square feet (11.45 acres) and is currently used by the New York City Police Department (NYPD) as a vehicle impoundment lot. Materials to be handled at the proposed facility would include MGP, paper, and certain scrap metal.

The proposed project would fulfill several important goals established by the City. As described below, the proposed project would:

- Realize a central component of the City's recycling initiative as set forth in the City's Solid Waste Management Plan (proposed in draft form in 2004 and approved by the City Council and the New York State Department of Environmental Conservation [DEC] in 2006);
- Expand the City's marine-based recycling infrastructure through intra-city movement of materials;
- Minimize area-wide truck trips by utilizing barge transport and allowing for potential rail transport;
- Create a new tipping location for New York City Department of Sanitation (DSNY) collection trucks that is strategically located for certain Brooklyn districts and dramatically

reduce DSNY collection truck vehicle miles traveled ([VMTs] estimated in excess of 200,000 VMTs per year);

- Develop a state-of-the-art recycling infrastructure to support the City's recycling program within the City. This would provide an important element of control over this essential infrastructure and create the jobs and related economic development associated with this facility; and
- Support the goal of redeveloping SBMT as set forth in the New York City Economic Development Corporation (EDC)'s Strategic Plan for the Redevelopment of the Port of New York (Strategic Port Plan). The project site is well suited for marine transport, has the capacity for future rail linkages, and is located in an area buffered from residences and designated for heavy industry under zoning.

The project site has already been identified for industrial redevelopment as part of EDC's Strategic Port Plan, which serves as a blueprint for the maximization of the City's maritime investments over the next 20 years. Part of EDC's long-term mission is to strengthen the City's established industrial neighborhoods, such as Sunset Park, by making them attractive locations for businesses. The Strategic Port Plan outlines a series of short- and long-term capital investments for SBMT facilities, and several projects are currently being advanced, including renovations to pier sheds, rail track improvements, and installation of an on-dock rail yard. This area has a history of industrial use and is considered an appropriate site for programs and facilities to improve New York City's port infrastructure. The waterfront project site is ideally suited for maritime transportation because it offers the shortest sailing time to the open ocean of any port facility in New York and New Jersey. The site also has the potential for future rail freight handling that would allow for intermodal movement of material; this would result in fewer truck trips through the City's street network and their associated effects on infrastructure and roadway congestion.

Since the 1960s, no new waste disposal facilities have been constructed in New York City. Municipal incinerators—once used to handle portions of the City's waste stream—dwindled in number from 11 in 1964 to none in 1994. Six landfills, filled to capacity, were closed between 1965 and 1991, and the one remaining landfill—Fresh Kills in Staten Island—was finally closed in 2001.

In response to and in anticipation of these circumstances, recycling began in New York City as a voluntary program in 1986. In July 1989, with the passage of Local Law 19, recycling became mandatory. Collection of certain recyclable materials was phased in and by 1997 was established throughout the City. For budgetary reasons following the September 11 attacks, the recycling program experienced temporary cutbacks in July 2002, but in April 2004 normal service was restored. All residents, schools, institutions, agencies, and commercial businesses must recycle. New York City residents and certain institutions receive DSNY trash collection and curbside recyclables collection. Residents and institutions are required to separate and set out for collection two distinct streams of recyclable materials: Metal/Glass/Plastic (MGP) and paper. Once collected, DSNY delivers MGP and paper to private companies that are responsible for processing and marketing these materials.

In September 2004, New York City announced that it had selected Sims through an RFP process for a 20-year contract to receive, process, and market all of the MGP and a portion of the paper collected by DSNY through its curbside recycling program. As part of the proposed contract, Sims agreed to build a modern recycling facility in the City. This long-term contract allows Sims

to make the capital investment necessary to develop a more modern, marine transport-based infrastructure for processing the City's recyclable materials.

The City's Solid Waste Management Plan (proposed in draft form in 2004 and approved by the City Council and DEC in 2006) outlines the City's policies and plans for handling municipal waste for the next 20 years. One key component of the plan includes developing a materials processing facility at the project site. Under the plan, Sims would lease the parcel from the SBS and privately finance construction of the facility, while DSNY would contribute capital funds for dredging and pier improvements at the site.

Another goal of the Solid Waste Management Plan is the equitable distribution of waste handling and recycling facilities throughout the City. DSNY trucks coming to the project site would serve certain portions of Brooklyn under the curbside recycling program. This geographic area, shown in Figure 5 of the EAS, would include Brooklyn Community Districts 2 and 5 through 18. Barge transport would be used to transport the recyclable materials coming from other areas, resulting in less truck traffic on regional roadways. Approximately 75 percent of the recyclables would be delivered by barge to the facility, and approximately 65 percent (principally glass and ferrous metals) would leave post-processing via barge, with the remainder (principally plastic and residue) leaving by truck. DSNY trucks collecting curbside recyclables in the Bronx would tip this material at an existing Sims facility in the Bronx, from which it would be transported by barge to the project site. DSNY trucks collecting curbside recyclables in northern Brooklyn and Queens would tip this material at Sims' facility in Long Island City, from which it would be transported by barge to the project site. DSNY trucks collecting recyclables on Staten Island would deliver the material to Sims' facility in Jersey City, from which certain recyclables could be barged to the project site. DSNY trucks collecting recyclables in Manhattan would either deliver materials to a new Marine Transfer Station (MTS) on the Gansevoort Street Peninsula/Pier 52 (Gansevoort) as proposed in the Solid Waste Management Plan, or—as they do now—to Sims facilities in the Bronx and Jersey City. DSNY trucks collecting curbside recyclables from southern Brooklyn would tip their material directly at the SBMT facility.

Individual but connected buildings would be constructed for MGP and paper unloading, MGP processing, bale storage, and ferrous metals. Additional space would be provided for employee and administrative services, and a visitor/education center. Waterborne movement of material would be accommodated along the south side of the site. This would include an enclosed barge shed and tie-up areas. Parking for employees would be provided by 65 spaces along the east side of the site.

The facility would also include an education center for school groups and visitors. It would be a separate building located at the west end of pier, allowing for views of the Harbor. Most visitors are expected to be school children from New York City public schools, although a wide range of visitors is expected, including domestic and foreign government officials, private school groups, and environmental and civic organizations. School children would arrive in buses and be directed to a separate school bus parking area adjacent to the visitor center. Vehicle parking spaces would also be provided for visitors not arriving by bus. The visitor center would be designed to accommodate at least two school groups at a time and would include educational, interactive exhibits suitable for children of varying ages. Educational materials would be designed to allow visitors to learn about recycling in general, the New York City recycling program in particular, and the recycling activities that occur within the Pier. A fully enclosed walkway and viewing corridor would allow students and other visitors to watch recycling operations from a safe and controlled environment.

C. APPLICATION OF FAIR SHARE CRITERIA

ARTICLE 4: CRITERIA FOR SITING OR EXPANDING FACILITIES

4.1(A) COMPATIBILITY OF THE FACILITY WITH EXISTING FACILITIES AND PROGRAMS, BOTH CITY AND NON-CITY, IN THE IMMEDIATE VICINITY OF THE SITE.

The purpose of this criterion is to discourage the placement of facilities on sites where they would be incompatible with surrounding uses. The study area for the assessment is 400 feet from the project site.

The MRF is proposed for construction on the 30th Street Pier in the South Brooklyn Marine Terminal in the Sunset Park section of Brooklyn (Community District 7). The project site is located in an M3-1 zoning district, which permits heavy manufacturing uses. The area within 400 feet of the project site is zoned entirely for manufacturing uses, and is also within the M3-1 zoning district (see EAS Figure 4). Most of the above-water portion of the 400-foot study area is used for vehicle impoundment by NYPD, which will be relocated as part of another City project. There are no neighborhood-oriented facilities (such as libraries, parks, or schools, or other City facilities or programs) within 400 feet of the project site, although there is a Federal Correctional Facility along Second Avenue.

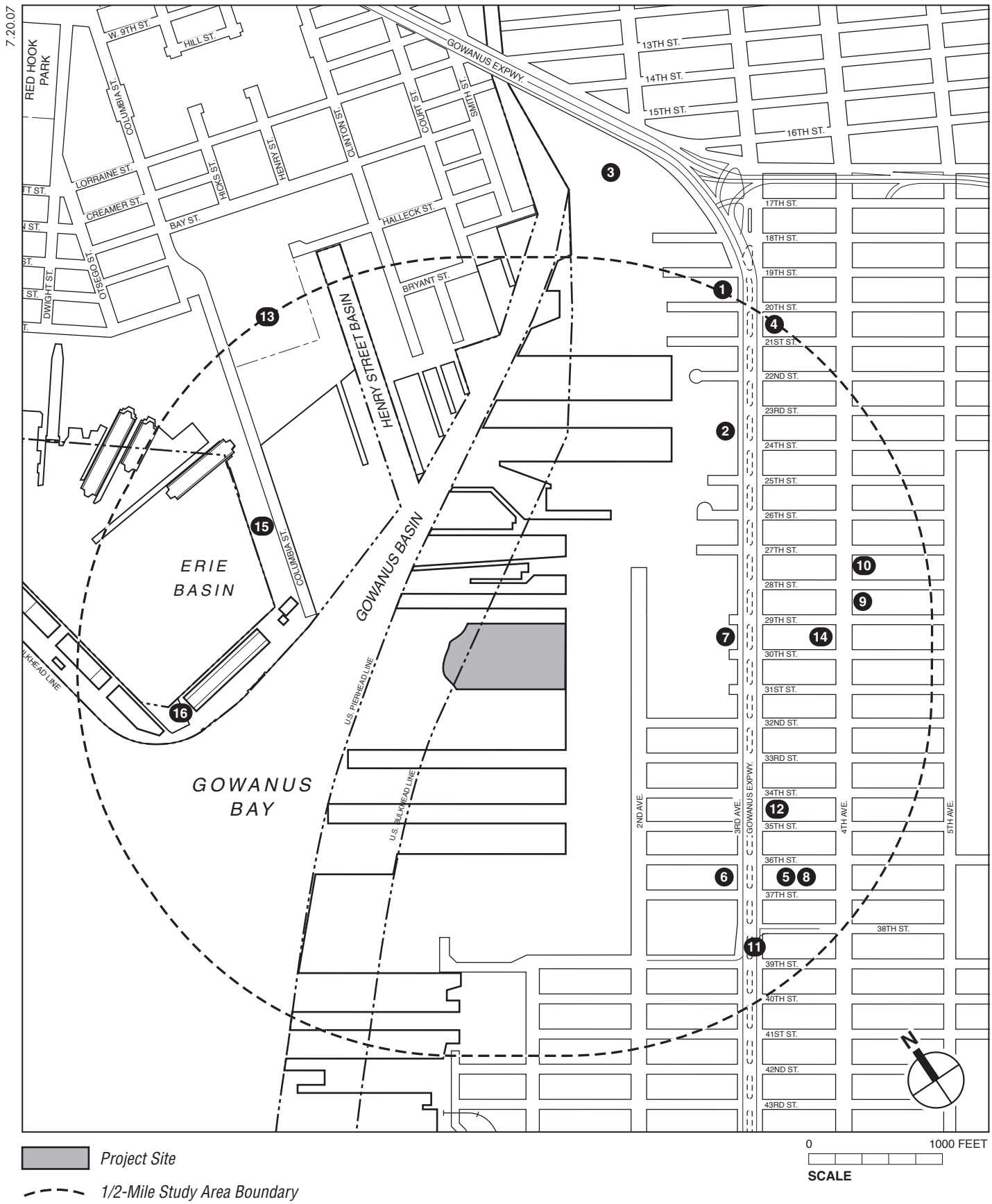
The MRF would be located in the context of the larger industrial area surrounding the site. The Environmental Assessment Statement (EAS) submitted in conjunction with this Fair Share Analysis determined that there would be no significant land use, zoning, noise, odor, or air quality impacts resulting from the construction and operation of the MRF. Therefore, the proposed project would not conflict with existing facilities or uses in the immediate surrounding area.

4.1(B) EXTENT TO WHICH NEIGHBORHOOD CHARACTER WOULD BE ADVERSELY AFFECTED BY A CONCENTRATION OF CITY AND/OR NON-CITY FACILITIES.

The purpose of this criterion is to assess whether the proposed site is located in an area where facilities are already concentrated, whether the proposed facility would contribute to such a concentration, and if so, whether such a concentration would have an adverse effect on the surrounding neighborhood. The study area for the assessment is ½ mile from the project site.

Within a ½-mile of the project site, the predominant zoning designation is M3-1, the same manufacturing zoning designation as the project site itself. In the eastern portion of the study area, there is an area of M1-2D zoning, which is a manufacturing district that allows for residential uses with authorization of the City Planning Commission (CPC). East of the M1-2D zoning district is an R6 residential district, with one small area between 24th and 28th Streets and Fourth and Fifth Avenues zoned M1-1D. The zoning designations discussed above are reflected in the area's land uses. The area has a mix of manufacturing and residential uses with ground-floor retail uses located along the avenues.

An inventory of City and non-City, neighborhood (facilities that predominantly serve the local community) and non-neighborhood (facilities that serve a more regional community) facilities was undertaken within this ½-mile study area (see Figure E-1 and Table E-1). The ½-mile study area includes portions of Brooklyn Community Districts 6 and 7. With the exception of the Federal Correctional Facility, Hamilton Avenue MTS, a New York Power Authority peaking



Neighborhood and Non-Neighborhood Facilities
Community Districts 6 and 7

Figure E-1

facility, and several rehabilitation centers and institutional uses, these facilities serve the local community and do not constitute an adverse concentration of facilities.

The ½-mile study area also includes a number of private commercial businesses and small-scale industrial establishments, including plumbing and electrical, publishing, furniture, and auto-related establishments. These are not facilities for fair share purposes and are not listed in Table E-1. As discussed in the EAS prepared for this project, no potential significant land use, zoning, traffic, odor, noise, or air quality impacts are expected to occur with the proposed project (see 6.1(d) and 6.4 below). For these reasons, no potential significant adverse neighborhood character impacts are expected.

Table E-1
Neighborhood and Non-Neighborhood Facilities
Brooklyn Community Districts 6 and 7—1/2-Mile Study Area

Map No.	Block	Lot	Use	Address	Agency*	Comm. Dist.
Industrial Facilities						
2	644	1	New York Power Authority 23rd Street Power Plant	Third Ave. btwn. 23 and 24 St.	NYPA	7
3**	625	Part of 2 and 250	Hamilton Avenue Converted Marine Transfer Station	486 Hamilton Avenue	DSNY	7
Non-Neighborhood Facilities						
4	639	60	South Brooklyn Medical Administrative Services	685 Third Avenue	OASAS	7
5	696	31	Steinway Day Treatment Program	355 37th Street	NYSOMH	7
6	695	46	Turning Point (homeless shelter)	968 Third Avenue	DHS	7
7	667	1	Federal Correctional Facility	100 29th Street		7
Neighborhood Facilities—Schools, Libraries						
8	696	31	P.S. 371 Lillian L. Rashkis School	355 37th Street	DOE	7
9	669	1	P.S. 172	825 Fourth Ave.	DOE	7
10	661	5	Early Childhood Center at St. Rocco's Church	783 Fourth Ave./226 27th Street	DOE	7
Neighborhood Facilities—Community Gardens, Parks, and Playgrounds						
11			Green Street	Third Ave. and 39 St.	DPR	7
12	688	61	Playground	Third Ave. btwn. 34th and 35th St.	DPR	7
13	614		Red Hook Recreation Area	Bounded by Columbia Street, Bay Street, and Clinton Street	DPR	6
Neighborhood Facilities—Other						
14	668	29	72nd Precinct	830 Fourth Avenue	NYPD	7
15	612	205	NYPD Vehicle Maintenance lot	798 Columbia Street	NYPD	6
16	612	250	NYPD Outdoor Tow Pound	5 Erie Basin	NYPD	6

Notes:
See Figure E-1.
* DSNY (Department of Sanitation of New York), NYPA (New York Power Authority), OASAS (New York State Office of Alcohol and Substance Abuse Services), DOE (New York City Department of Education), DPR (New York City Department of Parks and Recreation), DHS (New York City Department of Homeless Services), NYSOMH (New York State Office of Mental Health), NYPD (New York Police Department).
** Located just outside of the ½-mile study area boundary to the north.
Sources: Brooklyn Community District 6 Profile, NYC Department of City Planning, December 2005; Brooklyn Community District 7 Profile, NYC Department of City Planning, December 2005, Atlas of City Property 2004

4.1(C) SUITABILITY OF THE SITE TO PROVIDE COST EFFECTIVE DELIVERY OF THE INTENDED SERVICES. CONSIDERATION OF SITES SHALL INCLUDE PROPERTIES NOT UNDER CITY OWNERSHIP, UNLESS AGENCY PROVIDES A WRITTEN EXPLANATION OF WHY IT IS NOT REASONABLE TO DO SO IN A PARTICULAR INSTANCE.

Several alternatives were considered as a result of a Request for Proposals issued by DSNY in 2003 for services to accept, process, and market MGP and paper recyclables. In addition to the Sims proposal, DSNY received two other proposals deemed responsive, but lacking certain advantages afforded by the Sims proposal. The first of these alternatives entailed the utilization of two locations on Staten Island to receive MGP; however, the delivery of MGP from the rest of the City to Staten Island presented logistical and transport problems. The second alternative offered two Brooklyn sites in close proximity to each other, but DSNY delivery to these locations would be less efficient compared with the Sims facilities, which are more evenly distributed in the City.

Once Sims had been selected, several site alternatives for the proposed facility were considered and evaluated, but ultimately determined to be less desirable than the Sunset Park site. Sims' Claremont facility in Jersey City was considered, but it was determined that a location within New York City was preferable to maintain control of an important infrastructure asset. In addition, the Sunset Park site was selected because it is owned by the City. Sims' Bronx site was also considered as a potential site for the MRF. This would have required relocating the existing Sims scrap metal operation to another location, and at approximately 5 acres the site was not large enough. In addition, the Bronx site did not have the same excellent capacity for waterborne transport of materials that the Sunset Park location has. A site in Staten Island presented issues of transportation and proximity to Sims' Jersey City facility and was not considered ideal. A fourth site, on the Erie Basin in Red Hook, would have required the demolition and removal of existing structures on the site and was dropped from consideration.

As described above, the project site is optimally located on the Brooklyn waterfront in an M3 zone, where it can make use of barges to bring recyclables to the site, thus limiting additional truck traffic in the surrounding neighborhood. Moreover, the site is already owned by the City and, therefore, the time and resources necessary to acquire a site would not be required. In addition, when the locations of other Sims receiving facilities are taken into consideration, the project site provides strategic additional geographic distribution of receiving facilities to minimize DSNY collection truck travel.

4.1(D) CONSISTENCY WITH THE LOCATIONAL AND OTHER SPECIFIC CRITERIA FOR THE FACILITY IDENTIFIED IN THE STATEMENT OF NEEDS OR A SUBSEQUENT SUBMISSION TO THE BOROUGH PRESIDENT.

The Solid Waste Management Plan Final Environmental Impact Statement (FEIS) identified and analyzed the need for the MRF as part of the City-wide Solid Waste Management Plan. This plan was reviewed by the Borough President. In addition, throughout the EIS process, the Brooklyn Borough President and Community Boards 6 and 7 were kept informed of the project (see 4.2 below). Siting issues are discussed in 4.1(c), above.

4.1(E) CONSISTENCY WITH ANY PLAN ADOPTED PURSUANT TO SECTION 197-A OF THE CHARTER.

The only plan that has been adopted pursuant to Section 197-a for the project site area is the Local Waterfront Revitalization Program (LWRP). The LWRP establishes the City's policies for development and use of the waterfront and provides a framework for evaluating activities proposed in the coastal zone. The applicable policies were reviewed, and the analysis and its findings are presented in Attachment A of the EAS. These assessments concluded that the proposed action would be consistent with all 10 policies of the LWRP.

4.2(A) CONSIDER THE MAYOR'S AND BOROUGH PRESIDENT'S STRATEGIC POLICY STATEMENT, THE COMMUNITY BOARD'S STATEMENT OF DISTRICT NEEDS AND BUDGET PRIORITIES AND ANY PUBLISHED DEPARTMENT OF CITY PLANNING LAND USE PLAN FOR THE AREA.

Mayor Bloomberg has not issued a Mayor's Strategic Policy Statement. No specific mention of the proposed MRF was made in the Brooklyn Borough President's Strategic Policy Statement (2002), though the Statement did call for greater community participation in the drafting of the Solid Waste Management Plan. The proposed MRF was mentioned in Community Board 7's Statement of District Needs (Fiscal Year 2007). The Statement affirmed the Community Board's support for the facility, but expressed a desire for tangible benefits to be conferred to the Sunset Park community. The Statement also noted that commitments had been received from DSNY and Sims to create a community advisory committee for the facility, and to use environmentally friendly technology, local hiring, and a recycling education center.

The proposed facility is located in a designated Significant Maritime and Industrial Area, as well as the Southwest Brooklyn Industrial Business Zone.

4.2(B) CONSIDER ANY COMMENTS RECEIVED FROM THE COMMUNITY BOARDS OR BOROUGH PRESIDENTS AND ANY ALTERNATIVE SITES PROPOSED BY A BOROUGH PRESIDENT PURSUANT TO SECTION 204(F) OF THE CHARTER AS WELL AS ANY COMMENTS OR RECOMMENDATIONS IN ANY MEETINGS, CONSULTATION OR COMMUNICATIONS WITH THE COMMUNITY BOARDS OR BOROUGH PRESIDENT.

As part of an ongoing dialogue Sims, DSNY, and SBS have reached out to discuss the Sunset Park MRF project with elected officials, the local community, individuals, and citizens' and environmental groups.

Those involved in presentations on the project, meetings, briefings, status updates, and other communications included Community Boards 6 and 7, Brooklyn Borough President Marty Markowitz, State Senator Valmanette Montgomery (18th Dist), Councilwoman Sarah Gonzalez, Assemblyman Felix Ortiz, Congresswoman Nydia Velazquez, UPROSE, the Brooklyn Solid Waste Advisory Board (SWAB), Manhattan SWAB, Bronx SWAB, Center for Family Life In Sunset Park, Brooklyn Chinese-American Association, Concerned Citizens of Bensonhurst, Opportunity for a Better Tomorrow, Brooklyn Center for the Urban Environment (BCUE), Lutheran Medical Center, Our Lady of Perpetual Help, Maimonides Hospital, City of New York Clergy Association for Justice, Southwest Brooklyn IDC, Sunset Park Business Improvement District (also 5th Ave BID), Brooklyn Chamber of Commerce, Brooklyn Economic Development Corporation, Partnership for NYC/NYC Investment Fund, NY Industrial Retention

Network, Citywide Recycling Advisory Board (CRAB), Metropolitan Waterfront Alliance (MWA), and the American Institute of Architects (AIA).

In addition, as part of the EIS process, the Solid Waste Management Plan FEIS was prepared after a public process extending from October 22, 2004 to January 24, 2005. The public process involved eight public hearings on the Draft EIS (DEIS) held in the communities potentially affected by the proposed action, in order to solicit comments and concerns from the public and regulatory agencies. Comments on the DEIS were reviewed and addressed in the FEIS.

ARTICLE 6: CRITERIA FOR SITING OR EXPANDING REGIONAL/CITYWIDE FACILITIES

6.1(A) NEED FOR THE FACILITY OR EXPANSION.

The proposed project would fulfill several important goals established by the City. As described above under "Description of the Proposed MRF," the proposed project would:

- Realize a central component of the City's recycling initiative as set forth in the City's Solid Waste Management Plan (proposed in draft form in 2004 and approved by the City Council and DEC in 2006);
- Expand the City's marine-based recycling infrastructure through intra-city movement of materials;
- Minimize area-wide truck trips by utilizing barge transport and allowing for potential rail transport;
- Create a new tipping location for DSNY collection trucks that is strategically located for certain Brooklyn districts and dramatically reduce DSNY collection truck vehicle miles traveled ([VMTs] estimated in excess of 200,000 VMTs per year);
- Develop a state-of-the-art recycling infrastructure to support the City's recycling program within the City. This would provide an important element of control over this essential infrastructure and create the jobs and related economic development associated with this facility; and
- Support the goal of redeveloping SBMT as set forth in EDC's Strategic Port Plan. The project site is well suited for marine transport, has the capacity for future rail linkages, and is located in an area buffered from residences and designated for heavy industry under zoning.

6.1(B) DISTRIBUTION OF SIMILAR FACILITIES THROUGHOUT THE CITY.

As described above, one of the goals of the Solid Waste Management Plan is the equitable distribution of waste handling and recycling facilities throughout the city. Table E-2 summarized public and privately owned transfer stations in Brooklyn. DSNY trucks coming to the project site would serve certain portions of Brooklyn under the curbside recycling program. This geographic area would include Brooklyn Community Districts 2 and 5 through 18. Barge transport would be used to transport the recyclable materials coming from other areas, resulting in less truck traffic on regional roadways. Approximately 75 percent of the recyclables would be delivered by barge to the facility, and approximately 65 percent (principally glass and ferrous metals) would leave post-processing via barge, with the remainder (principally plastic and residue) leaving by truck. DSNY trucks collecting curbside recyclables in the Bronx would tip this material at an existing Sims facility in the Bronx, from which it would be transported by barge to the project site. DSNY trucks collecting curbside recyclables in northern Brooklyn and

Queens would tip this material at Sims' facility in Long Island City, from which it would be transported by barge to the project site. DSNY trucks collecting recyclables on Staten Island would deliver the material to Sims' facility in Jersey City, from which certain recyclables could be barged to the project site. DSNY trucks collecting recyclables in Manhattan would either deliver materials to a new MTS at Gansevoort, as proposed in the Solid Waste Management Plan, or—as they do now—to Sims facilities in the Bronx and Jersey City. DSNY trucks collecting curbside recyclables from southern Brooklyn would tip their material directly at the SBMT facility.

Table E-2
Public and Private Transfer Stations
by Brooklyn Community Board

Facility Name	Facility Location	Type of Facility	Ownership Type	Community Board
Brooklyn				
Allocco	540 Kingsland Avenue, Brooklyn, NY 11222	Fill	Private	BK 1
Keyspan Energy	287 Maspeth Avenue, Brooklyn, NY 11201	Fill	Private	BK 1
Bfi Waste Systems of NJ, Inc.	115 Thames Street, Brooklyn , NY 11237	Putrescible	Private	BK 1
Bfi Waste Systems of NJ, Inc.	598-636 Scholes Street, Brooklyn, NY 11237	Putrescible	Private	BK 1
Hi-Tech Resource Recovery	130 Varick Avenue, Brooklyn, NY 11237	Putrescible	Private	BK 1
LESI NY Corporation	110-120 50th Street, Brooklyn, NY 11232	Putrescible	Private	BK 7
LESI NY Corporation	577 Court Street, Brooklyn, NY 11231	Putrescible	Private	BK 6
Waste Management of NY, LLC	215 Varick Avenue, Brooklyn, NY 11231	Putrescible	Private	BK 1
Waste Management of NY, LLC	485 Scott Avenue, Brooklyn, NY 11222	Putrescible	Private	BK 1
Waste Services of New York, Inc.	941 Stanley Avenue, Brooklyn, NY 11208	Putrescible	Private	BK 5
Astoria Carting Co., Inc.	538-545 Stewart Avenue, Brooklyn, NY 11222	Non-Putrescible	Private	BK 1
Atlas Roll-Off Corp.	889 Essex Street, Brooklyn, NY 11208	Non-Putrescible	Private	BK 5
BFI Waste Systems of NJ	575 Scholes Street, Brooklyn, NY 11211	Non-Putrescible	Private	BK 1
City Recycling Corporation	151 Anthony Street, Brooklyn, NY 11222	Non-Putrescible	Private	BK 1
Cooper Tank & Welding, Inc.	222 Maspeth Avenue, Brooklyn, NY 11211	Non-Putrescible	Private	BK 1
Decostole Carting Co.	1481 Troy Avenue, Brooklyn, NY 11203	Non-Putrescible	Private	BK 17
Gads Inc.(Previously Called BFI Waste Systems of NJ)	594 Scholes Street, Brooklyn, NY 11211	Non-Putrescible	Private	BK 1
LESI NY Corporation	548 Varick Avenue, Brooklyn, NY 11222	Non-Putrescible	Private	BK 1
Point Recycling, Ltd.	686 Morgan Avenue, Brooklyn, NY 11222	Non-Putrescible	Private	BK 1
Waste Management of NY, LLC	123 Varick Avenue, Brooklyn, NY 11237	Non-Putrescible	Private	BK 1
Waste Management of NY, LLC	75 Thomas Street, Brooklyn, NY 11222	Non-Putrescible	Private	BK 1
Hamilton Ave MTS	550 Hamilton Avenue/ 75 20th Street	MTS	Public	BK 7
Southwest Brooklyn MTS	1824 Shore Parkway	MTS	Public	BK 11
Greenpoint MTS	Kingsland/N. Henry Street	MTS	Public	BK 1

Sources: DSNY inventory of Department of Sanitation facilities, 2003; list of putrescible, non-putrescible, and fill transfer stations – run date: 3/10/2004 and 8/16/2007

6.1(C) SIZE OF THE FACILITY. TO LESSEN LOCAL IMPACTS AND INCREASE BROAD DISTRIBUTION OF FACILITIES, THE NEW FACILITY OR EXPANSION SHOULD NOT EXCEED THE MINIMUM SIZE NECESSARY TO ACHIEVE EFFICIENT AND COST-EFFECTIVE DELIVERY OF SERVICES TO MEET EXISTING AND PROJECTED NEEDS.

The proposed MRF has been designed to receive curbside recyclable materials by truck from certain districts in Brooklyn as well as recyclable materials by barge from other parts of the City. The proposed facility has been designed to achieve efficient and cost-effective recycling services to meet the projected needs of the long-term recycling contract. Certain processing activities at each Sims receiving location can be carried out efficiently in a decentralized manner, such as the removal of bulk metal from the balance of the MGP. However, for the sorting of plastics and recovery of non-ferrous metals, there are significant economies of scale to be achieved by centralizing processing activities at a single location.

6.1(D) ADEQUACY OF THE STREETS AND TRANSIT TO HANDLE THE VOLUME AND FREQUENCY OF TRAFFIC GENERATED BY THE FACILITY.

The facility would be located in an M3-1 zone, designated by the City for industries that generate significant amounts of truck traffic. The EAS for the proposed facility analyzed potential traffic impacts from the proposed MRF and concluded that with minor changes in signal timing at some intersections, the proposed MRF is not expected to result in significant adverse traffic impacts. The proposed project would incorporate changes in signal timing at several study area intersections, including Third Avenue and 29th Street, Third Avenue and 39th Street, Second Avenue and 39th Street at the BQE exit ramp, and Fourth Avenue and 39th Street. The applicant will submit the recommended signal timing alterations to the New York City Department of Transportation (NYCDOT) for evaluation, approval, and implementation. NYCDOT would be responsible for maintaining the proposed changes in the future. With these project-related improvements, the proposed project would not result in any significant adverse traffic impacts.

As discussed in the EAS, the proposed project would generate primarily vehicle trips and would not result in transit trips that would exceed the City Environmental Quality Review (CEQR) threshold for requiring a detailed analysis. Therefore, the proposed project is not expected to result in significant adverse transit impacts

6.4 TRANSPORTATION AND WASTE MANAGEMENT PROGRAMS

6.41 The proposed site should be optimally located to promote effective service delivery in that any alternative site actively considered by the sponsoring agency or identified pursuant to Section 204(f) of the Charter would add significantly to the cost of construction or operating the facility or would significantly impair effective service delivery.

As discussed in Section 4.1(c), above, the existing site has been determined to be the most effective location for the siting of the proposed recycling facility. It meets all siting criteria and is optimally located on the Brooklyn waterfront in an M3 zone, where it can make use of barges to transport material to and from the site, resulting in an overall reduction in truck trips. In addition, the site is already owned by the City and, therefore, the time and resources necessary to acquire a site would not be required.

6.42 In order to avoid aggregate noise, odor, or air quality impacts on adjacent residential areas, the sponsoring agency and the City Planning Commission, in its review of the proposal, should take into consideration the number and proximity of existing City and non-City facilities, situated within ½-mile radius of the proposed site, which have similar environmental impacts.

The nearest residential area is located on the east side of Third Avenue, between 29th and 30th Streets. As shown in Tables E-1 and E-2, there are two public and private transfer stations located near the project site. However, as discussed in detail in the EAS, the Sims MRF would not result in significant adverse air quality, noise, or odor impacts. ✷

A. INTRODUCTION

The *City Environmental Quality Review (CEQR) Technical Manual* (2001) defines natural resources as "plant and animal species and any area capable of providing habitat for plant and animal species or capable of functioning to support ecological systems and maintain the city's environmental balance." The purpose of this attachment is to describe the natural resources and floodplains that occur at the 30th Street Pier in Sunset Park, Brooklyn (see EAS Figure 1), and assess potential impacts on these resources from the proposed city-leasing agreement between Sims Municipal Recycling of New York, LLC ("Sims") and the New York City Department of Small Business Services (SBS) for the construction and operation of a materials recovery facility (MRF) at this pier and long-term contract with the New York City Department of Sanitation (DSNY) for the processing and marketing of recyclables. The proposed MRF is a component of New York City's Solid Waste Management Plan.

The approximately 499,000-square-foot (11.45-acre) project site, the 30th Street Pier, is located within the South Brooklyn Marine Terminal (SBMT), west of Second Avenue and between 29th and 31st Streets along the Gowanus Bay (see EAS Figure 1). The 30th Street Pier comprises fill material bounded by riprap. The project site is currently used by the New York City Police Department (NYPD) as a vehicle impoundment lot. Surrounding land uses include manufacturing and industrial uses as well as commercial, auto-related, and warehouse uses. Construction of the MRF is expected to take approximately 24 months, with completion anticipated in 2009. The MRF would comprise a vehicle entrance and truck scales, connected buildings for Metal/Glass/Plastic (MGP) and paper unloading, MGP processing, bale storage, ferrous metals receipt, employee/administrative services, and a visitor/education center; parking facilities, and facilities for waterborne movement of materials on the southern side of the pier (i.e., enclosed barge unloading facility with one berth for offloading MGP and one berth for loading out paper, a mooring pier for barges waiting to offload, a relieving platform with continuous fender system that would accommodate the berthing of up to 3, 40 by 200-foot barges, for the loading of processed glass, and ferrous metals (excavator); and an access channel dredged to allow delivery and removal of materials by barge (see EAS Figure 7).

The proposed project would result in the following activities:

- Removal of existing asphalt paving that currently covers the majority of the pier.
- Elevation of site to above 100-year floodplain.
- Construction of five buildings on the existing pier for MGP and paper tipping (approximately 38,500 square feet), MGP process area and glass process and storage (approximately 76,500 square feet), bale storage area (approximately 28,000) with a separate approximately 7,000-square-foot area for employees and administration, a visitor/education center (approximately 6,000 square feet), and ferrous storage shed (approximately 26,000 square feet). Shoreline stabilization and stormwater collection system would also be constructed.

- Habitat enhancement activities that will include a combination of on- and off-site measures. These activities will be finalized in conjunction with the New York State Department of Environmental Conservation (DEC) and the U.S. Army Corps of Engineers (USACE). Measures being considered include the following.
  - On-site habitat enhancement activities along the shoreline edges of the pier outside the currently paved area that will result in the development of plant communities (approximately 0.72 acres of upland and 0.19 acres of tidal wetland) comprising plant species characteristic of maritime coastal areas within the New York metropolitan area. An estimated 31,464 square feet (0.74 acres) of these maritime communities may be developed along the waterfront area of the pier, approximately 8,143 square feet (0.19 acres) of which may be low marsh.
  - Off-site habitat enhancement measures identified in coordination with DEC and USACE.
- Installation of underground filtration units within the 30th Street Pier to treat stormwater runoff collected from the pier ground surface. Treated stormwater will either be discharged to Gowanus Bay through existing 15-inch-diameter pipes that are spaced at approximately 200-foot intervals on the north and south sides of the pier, or through a new trunk line system should the existing pipes prove inadequate. Rooftop drainage that is not collected for on-site uses, such as landscape irrigation, would be discharged directly to Gowanus Bay.
- New sanitary sewer and municipal water supply connections.
- Dredging to a depth of 12 feet below Mean Low Water (MLW) within an approximately 186,000-square-foot (4.3-acre) area along the southern side of the 30th Street Pier. The 200-foot-long by 40-foot-wide barges anticipated to deliver and remove material from the MRF would have up to a 10-foot draft when fully laden. Dredging would include removal of debris (concreted decking, rebar, timbers, etc.) associated with a pile-supported finger pier formerly located adjacent to the southern edge of the 30th Street Pier that was demolished/collapsed, and to remove bottom sediment and debris (dredge volume of approximately 53,158 cubic yards, including 2-foot allowable over-dredge) to facilitate movement of barges to and from the project site. It is anticipated that dredging will be performed using an environmental bucket dredge (an enclosed clamshell bucket with the hoist speed limited to less than 2 feet per second to minimize turbidity). Dredged material would be placed directly into sealed barges with no barge overflow permitted. The dredger would be required to submit a dewatering plan which at a minimum would allow for loaded scows to settle and decant water to be tested for suspended solids concentrations. Decanted water will be released back to the bay when suspended solids concentration is at or below 200 mg/L. Dredging is anticipated to take approximately 60 days, including mobilization and demobilization. Approximately 11,000 square feet (0.25 acres) of the area proposed to be dredged is vegetated rocky intertidal wetlands (i.e., between MLW and MHHW [+5.07 feet at MLW]), and approximately 65,550 square feet (1.51 acres) of the area proposed to be dredged is between MLW and -6 feet at MLW and would meet the DEC definition of littoral zone tidal wetlands (6 NYCRR Part 661). The remaining portion of the proposed dredged area (109,246 square feet, 2.51 acres) is in waters deeper than 6 feet at MLW (see Figure F-1). The possible placement of approximately 22,210 to 23,357 cubic yards of stabilized dredged material on the project site to elevate it above the 100-year floodplain would be evaluated prior to the selection of the dredging contractor.

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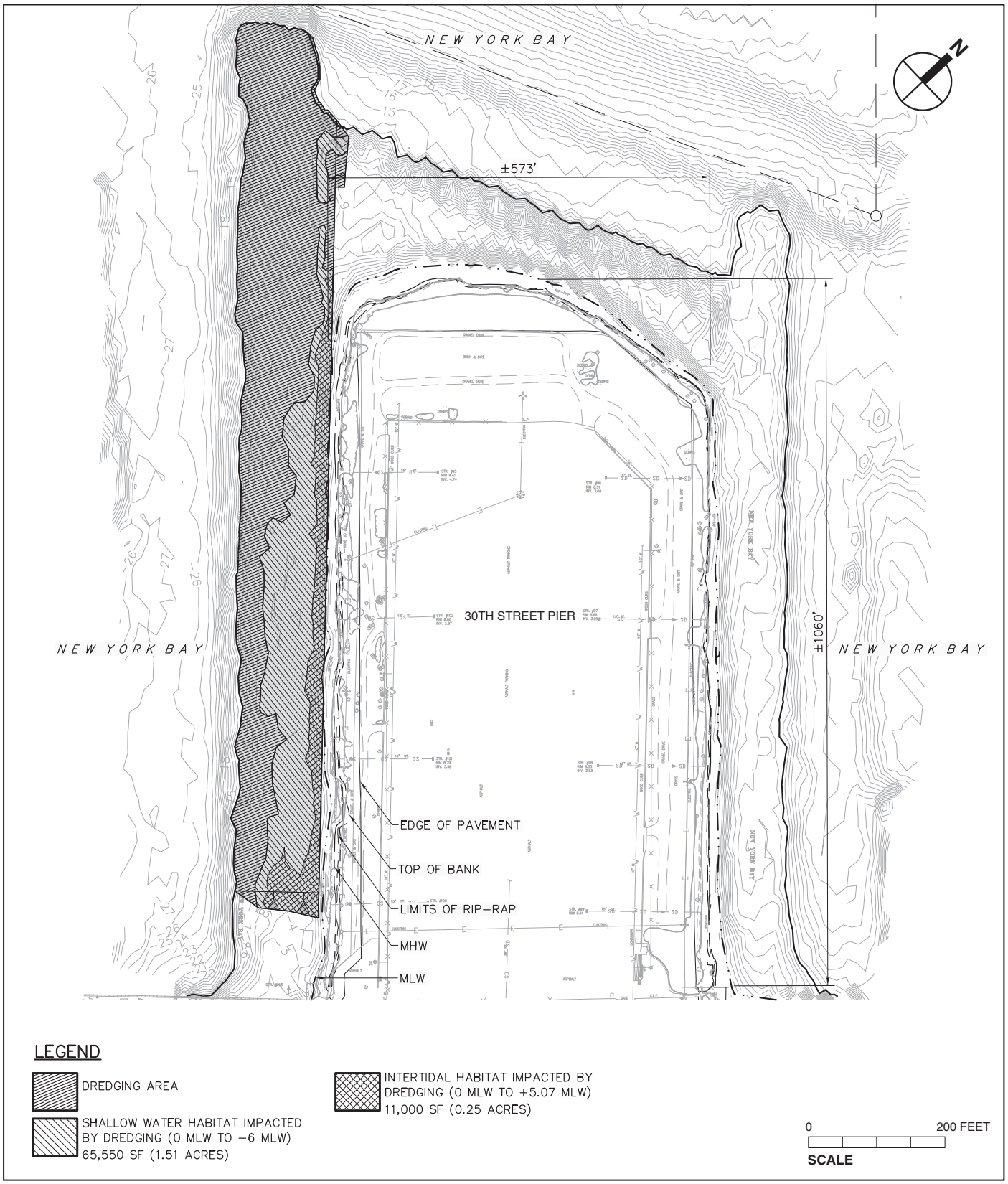

Existing Shallow Water Tidal and Intertidal Habitat
Within the Proposed Dredging Area

Figure F-1

- Construction of an approximately 850-foot-long by 27-foot-wide relieving platform with continuous fender system along the southern edge of the pier. Construction of the relieving platform will include the installation of approximately 850 linear feet of steel sheetpile along the southern edge of the pier at the Mean Higher High Water (MHHW) elevation (+5.07 feet at MLW). The bulkhead would be at MHHW. The relieving platform will function as a marginal wharf, and will be used for berthing, loading/unloading equipment, and emergency vehicles. No portion of the relieving platform would extend over tidal waters. The fender system would consist of steel H-piles with 5-foot bent spacing. The relieving platform would be constructed upland of MHHW and the steel sheetpile bulkhead, and would be supported by steel H-piles. H-piles and sheet piles would be driven with barge-mounted or land based impact or vibratory hammers.
- Construction of an enclosed barge unloading facility (EBUF) comprising the following (note that this EBUF encompasses 200 feet of the relieving platform described above).
    - Two barge berths separated by pile clusters (i.e., dolphins) under cover of a roof. A roofed structure is considered necessary to minimize loss of MGP material during offloading of barges and to load out paper and has been incorporated into other DSNY facilities. Sims is evaluating the possible use of translucent roof panels, which would allow light to penetrate to the water surface. The overwater coverage due to the EBUF roof would be 21,025 square feet (0.48 acres). Total overwater coverage by the EBUF canopy and new finger pier (described below) would be approximately 25,822 square feet (0.59 acres).
    - An approximately 17-foot-wide by 200-foot-long finger pier located at the southern edge of the canopy parallel to the wharf. The approximately 17-foot-wide concrete deck of the pier would be supported by steel pipe piles with 20-foot bent spacing. The north and south edges of the finger pier would be protected with a fender system supported on H piles. Overwater coverage due to this finger pier would be 3,386 square feet (0.08 acres).
- Construction of an approximately 195-foot-long by 10-foot-wide barge mooring pier (1,950 square feet, 0.05 acres) on the western edge of the new wharf, extending into Gowanus Bay. The 10-foot-wide concrete deck would be supported by steel pipe piles with 15 to 20-foot bent spacing. The southern edge of the pier would be protected with a fender system supported on H piles.

B. PRINCIPAL CONCLUSIONS

The construction and operation of the MRF at the 30th Street Pier would not result in significant adverse impacts on the 100-year floodplain. The proposed project would raise the elevation of the project site approximately 2 feet, using imported fill or stabilized dredge material, such that the paved surfaces and bases of all buildings are above the 100-year flood elevation, and will comply with all applicable statutes governing construction of non-residential buildings within flood hazard areas. Because the floodplain within and adjacent to the 30th Street Pier is affected by coastal flooding, which is influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes), the proposed project would not affect the floodplain adjacent to the project site.

Dredging of a 4.3-acre area south of the 30th Street Pier, required to allow delivery and removal of material from the MRF, would impact approximately 1.76 acres of littoral zone wetlands/intertidal area through their conversion to deeper subtidal habitat (i.e., 12 feet deep at MLW). Habitat improvement measures proposed as part of the project will offset impacts on

these wetlands and their potential use as fish habitat. Proposed measures may include the approximately 0.19 acres of low marsh habitat created on site through habitat enhancement measures implemented along the shoreline of the pier, combined with off-site improvement opportunities developed in coordination with DEC and USACE. Dredging would not occur during the period established by regulatory agencies to protect certain species of overwintering fish (e.g., striped bass), usually November 1 through May 31. Implementation of erosion and sediment control measures and stormwater management measures during and after construction, as will be identified in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the proposed project, would minimize potential impacts on tidal wetlands along the edges of the 30th Street Pier from stormwater discharges.

Implementation of the SWPPP prepared for the proposed project during construction of the proposed project would minimize potential impacts on Gowanus Bay water quality associated with discharge of stormwater runoff during construction. Dredging of approximately 4.3 acres south of 30th Street Pier needed to provide access to the MRF by barges, and the driving of piles used to support the relieving platform, EBUF finger pier and mooring pier, would result in temporary and localized increases in suspended sediment within the area dredged and piles installed. Use of an environmental bucket dredge, and placing dredged material directly into sealed barges with no barge overflow, will minimize increases in suspended sediment during dredging activities. Any increase in suspended sediment that occurs during dredging and pile driving activities would dissipate shortly after the completion of the activity and would not result in significant adverse impacts on water quality and aquatic biota. Fish are mobile and generally avoid unsuitable conditions in the vicinity such as increases in suspended sediment and noise. The resuspension and redeposition of the Gowanus Bay sediments in the vicinity of the 30th Street Pier would not be expected to pose a significant risk to aquatic organisms.

Dredging would result in the temporary loss of benthic macroinvertebrates within the 4.3-acre area to be dredged. The loss of some individual macroinvertebrates would not result in significant adverse impacts on populations of these species within the Harbor Estuary. Similarly, the permanent loss of a small amount of bottom and water column habitat for each pile installed, and the benthic macroinvertebrates associated with these pile footprints that are unable to move from the area of pile installation, would not result in significant adverse impacts on populations of aquatic species using Gowanus Bay. The permanent loss of benthic macroinvertebrates within the piling footprints would not significantly impact the food supply for fish foraging in the area.

Operation of the proposed MRF on the 30th Street Pier would not result in significant adverse impacts on water quality and aquatic biota of Gowanus Bay due to stormwater runoff, the possible reuse of stabilized dredged material on the site, the release of materials being processed by the facility to surface waters, or from the movement of barges or tugboats to the wharf or mooring locations. Operation of the MRF would not be expected to impair the use of these waters or future improvements to these waters that would result from measures implemented as part of the Gowanus Canal and Bay Ecosystem Restoration Project, and other water quality and habitat improvement projects initiated by NY City and the state. Of the 0.64 acres of water column and bottom habitat that would be under platforms constructed for the MRF, only 0.59 acres would be under platforms wider than 15 feet. Shading within this 0.59-acre area would impact fish habitat, including essential fish habitat (EFH). Should translucent material be used for the EBUF roof, some light would penetrate to the water surface within the 0.44-acre area under the roof. Further, coordination with DEC and USACE is required to finalize on- and off-site measures to offset losses due to shading.

The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) identified the endangered shortnose sturgeon (*Acipenser brevirostrum*) as occurring in Kings County, but that this species primarily occurs in the Hudson River. Additionally Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) (considered a Candidate Species as NMFS has initiated a status review for this species to determine whether listing as threatened or endangered under the Endangered Species Act is warranted) is also known to occur in the Hudson River and surrounding coastal waters. The preference of shortnose and Atlantic sturgeon for deep water habitat suggests that it is unlikely that individuals of these species would occur within the shallow waters of Gowanus Bay surrounding the 30th Street Pier except perhaps as occasional transients. Because water quality impacts associated with dredging and pile driving would be localized, the deep channel habitat preferred by these species while in transit to and from spawning and nursery habitat in the upper portion of the Hudson River would not be impacted during construction of the proposed project. Therefore, the proposed actions would not be expected to result in significant adverse impacts on shortnose and Atlantic sturgeon.

The construction of the proposed MRF on the 30th Street Pier would result in the loss of the narrow band of herbaceous and woody vegetation found between the paved surface and riprap bordering Gowanus Bay. The bird and other wildlife species expected to occur within the project site are those highly tolerant of urban conditions and the current use of the site as an impoundment lot, and the highly developed land uses surrounding the project site. Adverse impacts could occur to some *individual* birds and other wildlife currently using this extremely limited wildlife habitat, should suitable habitats not be available nearby. However, because the wildlife species expected to occur within the project site are common to urban areas, the relocation and/or loss of some individuals would not result in a significant adverse impact on the bird and wildlife community of the region. Therefore, the construction of the proposed project would not result in significant adverse impacts on terrestrial resources. The proposed development of maritime coastal plan communities along the western and northern edges of the pier would benefit terrestrial resources by providing improved habitat for wildlife.

C. METHODOLOGY

This section presents the methodology used to characterize existing natural resources within the 30th Street Pier project site under existing and future conditions, and to assess potential impacts on these resources from the proposed project. For terrestrial resources and floodplains, the study area was restricted to the 30th Street Pier project site and the area immediately adjacent to it because of the highly developed nature of the surrounding land uses. An exception was made for the identification of threatened or endangered species, which were evaluated for a distance of at least 0.5 miles from the project site. The study area for water quality and aquatic biota included Gowanus Bay and entrance to Gowanus Canal. The analysis of potential impacts on natural resources from the proposed project considered the potential effects for a 24-month construction period, with completion anticipated in 2009. Dredging and in-water construction activities are expected to commence in mid-2008.

EXISTING AND FUTURE CONDITIONS

The existing natural resources within the vicinity of the 30th Street Pier in Brooklyn were described on the basis of the following:

- Existing information identified in literature and obtained from governmental and non-governmental agencies such as: DEC, New York City Department of Environmental

Protection (DEP) Harbor Water Quality Surveys, New York City Department of Sanitation (DSNY) Final Environmental Impact Statement (FEIS) for the New York City Comprehensive Solid Waste Management Plan (DSNY 2005), U.S. Environmental Protection Agency ([EPA] e.g., Regional Environmental Monitoring and Assessment Program ([R-EMAP] Adams et al. 1998), USACE, Federal Emergency Management Agency (FEMA) flood insurance rate maps, and the Interstate Environmental Commission (IEC).

- Responses to requests for information on rare, threatened or endangered species within the vicinity of the project site. These requests were submitted to the USFWS, NMFS, and the New York Natural Heritage Program (NYNHP), a joint venture of DEC and The Nature Conservancy (TNC). DEC maintains the NYNHP files. The NYNHP database is updated continuously to incorporate new records and changes in the status of rare plants or animals. In addition to the state program, the USFWS maintains information for federally listed threatened or endangered freshwater and terrestrial plants and animals, and the NMFS for federally listed threatened or endangered marine organisms.

ASSESSMENT OF IMPACTS ON NATURAL RESOURCES

Potential impacts on floodplain, wetlands, water quality, aquatic biota, and terrestrial resources were assessed using an approach that considered the following:

- The existing natural resources within the vicinity of the 30th Street Pier.
- Potential short-term and long-term effects to the floodplain from the construction and operation of the MRF.
- Potential short-term effects to wetlands, water quality and aquatic biota from the in-water and upland activities associated with the construction of the MRF.
- Potential long-term effects to aquatic resources from the operation of MRF.
- Potential effects to Essential Fish Habitat (EFH).
- Results of empirical studies conducted in the vicinity of the 30th Street Pier within Gowanus Bay or the Upper New York Harbor, relevant studies performed in other geographic areas that relate to the activities associated with the proposed construction of in-water components and operation of the MRF.

D. EXISTING CONDITIONS

FLOODPLAIN

Figure F-2 presents the 100-year floodplain (area with a 1 percent chance of flooding each year) and 500-year floodplain (area with a 0.2 percent chance of flooding each year) boundaries at the 30th Street Pier project site. As presented in Figure F-2, the southern, northern, and eastern periphery of the pier are within the 100-year floodplain, and a portion of the central area of the pier is within the 500-year floodplain.

WETLANDS

The entire shoreline within the project area is engineered with riprap that limits the potential for tidal marsh plants or submerged aquatic vegetation. Vegetated rocky intertidal wetlands are also located on the project site, along the northern and southern portions of the pier. The USFWS

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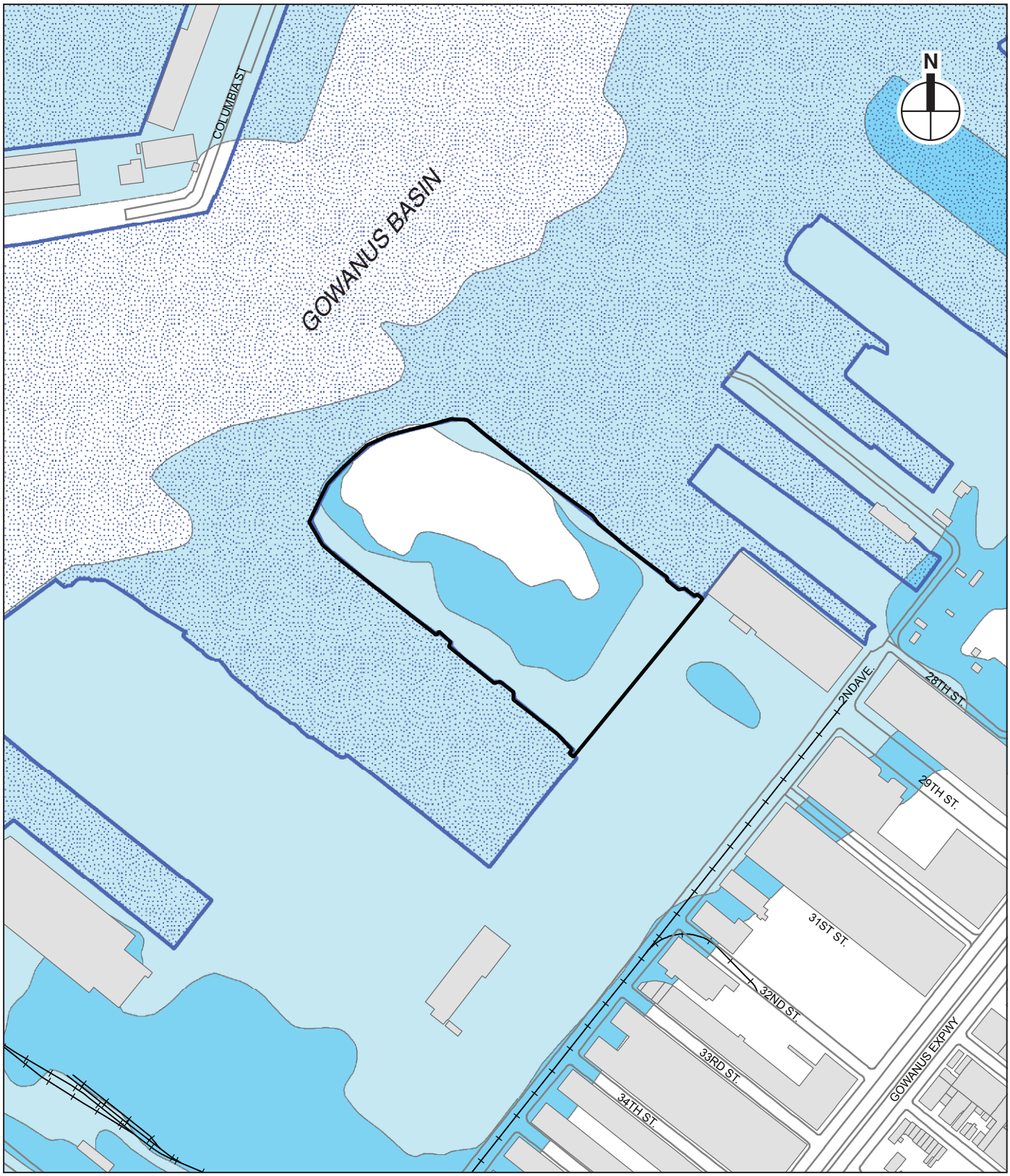

Project Site Boundary

Water

Inside 100-Year Floodplain

Inside 500-Year Floodplain

Sunset Park Materials Recovery Facility

FEMA Floodplain

Figure F-2

National Wetlands Inventory (see Figure F-3) classifies the waters surrounding the project site as estuarine subtidal wetlands with unconsolidated bottom (E1UBL). Subtidal estuarine wetlands are continuously submerged areas with low energy and variable salinity, influenced and often enclosed by land. Unconsolidated bottoms have at least 25 percent cover of particles smaller than 6 or 7 cm, and less than 30 percent vegetative cover. Because the waters within the project area do not contain tidal wetland plants, USACE would likely regulate them as waters of the U.S. and would not be likely to classify portions of the project area as wetlands.

DEC designates the portion of Gowanus Bay surrounding the 30th Street Pier as littoral zone (shallow waters six feet or less in depth that are not included in other DEC tidal wetland categories [Figure F-4]). DEC regulations state that actual water depths determine whether or not an area is a littoral zone. Water depths recorded within the portion of the Gowanus Bay surrounding 30th Street Pier range from 0 to 27 feet at MLW. Water depths within the portion of the project site where dredging will occur (south of the pier) range from 0 to 18 feet at MLW (see Figure F-1). As presented in Figure F-1, areas with water depths at or shallower than 6 feet at MLW that may be classified as littoral wetland by DEC occur near the southern edge of the pier within the area to be dredged, as well as along the outboard and northern edges of the pier. Vegetated rocky intertidal wetlands (i.e., between MLW and MHHW (+5.07 feet at MLW) occur along all three riprapped edges of the pier.

AQUATIC RESOURCES

SURFACE WATER RESOURCES

The 30th Street Pier is located within Gowanus Bay and near Gowanus Channel, within the Upper New York Bay (Figure F-5). The Upper New York Bay is the portion of the New York-New Jersey Harbor Estuary ("Harbor Estuary") enclosed by the New York and New Jersey shorelines from the Battery at the tip of Manhattan south to the Verrazano-Narrows Bridge. The shoreline of this portion of the Harbor Estuary is almost entirely developed with bulkheading, piers (usable and dilapidated), pile fields, commercial and industrial waterfront facilities, and military installations (USACE 1998).

WATER QUALITY

Title 6 of the NYCRR Part 703 includes surface water standards for each Use Class of New York surface waters. Gowanus Bay and Upper New York Harbor have been designated Use Classification I. The best usages for Class I waters are as secondary contact recreation and fishing. Water quality should be suitable for fish propagation and survival. Water quality standards for fecal and total coliform, DO, and pH for Use Class I waters are as follows. (There are no New York State standards for chlorophyll *a* or water clarity.)

- Fecal coliform—Monthly geometric mean less than or equal to 2,000 colonies/100mL from 5 or more samples.
- Total coliform—The monthly geometric mean from a minimum of 5 examinations shall not exceed 10,000 colonies/100 milliliters (mL).
- DO—Never less than 4 milligrams per liter (mg/L).
- pH—The normal range shall not be extended by more than 0.1 of a pH unit.

The City of New York has monitored New York Harbor water quality for over 90 years through the Harbor Survey. DEP evaluates surface water quality of four designated regions: Inner Harbor

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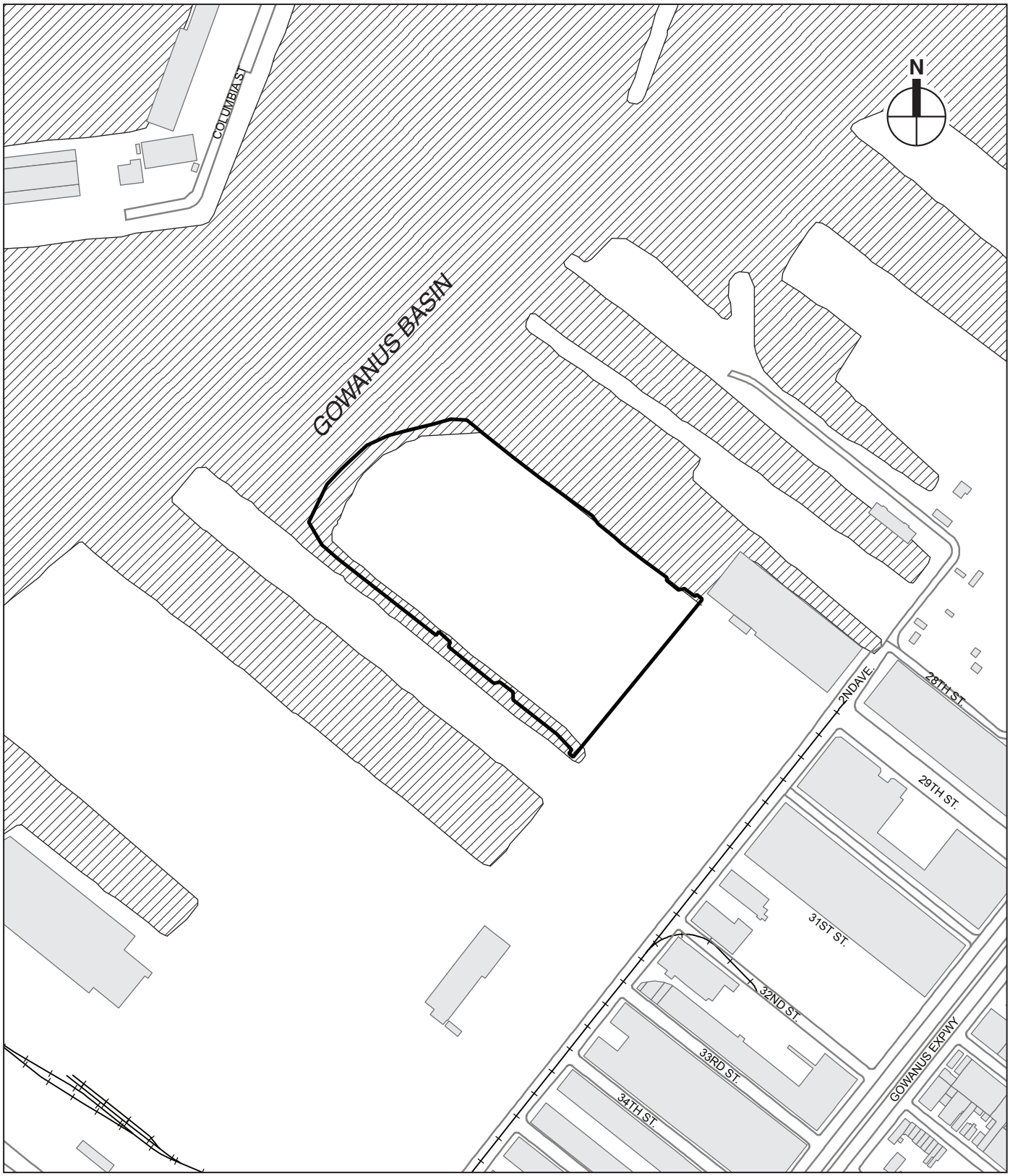


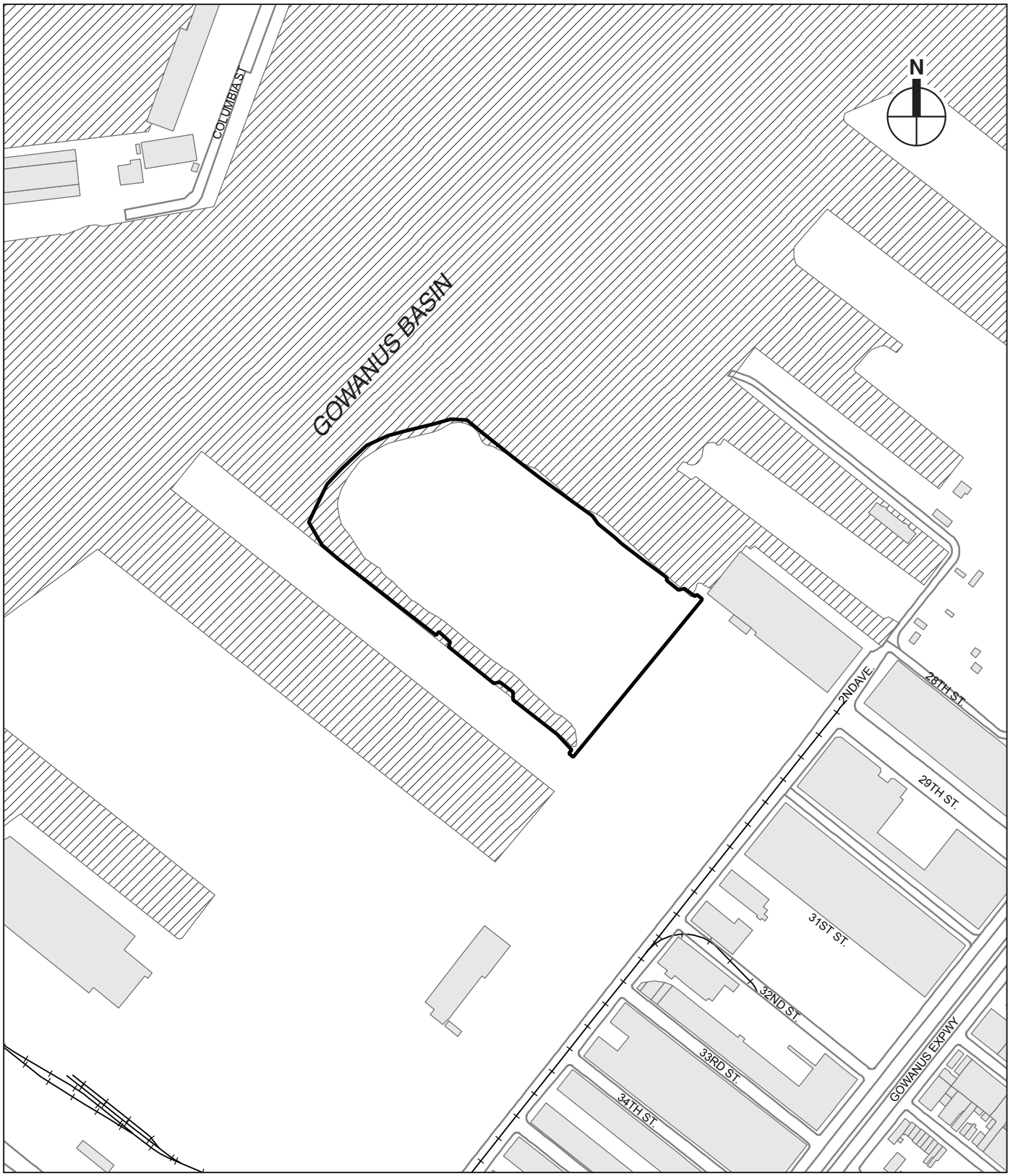
Project Site Boundary

NWI Wetlands Classification

E1UBL

Sunset Park Materials Recovery Facility

NWI Wetlands
Figure F-3



DEC Wetlands
Figure F-4

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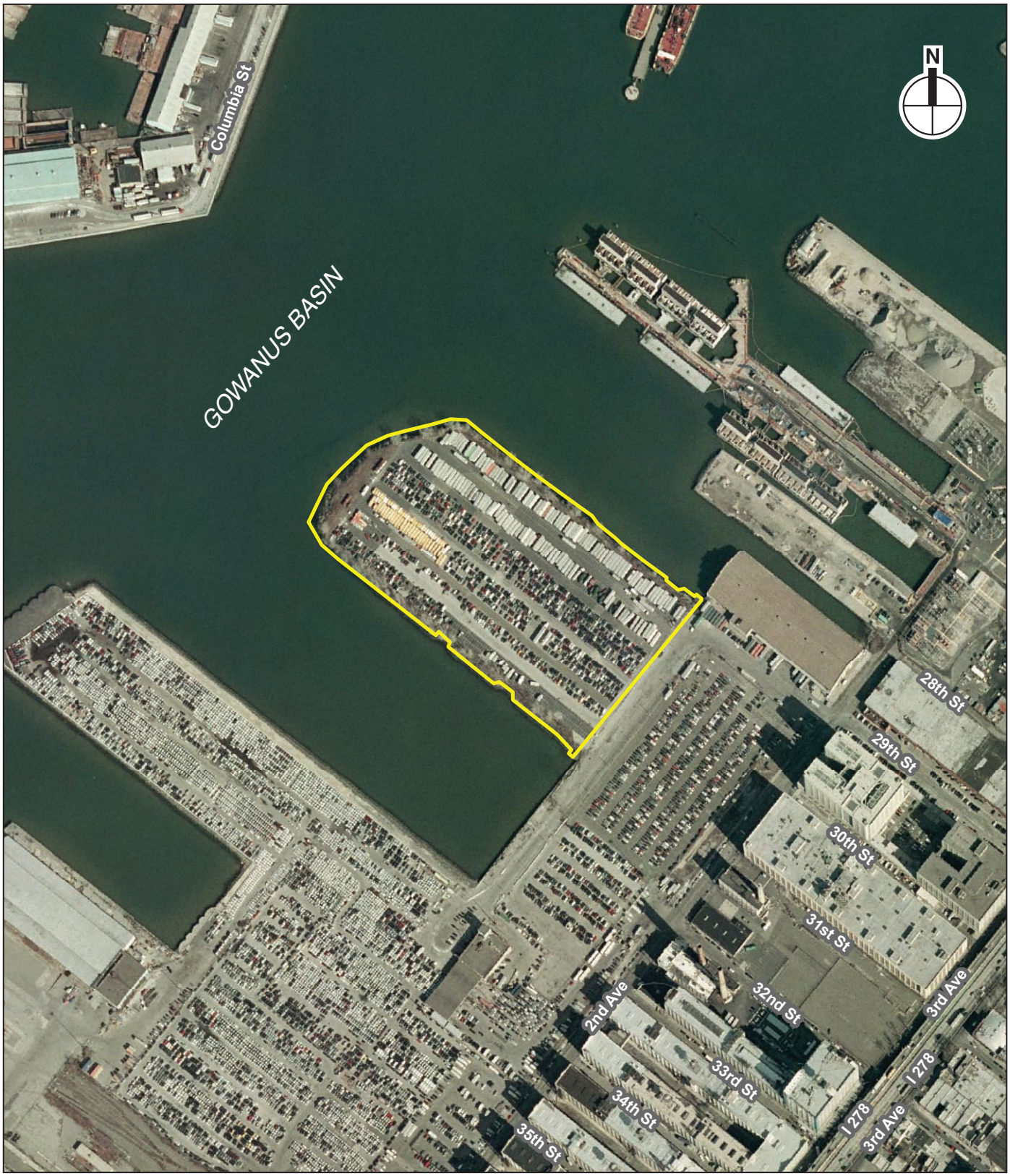

Project Site Boundary

0 200 500 FEET

SCALE

Sunset Park Materials Recovery Facility

Aerial

Figure F-5

Area, Upper East River-Western Long Island Sound, Lower New York Bay-Raritan Bay, and Jamaica Bay (DEP 2002). The 30th Street Pier is in the Inner Harbor Area.

Temperature and salinity influence several physical and biological processes within the Harbor. Temperature has an effect on the spatial and seasonal distribution of aquatic species and affects oxygen solubility, respiration, and other temperature-dependent water column and sediment biological and chemical processes. Salinity fluctuates in response to tides and freshwater discharges. Salinity and temperature largely determine water density and can affect vertical stratification of the water column. Salinity is also an important habitat variable as a number of aquatic species have a limited salinity tolerance.

Average temperatures within the Upper Bay range from about 3.7 to 23.8°C (38.7 to 74.8°F) (USACE 1999a). Within the Upper Bay, higher salinity bottom waters tend to be somewhat warmer than the less saline surface waters during the winters months, with the opposite being true during the summer. However, within Gowanus Bay, surface water and bottom water temperatures recorded from October 2003 to June 2004 during sampling for the Gowanus Bay and Canal Ecosystem Restoration Program were similar, and ranged from 5°C to 18°C (41 to 64°F [LMS 2004]). In 2004, surface water and bottom water temperatures recorded between March and December at the DEP Harbor Survey monitoring station closest to the project site, Station G2 located at the mouth of the Gowanus Canal, ranged from 4.92 to 24.29°C (40.87 to 75.72°F) and 3.71 to 22.69°C (38.70 to 72.84°F) respectively (DEP 2004a).

Salinity varies at any given point within the Harbor Estuary depending on the amount of freshwater flow. Average salinity values are highest in the Lower New York Harbor and Raritan Bay, and decrease moving up-estuary to the Upper New York Harbor, the Lower Hudson River, and the Lower East River. The Upper Bay is partially stratified—higher salinity water originating from the Atlantic Ocean at the mouth of the estuary tends to remain toward the bottom, while freshwater from the rivers draining to the estuary remain toward the top. Average salinity differences throughout the water column in the harbor are generally between 1 and 3 parts per thousand ([ppt] USACE 1999a). Surface water and bottom water salinities recorded in Gowanus Bay from October 2003 to June 2004 during sampling conducted for the Gowanus Bay and Canal Ecosystem Restoration Program ranged from about 10 to 23 ppt, and about 20 to 24 ppt respectively (LMS 2004). In 2004, surface water and bottom water salinities recorded between March and December at the DEP Harbor Survey monitoring station G2 ranged from 13.86 to 24.81 ppt and 17.97 to 26.3 ppt respectively (DEP 2004a).

The results of recent Harbor Surveys (DEP 2001, 2002, 2003, 2004b) show that the water quality of New York Harbor has improved significantly since the 1970s as a result of measures undertaken by the city. These measures include eliminating 99 percent of raw dry-weather sewage discharges, reducing illegal discharges, increasing the capture of wet-weather related floatables, and reducing the toxic metals loadings from industrial sources by 95 percent (DEP 2002). The 1999 and 2000 IEC 305(b) reports also indicate that the year-round disinfection requirement for discharges to waters within its district (including New York Harbor) has contributed significantly to water quality improvements since the requirement went into effect in 1986 (IEC 2000, 2001).

Recent survey data from the Harbor Survey station closest to the project site, Station G2 at the mouth of the Gowanus Canal, indicate that the water quality in this part of the Upper Bay is generally good, with occasional increases in fecal coliform above the standard. The following section provides a summary of the water quality conditions in the sampling region (Inner Harbor Area) of the Harbor Survey that includes the project area. Table F-1 presents a summary of water quality measurements at Station G2 for 2004.

Table F-1
2004 DEP Water Quality Data for Station G2 at Mouth of Gowanus Canal

Parameter	Top Waters			Bottom Waters		
	Low	High	Avg	Low	High	Avg
Total Fecal Coliform (per 100 mL)	2.0	4,000	712.1	NM		
Dissolved Oxygen (mg/L)	4.0	12.1	6.6	3.4	11.4	6.2
Secchi Transparency (ft)	2.5	10.0	6.3	NM		
Chlorophyll *a* (µg/L)	0.3	13.4	4.4	NM		

Notes: NM = not measured.
Source: DEP 2004a.

The presence of coliform bacteria in surface waters indicates potential health impacts from human or animal waste, and elevated levels of coliform can result in the closing of bathing beaches and shellfish beds. In 2004, all of the Harbor Survey monitoring stations in the Inner Harbor Area met the fecal coliform standard for Use Class I waters. Temporary increases in fecal coliform concentrations occurred during rain events due to additional fecal coliform loadings from storm drains and combined sewer overflows ([CSOs] DEP 2004b). Overall, fecal coliform concentrations in this area have declined from the early 1970s, when levels were well above the 2,000 colonies/100 mL water quality standard (DEP 2001). In 2004, fecal coliform concentrations near the project site were generally below the below the water quality standard with occasional increases to 4,000 colonies/100mL.

DO in the water column is necessary for respiration by all aerobic forms of life, including fish and invertebrates. The bacterial breakdown of high organic loads from various sources can deplete DO to low levels. Persistently low DO can degrade habitat and cause a variety of sublethal or, in extreme cases, lethal effects. Consequently, DO is one of the most universal indicators of overall water quality in aquatic systems. DO concentrations in the Inner Harbor Area have increased over the past 30 years from an average that was below 3 mg/L in 1970 to above 5 mg/L in 2001, a value fully supportive of ecological productivity (DEP 2002). In 2004, DO concentrations near the project site (Station G2) were generally above the 4 mg/L standard for Use Class I waters, with occasional drops in bottom water DO concentrations (DEP 2004a) Surface water and bottom water DO concentrations recorded in Gowanus Bay from October 2003 to June 2004 during sampling conducted for the Gowanus Bay and Canal Ecosystem Restoration Project ranged from about 6 to 11 mg/L and about 5.5 to 10 mg/L respectively (LMS 2004). All pH levels in the New York Harbor Area are in attainment.

High levels of nutrients can lead to excessive plant growth (a sign of eutrophication) and depletion of dissolved oxygen. Concentrations of the plant pigment chlorophyll-*a* in water can be used to estimate productivity and the abundance of phytoplankton. Chlorophyll-*a* concentrations greater than 20 micrograms per liter (µg/L) are considered suggestive of eutrophic conditions. Chlorophyll- *a* concentrations recorded at DEP sampling station G2 in 2004 averaged 4.4 µg/L and never exceeded 14 µg/L.

Secchi transparency is a measure of the clarity of surface waters. Transparency greater than 5 feet (1.5 meters) is indicative of clear water in turbid estuaries. Decreased clarity can be caused by high suspended solid concentrations or blooms of plankton. Secchi transparencies less than 3 feet (0.9 meters) are generally indicative of poor water quality conditions. In 2004, average Secchi readings in the Inner Harbor, 4.50 feet (1.4 meters), were similar to previous years (DEP

2004b). Average Secchi transparency near the project site in 2004 was 6.3 feet (1.9 meters) (DEP2004a).

SEDIMENT QUALITY

Upper New York Bay has a complex distribution of sediments in the area because of variable currents and a high degree of sediment input due to natural and human actions. Sediments in the Upper Bay vary from coarse sands and gravels in high-energy areas to fine-grained silts and clays in low-energy areas (USACE 1999a). Sediment samples collected from within the Bush Terminals along the Brooklyn waterfront in 1995, south of the project site, were characterized as dark silty material (Iocco et al. 2000). Sediment samples collected south of 30th Street Pier in December 2006 within the area to be dredged comprised primarily fine material (73 percent) with small amounts of sand (15 percent) and gravel (12 percent).

Typical of any urban watershed, Harbor Estuary sediments are contaminated due to a history of industrial uses in the area. Contaminants found throughout the Harbor Estuary included pesticides such as chlordane and DDT, metals such as mercury and copper, and various polycyclic aromatic hydrocarbons (PAHs). Adams et al. (1998) found the mean sediment contaminant concentration for 50 of 59 chemicals measured to be statistically higher in the Harbor Estuary than other coastal areas on the East Coast. Within the Harbor Estuary, Adams et al. (1998) ranked Newark Bay as the most degraded area on the basis of sediment chemistry, toxicity, and benthic community, followed by the Upper Bay, Jamaica Bay, Lower Harbor, Western Long Island Sound and the New York Bight Apex. Biological effects, identified based upon the benthic invertebrate community, were found to be associated with the chemical contamination. While the sediments of the Harbor Estuary are contaminated, the levels of most sediment contaminants (e.g., dioxin, DDT, and mercury) have decreased on average by an order of magnitude over the past 30 years (Steinberg et al. 2002). Between 1993 and 1998 the percentage of sediment sampling locations with benthic macroinvertebrate communities considered impacted, or of degraded quality, decreased throughout the Harbor Estuary. Within the Upper Bay, the percentage of benthic communities considered impacted decreased significantly from 75 percent in 1993 to 48 percent in 1998 (Steinberg et al. 2004).

Bulk chemical analysis of the sediment samples collected in December 2006 within the area to be dredged indicated that the levels of contamination were typical of other areas within New York Harbor. Similar to other sediment within the Harbor estuary, the primarily black clay-like silt sediment has elevated levels of some sediment contaminants—cadmium, copper, lead and mercury, PAHs, PCBs, and DDT—for which DEC has established sediment quality threshold values for dredging activities, or riparian or in-water placement of dredged material. As presented in Table F-2, the concentrations of these contaminants fall within the moderate to high concentration level, with the potential to result in chronic or acute toxicity to aquatic life, and likely requiring restrictions during dredging (i.e., use of environmental bucket dredge to minimize resuspension of sediment). Concentrations of benzene, total BTEX, and dieldrin are at the no appreciable contamination level. Concentrations of arsenic range from the no appreciable contamination level to the moderate contamination level.

Table F-2
Summary of Sediment Sampling 12/17/2006-12/19/2006, 30th Street Pier, South Brooklyn Marine Terminal

Compounds With DEC Sediment Quality Threshold Values (TOGS 5.1.9)	Number Observations in which the Compound was Not Detected	Number of Observations in which the Compound was Detected	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Average Detected Concentration (mg/kg)
Arsenic	0	12	3.3 (1)	39 (2)	24.46 (2)
Cadmium	0	12	0.88 (1)	12 (3)	6.34 (2)
Copper	0	12	140 (2)	550 (3)	375 (3)
Lead	0	12	230 (3)	720 (3)	452.5 (3)
Mercury	0	12	0.58 (2)	22 (3)	7.04 (3)
Benzene	11	1	0.0022 (1)	0.0022 (1)	0.0022 (1)
Total BTEX	9	3	0.0035 (1)	0.018 (1)	0.0091 (1)
Total PAH	0	12	4.605 (2)	87.3 (3)	48.91 (3)
Sum of DDT+DDD+DDE	2	10	0.0097 (2)	0.117 (3)	0.048 (3)
Mirex	Not Analyzed				
Chlordane	12	0	-	-	-
Dieldrin	11	1	0.026 (1)	0.026 (1)	0.026 (1)
PCBs (sum of aroclors)	3	9	0.1 (2)	2.59 (3)	0.82 (2)
2,3,7,8-TCDD (sum of toxic equivalency)	Not Analyzed				

Notes:

1 – TOGS 5.1.9 Class A Sediment Quality Threshold Value for dredging, riparian placement or in-water placement based on known or presumed impacts on aquatic organisms/ecosystem, no appreciable contamination level, no toxicity to aquatic life.

2 – TOGS 5.1.9 Class B Sediment Quality Threshold Value for dredging, riparian placement or in-water placement based on known or presumed impacts on aquatic organisms/ecosystem, moderate contamination (Chronic Toxicity to aquatic life). Dredging and riparian placement may be conducted with several restrictions.

3 – TOGS 5.1.9 Class B Sediment Quality Threshold Value for dredging, riparian placement or in-water placement based on known or presumed impacts on aquatic organisms/ecosystem, high contamination (Acute Toxicity to aquatic life). Dredged material is expected to be acutely toxic to aquatic biota and therefore, dredging and disposal requirements may be stringent

4 - Total BTEX was calculated by summing concentrations of benzene, toluene, ethylbenzene, and xylene (m&p) for each sample.

5 - Total PAH was calculated by summing concentrations of all PAHs analyzed: 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benxo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene

6 - Sum of DDT + DDD + DDE was calculated by summing concentrations of P,P'-DDT, P,P'-DDD, and P,P'-DDE. O,P'-DDT, O,P'-DDD, and O,P'-DDE were not included in sampling results.

7 - Mirex and 2,3,7,8-TCDD were not analyzed.

8 - PCBs (sum of aroclors) was calculated by summing concentrations of Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, and 1262.

Sources: New York State Department of Environmental Conservation. 2004. Technical Operational Guidance Series (TOGS), 5.1.9, *In-Water and Riparian Management of Sediment and Dredged Material*. NY State Department of Environmental Conservation, Division of Water, Bureau of Water Assessment and Management, 625 Broadway, Albany, NY, 12233.

AQUATIC BIOTA

The Harbor Estuary supports a diverse and productive aquatic community of over 100 species of finfish, more than 100 invertebrate species, and a variety of phytoplankton and zooplankton. The following sections provide a brief description of the aquatic biota found in the Harbor Estuary.

Phytoplankton are microscopic plants whose movements within the system are largely governed by prevailing tides and currents. Light penetration, turbidity and nutrient concentrations are important factors in determining phytoplankton productivity and biomass. Diatoms such as *Skeletonema costatum* and *Thalassiosira* spp. generally dominate the phytoplankton community, with lesser contributions from dinoflagellates and green algae (Brosnan and O'Shea 1995). While nutrient concentrations in most areas of New York Harbor are very high, low light penetration has often precluded the occurrence of phytoplankton blooms. Limited light penetration also restricts the distribution of submerged aquatic vegetation (SAV) in the Harbor. Benthic macroalgae are large multicellular algae that are important primary producers in the aquatic environment. Species of macroalgae that occur in the Harbor Estuary include sea lettuce, green fleece, and brown algae (]*Fucus* spp.] PBS&J 1998).

Zooplankton are an integral component of aquatic food webs—they are primary grazers on phytoplankton and detritus material, and are themselves used by organisms of higher trophic levels as food. The higher-level consumers of zooplankton typically include forage fish, such as bay anchovy, as well as commercially and recreationally important species, such as striped bass and white perch during their early life stages. Crustacean taxa (copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis)* dominate the zooplankton community, with the dominant species changing with the season (Stepien et al. 1981, Lonsdale and Cosper 1994, Perlmutter 1971, Lauer 1971, Hazen and Sawyer 1983).

The major groups of benthic invertebrates collected in the estuary include aquatic earthworms (oligochaetes), segmented worms (polychaetes), snails (gastropods), bivalves, barnacles, cumaceans, amphipods, isopods, crabs, and shrimp (EEA 1988, EA Engineering Science and Technology 1990, Coastal 1987, and PBS&J 1998). The polychaetes *Mulinia lateralis*, *Streblospio benedicti*, and *Mediomastus* dominated the benthic invertebrate community sampled at the Bush Terminals in 1995 (Iocco et al. 2000). Invertebrate sampling conducted in 2003 and 2004 as part of the Gowanus Bay and Canal Ecosystem Restoration Studies (LMS 2004) found Mussels and barnacles, followed by tube dwelling amphipods and polychaetes to be the dominant invertebrates to colonize artificial substrates deployed within Gowanus Bay. The lowest abundance occurred in December and greatest abundance in June.

New York City is located at the convergence of several major river systems, all of which connect to the New York Bight portion of the Atlantic Ocean. This convergence has resulted in a mixture of habitats in the Harbor Estuary that support marine, estuarine, anadromous (fish that migrate up rivers from the sea to breed in freshwater), and catadromous fish (fish that live in freshwater but migrate to marine waters to breed). Table F-3 lists fish species known to occur within the Harbor Estuary and have the potential to occur in the vicinity of the 30th Street Pier. According to Woodhead (1990), populations of numerically dominant fish within the Harbor Estuary (hogchoker, tomcod, winter flounder, white perch and striped bass) remain relatively stable from year to year.

Table F-3
Finfish Species Caught in New York Harbor 1982–2003

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
American eel	*Anguilla rostrata*
American sand lance	*Ammodytes hexapterus*
American shad	*Alosa sapidissima*
Atlantic cod	*Gadus morhua*
Atlantic croaker	*Micropogonias undulatus*
Atlantic herring	*Clupea harengus*
Atlantic mackerel	*Scomber scombrus*
Atlantic menhaden	*Brevoortia tyrannus*
Atlantic moonfish	*Selene setapinnis*
Atlantic needlefish	*Strongylura marina*
Atlantic seasnail	*Liparis atlanticus*
Atlantic silverside	*Menidia menidia*
Atlantic sturgeon	*Acipenser oxyrhynchus*
Banded killifish	*Fundulus diaphanous*
Bay anchovy	*Anchoa mitchilli*
Black sea bass	*Centropristis striata*
Blackfish	*Tautoga onitis*
Blueback herring	*Alosa aestivalis*
Bluefish	*Pomatomus saltatrix*
Butterfish	*Peprilus triacanthus*
Clearnose skate	*Raja eglanteria*
Conger eel	*Conger oceanicus*
Crevalle jack	*Caranx hippos*
Cunner	*Tautogolabrus adspersus*
Fawn cusk eel	*Lepophidium cervinum*
Feather blenny	*Hypsoblennius hentzi*
Fourbeard rockling	*Enchelypus cimbrius*
Foureye butterflyfish	*Chaetodon capistratus*
Four-spot flounder	*Paralichthys oblongus*
Gizzard shad	*Dorosoma cepedianum*
Goosefish	*Lophius americanus*
Grey snapper	*Lutjanus griseus*
Grubby	*Myoxocephalus aenaeus*
Hickory shad	*Alosa mediocris*
Hogchoker	*Trinectes maculatus*
Inshore lizardfish	*Synodus foetens*
Lined seahorse	*Hippocampus erectus*
Little skate	*Raja erinacea*
Longhorn sculpin	*Myoxocephalus octodecimspinosus*
Lookdown	*Selene vomer*
Mummichog	*Fundulus heteroclitus*
Naked goby	*Gobiosoma bosci*
Northern kingfish	*Menticirrhus saxatilis*
Northern pipefish	*Syngnathus fuscus*
Northern puffer	*Sphoeroides maculatus*
Northern searobin	*Prionotus carolinus*

Table F-3 (cont'd)
Finfish Species Caught in New York Harbor 1982–2003

Common Name	Scientific Name
Orange filefish	*Aluterus schoepfi*
Oyster toadfish	*Opsanus tau*
Planehead filefish	*Monacanthus hispidus*
Pollock	*Pollachius virens*
Rainbow smelt	*Osmerus mordax*
Red hake	*Urophycis chuss*
Rock gunnel	*Pholis gunnellus*
Rough scad	*Trachurus lathami*
Scup	*Stenotomus chrysops*
Seaboard goby	*Gobiosoma ginsburgi*
Sheepshead	*Archosargus probatocephalus*
Short bigeye	*Pristigenys alta*
Silver hake	*Merluccius bilinearis*
Silver perch	*Bairdiella chrysoura*
Smallmouth flounder	*Etropus microstomus*
Spot	*Leiostomus xanthurus*
Spotfin butterflyfish	*Chaetodon ocellatus*
Spotted hake	*Urophycis regia*
Striped bass	*Morone saxatilis*
Striped burrfish	*Chilomycterus schoepfi*
Striped cuskeel	*Ophidion marginatum*
Striped killifish	*Fundulus majalis*
Striped mullet	*Mugil cephalus*
Striped searobin	*Prionotus evolans*
Summer flounder	*Paralichthys dentatus*
Tautog	*Tautoga onitis*
Threespine stickleback	*Gasterosteus aculeatus*
Tomcod	*Microgadus tomcod*
Weakfish	*Cynoscion regalis*
White hake	*Urophycis tenuis*
White mullet	*Mugil curema*
White perch	*Morone americana*
Windowpane	*Scophthalmus aquosus*
Winter flounder	*Pseudopleuronectes americanus*
Yellowtail flounder	*Limanda ferruginea*

Sources: Woodhead 1990; EEA 1988; EA Engineering, Science & Technology 1990; LMS 1994, 1999, 2002, 2003a, 2003b; Able et al. 1995

Trawl surveys conducted bi-monthly from October 1998 to September 1999 for the New York/New Jersey Harbor Navigation Study found 18 species of fish in the Red Hook Channel, northwest of the 30th Street Pier (see Table F-4). Sampling conducted in Gowanus Bay as part of the Gowanus Bay and Canal Ecosystem Restoration Program (LMS 2004) found bay anchovy, Atlantic menhaden, members of the family Labridae (parrotfishes, rainbowfishes, and wrasses), windowpane flounder, and members of the family Gadidae (cod, haddock, whiting, and pollock eggs dominated the ichthyoplankton community. Low numbers of yolk-sac larva were collected in Gowanus Bay (i.e., only two grubby and one weakfish). For post yolk-sac larvae, windowpane flounder and Atlantic menhaden were collected in October, bay anchovy in December, grubby and winter flounder in March, and bay anchovy, and Atlantic menhaden in

Table F-4
Fish Caught in Trawl Surveys of Red Hook Channel, 1998-1999

Species	Scientific Name
Alewife	*Alosa pseudoharengus*
American eel	*Anguilla rostrata*
American shad	*Alosa sapidissima*
Atlantic menhaden	*Brevoortia tyrannus*
Atlantic tomcod	*Microgadus tomcod*
Bay anchovy	*Anchoa mitchilli*
Cunner	*Tautogolabrus adspersus*
Grubby	*Myoxocephalus aenaeus*
Little skate	*Raja erinacea*
Rock gunnel	*Pholis gunnellus*
Scup	*Stenotomus chrysops*
Spotted hake	*Urophysis regia*
Striped bass	*Morone saxatilis*
Striped searobin	*Prionotus evolans*
Summer flounder	*Paralichthys dentatus*
Weakfish	*Cynoscion regalis*
Windowpane	*Scopthalmus aquosus*
Winter flounder	*Pseudopluronectes americanus*
Source: USACE 1999b	

June. The results of the ichthyoplankton sampling suggest that some spawning occurs in Gowanus Bay. Adult fish collected within Gowanus Bay during this same study comprised striped bass (80 percent), winter flounder and white perch in December, and Atlantic tomcod (76 percent), spotted hake, bay anchovy and winter flounder in June. The fish community characterized for Gowanus Bay by results of sampling conducted for the Gowanus Bay and Canal Ecosystem Restoration Program was dominated by migratory species common to the Harbor Estuary, with few individuals of species known to reside in the Harbor Estuary year round (i.e., cunner and tautog) (LMS 2004).

ESSENTIAL FISH HABITAT (EFH)

The NMFS designates essential fish habitat (EFH) (i.e., waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity) for fish species actively managed under Federal Fishery Management Plans. Federal agencies are required to consult with NMFS (using existing consultation processes for NEPA, the Endangered Species Act, or the Fish and Wildlife Coordination Act) on any action that they authorize, fund or undertake that may adversely impact EFH. Table F-5 identifies the fish species and life stages designated as having EFH within the vicinity of the 30th Street Pier.

Table F-5
Fish Species Designated as Having Essential Fish Habitat (EFH) Within Upper New York Bay

Species	Eggs	Larvae	Juveniles	Adults
red hake (*Urophycis chuss*)		X	X	X
winter flounder (*Pleuronectes americanus*)	X	X**	X	X**
windowpane flounder (*Scopthalmus aquosus*)	X**	X**	X	X
Atlantic sea herring (*Clupea harengus*)		X	X	X
bluefish (*Pomatomus saltatrix*)			X	X
Atlantic butterfish (*Peprilus triacanthus*)		X	X	X
Atlantic mackerel (*Scomber scombrus*)			X	X
summer flounder (*Paralicthys dentatus*)		X	X	X
scup (*Stenotomus chrysops*)	X	X	X	X
black sea bass (*Centropristus striata*)			X	X
king mackerel (*Scomberomorus cavalla*)	X	X	X	X
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X
cobia (*Rachycentron canadum*)	X	X	X	X
clearnose skate (*Raja eglanteria*)			X	X
little skate (*Leucoraja erinacea*)			X	X
winter skate (*Leucoraja ocellata*)			X	X
sandbar shark (*Carcharinus plumbeus*)		X*		X
sand tiger shark (*Carcharius taurus*)		X*		
dusky shark (*Carcharhinus obscurus*)		X*		

Notes: * neonates
**known to occur within Gowanus Bay on basis of sampling for the Gowanus Bay and Canal Ecosystem Program (LMS 2004).
Sources: http://www.nero.noaa.gov

THREATENED OR ENDANGERED SPECIES, OR SPECIAL CONCERN SPECIES

Requests for information on rare, threatened or endangered species within the immediate vicinity of the 30th Street Pier were submitted to USFWS, NMFS, and the DEC Natural Heritage Program (NYNHP) in June 2007. According to the list of threatened or endangered species for Kings County posted by the USFWS (http://nyfo.fws.gov/es/section 7.htm, reviewed on July 22, 2007 as instructed by Papa 2007), the endangered shortnose sturgeon (*Acipenser brevirostrum*) is listed as occurring in Kings County, but primarily occurs in the Hudson River. No habitat designated or proposed as "critical habitat" in accordance with provisions of the Endangered Species Act, are listed as occurring in Kings County. The NMFS (2007) also confirmed that shortnose sturgeon occur in the Hudson River, and that Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) (considered a Candidate Species as NMFS has initiated a status review for this species to determine whether listing as threatened or endangered under the Endangered Species Act is warranted) also occurs in the Hudson River and surrounding coastal waters (Colligan 2007). Additional response from NMFS regarding EFH is pending.

Shortnose sturgeon is an anadromous bottom-feeding fish that can be found throughout the Hudson River system but spawns, develops, and overwinters well north of the project area in the Hudson River, and prefers colder, deeper waters for all lifestages. While documented as occurring below Tappan Zee in the Hudson River and collected in the Manhattan area during an annual striped bass survey (annual survey conducted from July through December) in 2003, 2005, and 2006 (Colligan 2007), this portion of the river is not considered optimal shortnose sturgeon habitat (Bain 2004), and sturgeon would be expected to occur rarely south of the

southern tip of Manhattan (Bain 1997). Therefore, individuals are only expected to use the Upper Harbor in the vicinity of Gowanus Bay when traveling to or from the upriver spawning, nursery and overwintering areas on the Hudson River. Fish that may occur in the Upper Harbor would be expected to use the deeper channel areas as opposed to the near-shore areas in the vicinity of the area of dredging and in-water construction associated with the proposed actions.

The Hudson River shortnose sturgeon population was recently estimated to contain approximately 61,000 fish (Peterson and Bain 2002). These studies show that the population has increased approximately 450 percent since the 1970s. Size and body condition of the fish caught in these studies indicate the population is primarily healthy, long-lived adults. Although larvae can be found in brackish areas of the river, the juveniles (fish ranging from 2 to 8 years old) are predominately confined to freshwater reaches above the downstream saline area. The primary summer habitat for shortnose sturgeon in the middle section of the Hudson River Estuary is the deep river channel (13 to 42 meters deep, 43 to 138 feet) (Peterson and Bain 2002).

The Atlantic sturgeon is the largest sturgeon found in New York, occasionally weighing over 200 pounds and measuring 6 to 8 feet long (Stegemann 1999). This anadromous species occurs within the New York Harbor Estuary (Woodhead 1990), and the Hudson River Estuary. In the Hudson River, Atlantic sturgeon are found in the deeper portions and do not occur further upstream than Hudson, New York. Atlantic sturgeon migrate from the ocean upriver to spawn above the salt front from April to early July (Smith 1985, Stegemann 1999). Female sturgeon move out of the river following spawning but the males may remain in the river until October or November.

According to the DEC, there were no records of rare or state-listed animals of plants, significant natural communities, or other significant habitats on or in the immediate vicinity of the site (Seoane 2007).

TERRESTRIAL RESOURCES

The majority of the 30th Street Pier is covered by asphalt surface and is used by the NYPD as a vehicle impoundment lot (see Figure F-5, aerial photograph). Between the edge of the paved surface and Gowanus Bay is a narrow band of vegetation (15 to 50 feet wide) comprising herbaceous, shrub and tree species typical of disturbed areas in New York City. Herbacous species reported for the project site include: poor-man's peppergrass (*Lepidium virginicum*), tall goldenrod (*Solidago altissima*), seaside goldenrod (*Solidago sempervirens*), lady's thumb (*Polygonum persicaria*), lamb's quarters (*Chenopodium album*), common mugwort (*Artemesia vulgaris*), wild carrot (*Daucus carota*), English plantain (*Plantago lanceolata*), spotted spurge (*Chamaesyce maculate*), black medic (*Medicago lupulina*), small white aster (*Aster vimineus*), common reed (*Phragmites australis*), horseweed (*Conyza canadensis*), Pennsylvania smartweed (*Polygonum pennsylvanicum*), white sweet clover (*Melilotus alba*), yellow sweet clover (*Melilotus officinalis*), panic grass (*Panicum* sp.), redroot pigweed (*Amaranthus retroflexus*), Kentucky bluegrass (*Poa pratensis*), green foxtail (*Setaria viridus*), common ragweed (*Ambrosia artemisiifolia*), common evening primrose (*Oenthera biennis*), annual wormwood (*Artemesia annua),* Asiatic bittersweet (*Celastrus orbiculatus*), pokeweed (*Phytolacca americana*), intermediate dogbane (*Apocynum medium*), common mullein (*Verbascum thapsus*), goose grass (*Eleusine indica*), field bindweed (*Convolvulus arvensis*), red clover (*Trifolium repens*), barnyard grass (*Echinochola crusgalli*), Canada thistle (*Cirsium arvense*), curly dock (*Rumex crispus*) and tufted lovegrass (*Eragrostis pectinacea*). Tree and shrub species reported for the project site comprise hackberry (*Celtis occidentalis*), cottonwood (*Populus deltoids*), princess tree

(*Paulownia tomentosa*), smooth sumac (*Rhus glabra*), American basswood (*Tilia americana*), tree-of-heaven (*Ailanthus altissima*), black cherry (*Prunus serotina*), pin oak (*Quercus palustris*), black locust (*Robinia pseudo-acacia*), and rose (*Rosa* sp.) (DSNY 2005). This narrow band of vegetation provides limited terrestrial habitat for urban birds and other wildlife such as pigeon (*Columba livia)*, European starling (*Sturnus vulgaris)*, house sparrow (*Passer domesticus)*, and gulls. Table F-6 lists bird species identified as breeding within the DEC Breeding Bird Atlas Block 5750D, which includes the project site, with the potential to occur at the 30th Street Pier.

Table F-6
Birds Identified as Breeding Within Breeding Bird Atlas Block 5750D With The Potential to Occur at 30th Street Pier

Common Name	Scientific Name
Killdeer	*Charadrius vociferus*
Rock Pigeon	*Columba livia*
Mourning Dove	*Zenaida macroura*
American Robin	*Turdus migratorius*
Gray Catbird	*Dumetella carolinensis*
Northern Mockingbird	*Mimus polyglottos*
European Starling	*Sturnus vulgaris*
Yellow Warbler	*Dendroica petechia*
Common Yellowthroat	*Geothlypis trichas*
Red-winged Blackbird	*Agelaius phoeniceus*
Brown-headed Cowbird	*Molothrus ater*
American Goldfinch	*Carduelis tristis*
House Sparrow	*Passer domesticus*

Notes:
Sources: http://www.dec.ny.gov/animals/7312.html, Breeding Bird Atlas Block 5750D 2005 Survey

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS

The future without the proposed action ("No Build") condition is a projection of natural resources in the vicinity of the 30th Street Pier independent of the proposed project. Without the proposed project, the existing conditions described in the previous sections would remain essentially the same and 30th Street Pier would likely continue to be used by the NYPD as a vehicle impoundment lot.

Elements of the New York/New Jersey Harbor Estuary Program (HEP) and other programs that are specifically directed at improving biological resources and habitats, would be expected to result in some improvements to natural resources over time. These programs are described briefly below.

NEW YORK/NEW JERSEY HARBOR ESTUARY PROGRAM PROJECTS

The New York-New Jersey Harbor Estuary Program (HEP) Final Comprehensive Conservation and Management Plan (CCMP) included a number of goals to improve water quality and aquatic resources throughout the Harbor Estuary. To meet these goals, the CCMP outlines objectives for the management of toxic contamination, dredged material, pathogenic contamination, floatable debris, nutrients and organic enrichment, and rainfall-induced discharges. Most of these objectives aim to increase knowledge of the nature and extent of various forms of pollution (e.g., toxic chemicals, sewage overflows, and floatables), reduce inputs of these pollutants, and

increase the habitat and human use potential of the Harbor Estuary area. The floatables action plan of HEP aims to reduce the amount of debris in the states' waters. It includes marine debris survey collection programs, improved street cleaning, combined sewer overflow and stormwater abatement, enforcement of solid waste transfer regulations, shoreline cleanup programs, and public education.

The HEP Habitat Workgroup developed watershed-based priorities for acquisition, protection, and restoration. The USACE New York District began a feasibility study in 2001 to assess potential sites for habitat restoration in New York Harbor. In May 2003 the Regional Plan Association (RPA) identified needs and opportunities for environmental restoration in the Hudson-Raritan Estuary. These sites are not local to the project site but involve the preservation and enhancement of tidal wetlands that will provide improved habitat for fish and macroinvertebrates as well as the birds, mammals, and reptiles that depend on these habitats. HEP Acquisition and Restoration Sites in closest proximity to the Upper Bay are listed below. HEP actions taken with respect to these sites would occur with or without the proposed project.

- *Liberty State Park*—Located in the Upper Bay, it has been identified for restoration, including permanent protection of natural areas, enhancement of emergent habitat, and restoration of oyster beds;
- *Bush Terminal*—Located in Upper Bay on the Brooklyn shoreline, south of the 30th Street Pier, it was chosen as a priority restoration site for salt marsh restoration.

NEW YORK CITY PROJECTS

EPA's National CSO Strategy of 1989 requires states to eliminate dry weather overflows of sewers, meet federal and state water quality standards for wastewater discharges, and minimize impacts on water quality, plant and animal life, and human health. New York City committed $1.5 billion for construction of CSO abatement facilities over the period 1998-2008. This should result in some future improvement in coliform, DO, and floatables levels in the Harbor Estuary. The City also recently completed improvements to its wastewater treatment plants, which should lead to further decreases in coliform counts and floatables levels.

As required by EPA's CSO Control Policy, DEP initiated the development of the Long Term Control Plan (LTCP) Project in 2004. The LTCP Project will integrate CSO Facility Planning Projects and the Comprehensive City-Wide Floatables Abatement Plan, incorporate ongoing Use and Standards Attainment Program (USA) Project work, and will develop Waterbody/Watershed Facility Plan Reports and the LTCP for each waterbody area. The LTCP Project monitors and assures compliance with applicable Administrative Consent Orders between DEC and New York City for the CSO Abatement Program. Additionally, DEP plans to increase identification and control of pollutants of concern, including mercury, PCBs, and solvents.

STATE AND REGIONAL PROJECTS

The Hudson-Raritan Estuary Ecosystem Restoration Project is a cooperative project being led by the USACE that was funded by a House of Representatives Resolution on 15 April 1999. PANYNJ is a co-sponsor of this project. Other agencies involved in this project include EPA, USFWS, NOAA, National Resource Conservation Service, New Jersey Department of Environmental Protection (NJDEP), New Jersey Department of Transportation (Office of Maritime Resources), DEC, NYSDOS, DEP, New York City Parks and Recreation, and New Jersey Meadowlands Commission. The focus of the study is to identify the actions needed to restore the Hudson-Raritan Estuary and develop a plan for their implementation. The study area

for the program includes all the waters of the New York and New Jersey Harbor and the tidally influenced portions of all rivers and streams that empty into the Harbor and ecologically influence the Harbor. The program would identify measures and plans to restore natural areas within the estuary and enhance their ecological value, and address habitat fragmentation and past restoration and mitigation efforts that were piecemeal in nature. Thirteen initial representative restoration sites in New York and New Jersey have been targeted as the first sites for inclusion as potential restoration projects for feasibility level analysis. It is anticipated that expedited restoration of these representative restoration sites would provide substantial immediate value to the ecosystem. None of these sites occurs in the vicinity of the of the 30th Street Pier. Therefore, actions taken by the Hudson-Raritan Estuary Ecosystem Restoration Project with respect to these sites would occur with or without the proposed project.

In addition to the 13 representative sites, three spin-off sites have been identified. These are restoration sites being evaluated in parallel to the representative sites. Gowanus Canal has been identified as one of these spin-off sites. Additionally, the Gowanus Canal and Bay Ecosystem Restoration Project was authorized by a U.S. House of Representatives Committee on Transportation and Infrastructure Resolution in 1999 (Docket Number 2596). The goal of this study, jointly funded by USACE and DEP, is to assess the environmental problems and potential solutions to restore the ecological health of the Gowanus Canal and complement other activities focused on improving this portion of the Upper Bay.

The Comprehensive Port Improvement Plan (CPIP), sponsored by PANYNJ, is a multi-agency plan for implementing economic development and environment improvement decisions for the Port of New York and New Jersey. Among the priority objectives for the Plan are the identification and protection of significant habitats, the investigation of innovative best management practices for reduction of non-point sources of water pollutants, and the incorporation of "green" (environmentally sustainable) technologies in port improvement projects.

DEC and NJDEP, in coordination with the IEC, would continue to develop total maximum daily loads (TMDLs) and to identify priority waterbodies in bi-annual 305(b) reports to EPA. TMDLs, once implemented, would reduce the daily inputs of various contaminants in an effort to improve water quality. New York State provided $255 million to implement wastewater improvements, nonpoint source abatement and aquatic habitat restoration projects in 1998. The State intends to continue water quality improvement projects in the Harbor for the foreseeable future.

F. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

FLOODPLAIN

The construction of the proposed MRF, and associated relieving platform and mooring platforms would not result in adverse impacts on the floodplain adjacent to the project site. The proposed project would not result in a change to the existing primarily impervious surface within the 30th Street Pier and would not be expected to result in an increase in stormwater runoff discharged to Gowanus Bay. The proposed project would raise the elevation of the project site using using imported fill or stabilized dredge material such that the paved surfaces (elevation +11.5 feet NGVD) and bases of buildings (elevation +13.5 feet NGVD) are above the 100-year flood elevation (+10 feet NGVD), and will comply with all applicable statutes governing the construction of non-residential buildings in flood hazard areas (e.g., NY City Building Code,

Title 27, Subchapter 4, Article 10). Raising the elevation of the project site above the 100-year flood elevation would not exacerbate flooding conditions in the vicinity of the project site. New York City is affected by local (e.g., flooding of inland portions of the City from short-term, high-intensity rain events in areas with poor drainage), fluvial (e.g., rivers and streams overflowing their banks), and coastal flooding (e.g., long and short wave surges that affect the shores of the Atlantic Ocean, bays such as Upper New York Bay and Gowanus Bay, and tidally influenced rivers, streams and inlets [FEMA 2001]). The floodplain within and adjacent to the project site is affected by coastal flooding, which is influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes [FEMA 2001]), and therefore, would not be affected by construction of the proposed project.

WETLANDS

CONSTRUCTION

As discussed previously the development of the proposed MRF at the 30th Street Pier would require dredging to a depth of 12 feet below Mean Low Water (MLW) within a 186,000-square-foot (4.3-acre) area along the southern side of the pier (see Figure F-1). Approximately 65,511 square feet (1.51 acres) of the proposed area to be dredged is no deeper than 6 feet at MLW and may be classified as littoral zone tidal wetland by DEC. Approximately 11,045 square feet (0.25 acres) of the proposed area to be dredged comprises vegetated rocky intertidal wetlands formed by debris remaining from the removal of the finger pier, and the riprap protecting the shoreline. The proposed dredging necessary to allow delivery to and removal of materials from the proposed MRF would impact approximately 1.76 acres of tidal wetlands (i.e., 1.51 acres of littoral zone tidal wetland and 0.25 acres of intertidal areas) through conversion of these wetlands to subtidal habitat. Habitat enhancement measures proposed as part of the project will offset impacts on these wetlands and their potential use as fish habitat. These measures may include the approximately 0.19 acres of low marsh habitat created through habitat enhancement measures implemented along the shoreline of the pier, as well as additional off-site opportunities developed in coordination with DEC and USACE.

The proposed project would be covered under the DEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity Permit No. GP-02-01. In order to obtain coverage under this permit, a SWPPP would be prepared and a Notice of Intent would be submitted to DEC. The SWPPP would comply with all of the requirements of GP-02-01, DEC's technical standard for erosion and sediment control presented in "New York Standards and Specifications for Erosion and Sediment Control," and DEC's technical standard for the design of water quantity and water quality controls (post-construction stormwater control practices) presented in the New York State Stormwater Management Design Manual. Implementation of erosion and sediment control measures, and stormwater management measures identified in the SWPPP would minimize potential impacts tidal wetlands along the edges of the 30th Street Pier associated with discharge of stormwater runoff during land disturbing activities on the upland portion of the pier, and along the shoreline in association with the proposed enhancement measures. These land disturbing activities would include:

- removal of the existing paved surface;
- installation of underground filtration units within 30th Street Pier to treat stormwater runoff collected from the pier ground surface to be discharged through either the existing 15-inch

diameter pipes, or through a new trunk line system should the existing pipes prove to not be adequate;

- installation of utilities (sewer and water);
- construction of the five buildings comprising the MRF; and
- construction of the portion of the relieving platform that would be located above MHHW.

OPERATION

The operation of the proposed MRF would not be expected to result in significant adverse impacts on tidal wetlands. The operation of the proposed underground filtration units within 30th Street Pier to treat stormwater runoff collected from the pier ground surface would minimize potential impacts on littoral zone tidal wetlands surrounding 30th Street Pier due to the discharge of stormwater.

WATER QUALITY

CONSTRUCTION

As discussed in the previous section, "Wetlands," implementation of erosion and sediment control measures and stormwater management measures specified in the SWPPP during construction of the proposed project would minimize potential impacts on Gowanus Bay water quality associated with discharge of stormwater runoff during land disturbing activities on the upland portion of the pier, and along the shoreline in association with the proposed habitat enhancement measures.

In-water construction activities for the proposed project that would result in sediment disturbance and have the potential to affect water quality include the following:

- Dredging of approximately 53,158 cubic yards of debris and sediment within 186,000-square-foot (4.3-acre) area along the southern side of 30th Street Pier to achieve a design water depth of 12 feet at MLW, with 2 feet of allowable overdepth dredging. This is the minimum design depth for the 200-foot- long by 40-foot-wide barges anticipated to deliver and remove material from the MRF, which would have up to a 10-foot draft when fully laden.
- Driving of piles used to support the proposed relieving platform (wharf) and fender system, EBUF finger pier and fender, and mooring pier and fender.

In order to minimize increases in suspended sediment it is anticipated that dredging will be performed using an environmental bucket dredge (enclosed clamshell bucket with the hoist speed limited to less than 2 feet per second to minimize turbidity). Enclosed clamshells have been found to reduce the amount of sediment suspended in the water column between 30 and 75 percent because less material leaks from the bucket (Barnard 1978, Hayes 1986, USACE 2001). Dredged material would be placed directly into sealed barges with no barge overflow permitted. The dredger selected for the proposed project would be required to submit a dewatering plan, which at a minimum, would allow for loaded scows to settle and decant water to be tested for suspended solids concentrations. Decant water will be released back to the bay when suspended solids concentration is at or below 200 mg/L.

Any increase in suspended sediment that may occur during use of the environmental bucket dredge would be expected to be minimal and would dissipate shortly after the completion of

dredging. In a study of the effect of dredging on turbidity, Pennekamp et al. (1996) observed that the collapse of the turbidity plume after dredging stopped rarely took more than 1.5 hours. Therefore, dredging activities in an estuary would not be expected to result in significant adverse impacts on water quality. Similarly, any contaminants released to the water column as a result of sediment disturbance would be expected to dissipate rapidly and would not be expected to result in significant long-term impacts on water quality. As discussed previously, the bottom material to be dredged has undergone testing for contaminants in accordance with DEC specifications in order for DEC and USACE to authorize dredging within the project site. Stabilized dredged material would be used beneficially for upland placement at an approved site, or on the project site. Dredging is anticipated to take approximately 60 days, including mobilization and demobilization, and would not occur during the period established by regulatory agencies to protect certain species of overwintering fish (e.g., striped bass), usually November 1 through May 31.

The driving of piles has the potential to result in water quality changes associated with increased suspended sediment in the water column. However, this increase in suspended sediment is expected to be temporary, and localized to the immediate vicinity of the pile being driven. Any increase in suspended sediment would be expected to dissipate shortly after the driving of the pile is complete and would not be expected to result in significant adverse impacts on water quality. Piles would be driven with a barge-mounted impact hammer. The estimated duration of construction for the relieving platform is 8 weeks, and for the EBUF pier and mooring pier is 6 weeks. Other construction activities, such as the installation of the pile caps and pouring of the concrete deck would either be done using a construction barge or land-based equipment.

In summary, implementation of the SWPPP prepared for the proposed project during construction of the proposed project would minimize potential impacts on Gowanus Bay water quality associated with discharge of stormwater runoff during construction. Dredging of approximately 4.3 acres south of 30th Street Pier needed to provide access to the MRF by barges, and the driving of piles used to support the relieving platform, EBUF finger pier and mooring pier, would result temporary, and localized increases in suspended sediment within the area dredged and piles installed. Any increase in suspended sediment that occurs during dredging and pile driving activities would dissipate shortly after the completion of the activity and would not result in significant adverse impacts on water quality.

OPERATION

The proposed MRF would not result in an increase in impervious area on the 30th Street Pier and would not result in an increase in stormwater runoff to Gowanus Bay. The operation of the underground filtration units within the pier to treat stormwater runoff collected from the pier ground surface would improve the quality of the stormwater runoff discharged to Gowanus Bay through the existing 15-inch diameter pipes or possible new trunk line system. Rooftop drainage discharged directly to Gowanus Bay would not result in significant adverse impacts on water quality. The possible placement of approximately 22,210 to 23,357 cubic yards of stabilized dredged material (mixed with Portland cement) on the project site to elevate it above the 100-year floodplain would be evaluated prior to the selection of the dredging contractor. The proposed reuse of stabilized dredged material would not result in significant adverse impacts on the quality of the stormwater released to Gowanus Bay from the underground filtration units. The placement of stabilized dredged material would be in accordance with a Beneficial Use Determination (BUD) issued by DEC for the proposed project. The BUD would include specifications (chemical and physical standards) for the stabilized dredged material that will be

used within the project site to ensure that it is non-hazardous and that its use will be protective of the environment.

Because all material unloading and processing at the MRF would be conducted in enclosed areas, the operation of the facility would not result in significant adverse impacts on water quality due to discharges. All areas where delivery vehicles unload materials would be enclosed. Unloading of MGP barges and loading of paper onto barges would be conducted in the EBUF. Booms will be placed around barges and dip nets used, as needed, to capture any floatables that may enter surface waters. A small boat would be available at the pier to capture any floatables that escape the boom. The proposed project would also include litter control measures (i.e., mechanical sweeper) and would provide trash and recycling receptacles for employees and visitors.

The movement of tugboats and barges to and from the MRF would not be expected to result in significant adverse impacts on water quality due to the resuspension of bottom sediment. The 12 foot depth at MLW of the access channel to the EBUF, wharf, and mooring pier would allow a minimum clearance of at least 2 feet between the bottom of the fully loaded barge (draft of 10 feet) and the bottom of Gowanus Bay, and a minimum clearance of between 0.2 and 3.4 feet between the bottom of the tugboats and the bottom of Gowanus Bay (drafts of tugboats range from 8.6 to 11.8 feet). These minimum clearances for some of the tugboats with the deeper draft may result in temporary increases in suspended sediment during passage of tugboat and barge that would be expected to dissipate quickly. Additionally, the proposed pile spacing for the EBUF finger pier (20-foot bent spacing), and the mooring pier (15-foot bent spacing), would not be expected to impair the movement of tidal waters in Gowanus Bay or the designated use of Gowanus Bay.

In summary, the operation of the proposed MRF on 30th Street Pier would not result in significant adverse impacts on water quality of Gowanus Bay due to stormwater runoff, the release of materials being processed by the facility to surface waters, or from the movement of barges or tugboats to the wharf or mooring locations. Operation of the MRF would not be expected to impair the use of these waters or future improvements to these waters that would result from measures implemented as part of the Gowanus Canal and Bay Ecosystem Restoration Project, and other water quality and habitat improvement projects initiated by NY City and the state.

AQUATIC BIOTA

CONSTRUCTION

Stormwater management measures specified in the SWPPP during construction of the proposed project would minimize potential impacts on Gowanus Bay water quality and aquatic biota associated with discharge of stormwater runoff during land disturbing activities on the upland portion of the pier. In-water project elements such as dredging and pile driving, as described above under “Water Quality,” also have the potential to result in temporary adverse impacts on fish and macroinvertebrates due to the following:

- increases in suspended sediment;
- noise associated with pile driving; and
- loss of bottom habitat and associated benthic invertebrates.

As discussed under "Water Quality," the temporary increase in suspended sediment associated with dredging and pile driving is expected to be localized to the vicinity of the dredging and the immediate vicinity of the pile being driven, and is not expected to result in significant adverse impacts on aquatic biota. While the Harbor Estuary sediments do contain contaminants, the resuspension and redeposition of the Gowanus Bay sediments in the vicinity of the 30th Street Pier would be minimized through the use of the environmental bucket dredge and other restrictions that may be imposed by DEC, and would not be expected to pose a risk to aquatic organisms.

Life stages of estuarine-dependent and anadromous fish species, bivalves and other macroinvertebrates are fairly tolerant of elevated suspended sediment concentrations and have developed behavioral and physiological mechanisms for dealing with variable concentrations of suspended sediment (Birtwell et al. 1987, Dunford 1975, Levy and Northcote 1982 and Gregory 1990 in Nightingale and Simenstad 2001a, LaSalle et al. 1991). Fish are mobile and generally avoid unsuitable conditions in the vicinity such as increases in suspended sediment and noise (Clarke and Wilber 2000). While the localized increase in suspended sediment may cause fish to temporarily avoid the area around the dredging and where piles are being installed, the affected area would be expected to be small. Similar suitable habitats would be available for use by fish to avoid the dredging area and areas of pile installation. Fish also have the ability to expel materials that may clog their gills when they return to cleaner, less sediment laden waters. Most shellfish are adapted to naturally turbid estuarine conditions and can tolerate short-term exposures by closing valves or reducing pumping activity. More mobile benthic invertebrates that occur in estuaries have been found to be tolerant of elevated suspended sediment concentrations. In studies of the tolerance of crustaceans to suspended sediments that lasted up to two weeks, nearly all mortality was caused by extremely high suspended sediment concentrations (greater than 10,000 mg/L) (Clarke and Wilber 2000) which would not occur from the in-water work associated with dredging or pile installation for the proposed project. In a study of the effect of dredging on turbidity, Pennekamp et al. (1996) observed that turbidity rarely increased by more than 500 mg/L. Increases in suspended sediment associated with use of environmental bucket dredges, reported by Hayes (1986), ranged from 50 to 300 mg/L within 100 feet, 40 to 210 mg/l within 200 feet, and 25 to 100 mg/L within 400 feet. Therefore, temporary increases in suspended sediment resulting from dredging and the installation of the piles would not be expected to result in significant adverse impacts on fish and mobile benthic macroinvertebrates.

Pile driving can produce underwater sound pressure waves that can affect fish, with the type and intensity of sounds varying with factors such as the type and size of the pile, firmness of the substrate, depth of water, and the type and size of the pile driver. Larger piles and firmer substrate require greater energy to drive the pile resulting in higher sound pressure levels (SPL). Hollow steel piles appear to produce higher SPL than similarly sized wood or concrete piles (Hanson et al. 2003). Sound attenuates more rapidly in shallow waters than in deep waters (Rogers and Cox 1988 in Hanson et al. 2003). SPLs generated by the driving of hollow steel piles with impact hammers can reach levels that injure fish (Hanson et al. 2003), and may not cause an avoidance behavior in fish. Impact hammers generate short pulses of sound with little of the sound energy occurring in the infrasound frequencies; the sound frequencies that have been shown to elicit an avoidance response in fish (Enger et al. 1993, Knudsen et al. 1997, and Sand et al. 2000 in Hanson et al. 2003). Therefore, fish have been observed exhibiting an initial startle response to the first few strikes of an impact hammer, after which fish may remain in an area with potentially harmful sound levels (Dolat 1997, NMFS 2001 in Hanson et al. 2003).

While there is little data available on the SPL required to injure fish, fish with swim bladders and smaller fish have been shown to be more vulnerable (Hanson et al. 2003). Because the area where pile driving will occur is small when compared the amount of open water area available between the 30th Street Pier and the pier to the south at 33rd Street, and within Gowanus Bay, fish would have sufficient available habitat to avoid pile driving activity. Additionally because the length of time for driving each pile is expected to be short, individual fish would not be expected to be exposed to potentially dangerous SPLs long enough to result in mortality. Therefore, the pile driving that would occur for the development of the MRF at 30th Street Pier would not be expected to result in significant adverse impacts on aquatic biota.

Dredging would result in the temporary loss of benthic macroinvertebrates within the 4.3-acre area to be dredged. In general, benthic communities found in environments with a great deal of variability, such as the estuarine environment of the Upper Bay, have higher rates of recovery from disturbance. Recovery rates of benthic macroinvertebrate communities following dredging range from only a few weeks or months, to a few years depending upon the type of project, the type of bottom material, the physical characteristics of the environment and the timing of disturbance (Hirsch et al. 1978, LaSalle et al. 1991). The temporary loss of benthic macroinvertebrates due to dredging, while it would result in the loss of some individual macroinvertebrates, is not expected to result in significant adverse impacts on populations of these species within the Harbor Estuary. The majority of the bottom habitat and associated benthic macroinvertebrates within the area to be dredged is the soft sediment community which dominates the Upper Bay. Therefore, the temporary loss of this area is not expected to adversely impact the populations of the species that make up this community. Additionally, the newly exposed sediments would be expected to be quickly recolonized by these same species. Recolonization by macroinvertebrates would not be affected by the increased depth of the dredged area.

The installation of the piles will result in the permanent loss of a small amount of bottom and water column habitat for each pile installed, and the benthic macroinvertebrates associated with the bottom habitat within the pile footprints, that are unable to move from the area of pile installation. The gradual loss of this small area of habitat for benthic macroinvertebrates and fish would not be expected to result in significant adverse impacts on populations of aquatic species using Gowanus Bay. The permanent loss of benthic macroinvertebrates within the piling footprints would not significantly impact the food supply for fish foraging in the area. Additionally, the piles would provide surface for encrusting organisms.

In summary, during dredging and in-water construction of the relieving platform, EBUF finger pier, and mooring pier, temporary increases in suspended sediment are expected to be localized to the vicinity of the dredging and pile driving, and are not expected to result in significant adverse impacts on aquatic biota. The temporary loss of benthic macroinvertebrates due to dredging, while it would result in the loss of some individual macroinvertebrates, is not expected to result in significant adverse impacts on populations of these species within the Harbor Estuary. Additionally, the newly exposed sediments would be expected to be quickly recolonized by these same species. Similarly, the permanent loss of a small amount of bottom habitat and water column habitat for each pile installed, and the benthic macroinvertebrates associated with these pile footprints, would not be expected to result in significant adverse impacts on populations of aquatic species using Gowanus Bay.

OPERATION

The operation of the proposed MRF would not result in significant adverse impacts on water quality and aquatic biota. However, with the placement of concrete decking on the piles driven to support the EBUF finger pier (3,386 square feet [0.08 acres]), and the concrete decking on the piles driven to support the mooring pier (2,150 square feet [0.05 acres]), and the placement of the roof material over the EBUF (21,025 square feet [0.51 acres]), approximately 26,561 square feet (0.64 acres) of water column and bottom habitat would have the potential to be shaded as a result of the proposed project.

Shading of estuarine habitats is of concern because decreased light levels can lower productivity of primary producers and adversely affect fish and invertebrates that use these areas to provide passage for various lifestages, and as important areas for feeding, refugia, and spawning (Nightingale and Simenstad 2001b). Alteration of light regimes by overwater structures and activities such as docks, floats, piling, and moored vessels can limit plant growth and recruitment and result in altered animal behavior and assemblages. Factors affecting the shade footprint include height of overwater structure, width, construction materials, and orientation to the arc of the sun (Burdick and Short 1995, Fresh et al. 1995 and 2000, Olson 1996 and 1997 in Nightingale and Simenstad 2001b). Piling density and construction materials can also affect the extent of light limitation, with shading increasing with the number of pilings. Piling material (i.e. concrete, wood, or steel) also affects underwater light. Concrete and steel refract more light to the underwater environment than wood piles which absorb light (Thom and Shreffler 1996 in Nightingale and Simenstad 2001b). Adequate spacing between piles reduces light limitations and minimizes interference with water and sediment movement (Fresh et al. 1995 in Nightingale and Simenstad 2001b).

Light is necessary for the photosynthetic process, and shading may result in some degree of impairment, resulting in a decrease in primary production. Light energy beneath a dock can be reduced by 90 to 100 percent, which can affect prey visibility and prey capture, and the availability of microalgae and macrophytes. The minimal light requirement for estuarine primary producers such as phytoplankton is that 1 percent of the surface irradiance reach the lower depth limit for that species (Stickland 1958 in Nightingale and Simenstad 2001b). The low light requirement of phytoplankton, combined with the relatively short residence time that would be expected under the areas covered by the relatively narrow (all less than 18 feet wide) platforms proposed as part of the proposed project, would limit potential impacts on phytoplankton from shading. Similarly, the increased shading resulting from the overwater coverage that would occur as a result of the proposed project would not be expected to result in adverse effects to zooplankton communities. Many zooplankton graze on phytoplankton as well as detritus, and a steady supply of these suspended materials provides an adequate availability of food sources. While the increase in shaded area may decrease a visual feeder's ability to locate prey, residence time of these planktonic organisms in such areas is expected to be short; thus, no significant adverse impacts would be expected.

Shading can adversely impact habitat for certain fish species because of these species' dependence on sight and light for feeding, prey capture, schooling (due to dispersal under low light conditions), spatial orientation, predator avoidance and migration (change in migratory route to deeper waters to avoid shaded areas). Juvenile and larval fish are primarily visual feeders and can be affected by light levels (Nightingale and Simenstad 2001b). It has been maintained that shading of estuarine habitats can result in decreased light levels which can lower productivity of primary producers and adversely affect invertebrates, and fish that use these

areas particularly with respect to use as foraging habitat (Able et al. 1998). The magnitude of shading impacts is likely to be species and life stage specific, and variable depending on site characteristics.

The DEC has determined that the area of decreased habitat value (shade-impacted area) under an overwater structure generally occurs in that portion of the pier that is 15 feet from the three water-side edges of the pier. Using this criterion, the total increase shade-impacted aquatic habitat resulting from the proposed project would be restricted to a portion of the area covered by the EBUF roof, and a portion of the area under the approximately 17-foot wide EBUF finger pier. Therefore, only approximately 25,822 square feet (0.59 acres) of overwater coverage would have the potential to result in shading impacts on aquatic habitat. Should translucent material be used for the EBUF roof, some light would penetrate to the water surface within the 0.44-acre area under the roof. Because shading would adversely affect the suitability of underwater areas as habitat for some fish species, the proposed coverage of approximately 0.59 acres of water column and bottom habitat by overwater platforms constructed for the proposed project would impact fish habitat due to shading. Habitat enhancement measures proposed as part of the project will offset adverse impacts on wetlands and fish habitat from the conversion of approximately 1.76 acres of littoral zone/intertidal habitat to waters 12 feet deep at MLW, and to approximately 0.59 acres of fish habitat due to shading. These measures may include the approximately 0.19 acres of low marsh habitat created on site through habitat enhancement measures implemented along the shoreline of the pier, combined with other off-site opportunities developed in consultation with DEC and USACE.

In summary, operation of the MRF on the 30th Street Pier would not result in significant adverse impacts on water quality or to aquatic biota. The proposed coverage of approximately 0.64 acres of water column and bottom habitat by overwater platforms associated with the MRF, only 0.59 acres of which is under platforms wider than 15 feet, would result in impacts on fish habitat due to shading. Further, coordination with DEC and USACE is required to finalize on- and off-site measures to offset losses due to shading.

ESSENTIAL FISH HABITAT

The development of approximately 0.59 acres of overwater coverage as part of the construction of the MRF at the 30th Street Pier would result in impacts on the suitability of some of the underwater portion of these expanded piers as EFH for some of the fish species identified by NMFS as having EFH in Gowanus Bay and the Upper Bay. These adverse impacts will be offset by the habitat enhancement measures discussed above under “Aquatic Biota.” EFH species that are sight feeders, or have a high potential to occur in the vicinity of the 30th Street Pier, would have the greatest potential to be adversely affected by the proposed project. EFH species most likely to be adversely affected by the increased shading include: winter flounder, windowpane, bluefish, butterfish, summer flounder and black sea bass. Nevertheless, the aquatic habitat in the vicinity of 30th Street Pier comprises a small portion of the EFH for the species identified as having EFH in the Upper Bay. With the implementation of the proposed habitat enhancement measures that were discussed in the previous section, impacts on EFH will be offset.

THREATENED OR ENDANGERED SPECIES, OR SPECIAL CONCERN SPECIES

As discussed in Section D, “Existing Conditions,” the preference of shortnose and Atlantic sturgeon for deep water habitat suggests that it is unlikely that individuals of these species would occur within the shallow waters of Gowanus Bay surrounding the 30th Street Pier except as

except perhaps as occasional transients. Furthermore, the Hudson River below Tappan Zee is not considered optimal shortnose sturgeon habitat and this species would be expected to occur only rarely south of the Battery. Because water quality impacts associated with dredging and pile driving would be localized, the deep channel habitat preferred by this species while in transit to and from spawning and nursery habitat in the upper portion of the Hudson River would not be impacted during construction of the proposed project. Therefore, the proposed actions would not be expected to result in significant adverse impacts on shortnose and Atlantic sturgeon. Responses from NMFS regarding EFH are pending. In summary, significant adverse impacts on threatened or endangered species or special concern species would not be expected to occur as a result of the proposed actions.

TERRESTRIAL RESOURCES

The construction of the proposed MRF on the 30th Street Pier would result in the loss of the narrow band of herbaceous and woody vegetation found between the paved surface and riprap bordering Gowanus Bay. The bird and other wildlife species expected to occur within the project site are those highly tolerant of urban conditions and the current use of the site as an impoundment lot, and the highly developed land uses surrounding the project site. Adverse impacts could occur to some *individual* birds and other wildlife currently using this extremely limited wildlife habitat, if there are no suitable habitats that are available nearby. In general, the wildlife species expected to occur within the project site are common to urban areas, and the relocation and/or loss of some individuals would not result in a significant adverse impact on the bird and wildlife community of the region. Therefore, the construction of the proposed project would not result in significant adverse impacts on terrestrial resources. The proposed development of maritime coastal plan communities along the western and northern edges of the pier would benefit terrestrial resources by providing improved habitat for wildlife. ✷

A. INTRODUCTION

This Attachment considers the effect of the Proposed Action upon the City's system of solid waste management, which includes the collection, transfer and transport system, materials recovery facilities, and disposal capacity designated by the City, such as landfills and waste-to-energy facilities, and the Proposed Action's consistency with the City's Solid Waste Management Plan (SWMP) that was approved by the City Council and accepted by the New York State Department of Environmental Conservation (NYSDEC) in 2006. The discussion here supplements the analysis presented for the facility in the April 2005 SWMP Final Environmental Impact Statement, which received extensive public review. A detailed consideration of potential traffic, air and noise impacts from the proposed rerouting of New York City Department of Sanitation (DSNY) collection trucks appears in those respective sections of the current document.

As discussed more fully in the Project Description (see EAS), Sims proposes to enter into a long-term contract with the DSNY to process and market source-separated recyclables delivered by DSNY. The proposed contract is expected to have an initial term of 23 years, followed by renewal options of 10-years and 7-years each, respectively. Sims will build and operate a state-of-the-art materials recovery facility at the South Brooklyn Marine Terminal (SBMT) that will enable Sims to sort, process and market most of the DSNY-collected Metal/Glass/Plastic (MGP) from New York City, and a portion of the Paper. The Proposed Action also includes a long-term lease of the City's 30th Street Pier via SBS to Sims, and a funding agreement by which DSNY will contribute toward certain improvements made by Sims to the Pier, and related approvals. As noted above, the Proposed Action is an integral component of the City's new SWMP and is intended to enable DSNY to carry out its obligations more efficiently under the New York City Recycling Law, provide stability to the City's recycling program, expand the City's recycling infrastructure and improve its economics, while promoting the economic development of the SBMT.

B. EXISTING CONDITIONS

As stated in the SWMP, residents, businesses, and visitors in New York City generate approximately 50,000 tons per day (tpd) of solid waste and recyclable items. DSNY collects waste from approximately 3 million residential households and about 5,000 other locations, including City and State agencies, non-profit institutions, and special DSNY operations, including street- and lot-cleaning. Local Law 19 of 1989, codified at Section 16-301 *et seq*. of the Administrative Code of the City of New York, is known as the New York City Recycling Law. The law establishes the City's policy "to promote the recovery of materials from the New York City solid waste stream for the purpose of recycling such materials and returning them to the economy." The proposed action is consistent with the policy of the New York City Recycling Law.

New York State's Solid Waste Management Act of 1988, codified at Article 27, Title 1 of the New York State Environmental Conservation Law (ECL), provides for the preparation of New York City's Comprehensive Solid Waste Management Plan. The state law sets forth the state's hierarchy of preferred solid waste management, which places waste prevention first, followed by reuse, recycling and composting, with energy recovery from waste next, followed by landfilling. New York City's SWMP prepared pursuant to Article 27 of the ECL was approved by the City Council in the summer of 2006 and by NYSDEC in October 2006. The SWMP specifies the City's policy of expanding the City's recycling infrastructure and reducing truck traffic and favoring barge and/or rail to transport solid waste by means of the Proposed Action. The Proposed Action is consistent with both the State's solid waste policy and with the City's SWMP, as further explained below.

New York City now has the nation's largest mandatory recycling program by far, and has a policy set forth in the SWMP of increasing recycling rates, where feasible. Items currently designated by regulation for source-separation and weekly recycling collection are: newspapers, magazines, corrugated cardboard, high grade office paper, catalogs, phone books, and mixed paper (collectively referred to as designated recyclable "Paper"); and metal cans, metal items large and small, aluminum foil, aluminum foil products, glass containers, plastic bottles and jugs (mainly high density polyethylene "HDPE" and polyethylene terephthalate "PET"), and beverage cartons, collectively referred to as designated recyclable metal, glass and plastic, or "MGP." At present, recyclable materials are delivered to existing material recovery facilities by truck.

DSNY's current recycling network of districts and their respective processing vendor tipping locations is depicted in EAS Figure 9. DSNY deliveries of MGP at present are as follows: a portion of Manhattan districts deliver to the Simsmetal East (formerly Sims Hugo Neu East , formerly Hugo Neu Schnitzer East) facility at 1 Linden Avenue in Jersey City; while the rest of Manhattan, a portion of Queens and all of the Bronx deliver to the Simsmetal East facility at 850 Edgewater Road in the Bronx. Most of Brooklyn and part of Queens send MGP to the Simsmetal East facility at 30-27 Greenpoint Avenue in Long Island City, Queens, while the rest of Brooklyn and Staten Island deliver MGP to the Simsmetal East facility in Jersey City.

DSNY trucks currently deliver Paper from Manhattan to the West 59th Street Marine Transfer Station for transfer to barge and delivery to the Pratt Industries (formerly Visy Paper of NY) paper mill at 4435 Victory Boulevard on Staten Island, while DSNY trucks deliver paper from Staten Island and part of Brooklyn directly to the Pratt Industries mill. Paper from the remaining Brooklyn districts goes to Rapid Recycling at 860 Humboldt Street in Brooklyn and Metropolitan Paper Recycling at 854 Shepherd Avenue in Brooklyn. DSNY trucks deliver paper from part of the Bronx to the Triboro Fibers facility at 891-899 East 135th Street, Bronx, and the rest of the Bronx to the Paper Fibers facility at 960 Bronx River Avenue in the Bronx. For Queens paper, DSNY trucks deliver to A&R Lobosco at 31- 33 Farrington Street in Queens; Rapid Recycling Paper Corp. in Brooklyn, Triboro Fibers in the Bronx, and to the Metropolitan Paper Recycling facility in Brooklyn.

In 2002, prior to the temporary partial suspension of recycling in 2003 and 2004, DSNY-managed waste totaled 3.36 million tons, while curbside recycling totaled 771,555 tons. During this time, the diversion rate for the curbside and containerized program alone was 20.1 percent. For the latest Fiscal Year (FY) (2007), the curbside diversion rate was 16.5 percent. The decline was attributed in significant part to theft of recyclables. To address this problem, In October, 2007, Mayor Bloomberg signed Local Law No. 50 of 2007. Among its provisions, this new law

imposes stiff sanctions against persons operating a motor vehicle who unlawfully remove or transport recyclables placed out at residential or commercial curbsides, and from premises occupied by city agencies and institutions that receive Department collection service. Sanctions include increasing the civil fines from $100 to $2,000 for a first time offender, and $5,000 for second and repeat offenders within a twelve-month period. The law also authorizes the Department to impound vehicles used by persons caught removing recyclables unlawfully.

DSNY has conducted extensive studies to inform the setting of recycling initiatives and targets. As part of the SWMP planning effort, a Preliminary Waste Characterization Study was undertaken in 2004 to examine the generation and composition of curbside refuse and recycling in New York City. This data on the City's waste stream was used to inform DSNY decision makers on designating additional recyclable materials and more efficiently targeting DSNY program resources to achieve increases in the City's diversion rates, as set forth in the New SWMP.

Table G-1
City-Wide Projected Paper and MGP Generated Tonnage and Diversion Rate

Year	Paper (tonnage)	Metal, Glass, and Plastic (tonnage)	Total Paper and MGP Recycling (tonnage)	Curbside/Containerized Diversion Rate (percentage)
2010	632,176	358,636	990,812	26.5
2015	663,671	376,502	1,040,173	28.3
2020	702,500	398,530	1,101,030	30.1
2026	741,575	420,698	1,162,273	35.0

Source: SWMP, 2006.

A major goal of the proposed action is to improve the economics of the City's recycling program by giving economic incentives for the City's MGP processing vendor to invest in equipment to improve the efficiency of recycling processing and potentially increase the types of plastics designated for recycling, which will require additional capital equipment not currently used to sort DSNY-collected MGP. The economics of recycling markets depends on the market demand for the sorted product lines. Market prices for recyclables fluctuate; in the New York metropolitan area prices are posted every two weeks at www.amm.com/recman/recdata/recny.htm. For example, the week of October 7, 2005, shredded municipal ferrous scrap was selling for $160/ton, mixed HDPE and PET for 9 cents/lb, clear glass for $27/ton, green glass for $6/ton, while paper prices varied by grade: $65/ton for #6 newspaper, $85/ton for old corrugated cardboard and for #8 newspaper, and $95/ton for high grade mixed office paper.

Paper, metal and plastic tend to have strong markets, but the City's Curbside MGP collections contain high proportions by weight of glass, particularly mixed-color broken glass (approximately 32 percent of MGP is glass), a material that does not currently have economic markets. While intact glass bottles that are returned for deposits at retail stores are readily sorted by color for recycling, glass containers typically emerge from DSNY collection and processing as mixed-color glass cullet, with very few intact items. As a result, New York City curbside glass is generally not recycled into new glass containers, as originally hoped when New York City's Recycling Law was passed, but instead has typically been used in road construction and drainage applications as a substitute for stone aggregate and as alternate daily cover at landfills. The glass processor typically receives no revenue from the landfill operators to take mixed glass

cullet as a cover material. Glass also adds significant costs to the City's recycling program. For example, under DSNY's previous contract to deliver metal and plastic to its vendor in 2002 (during a temporary suspension of glass recycling due to City budget cuts), the City received $5.12 per ton in revenue (excluding DSNY collection costs). But when DSNY added glass back to the recycling program in 2004, the resulting contract required DSNY to pay the vendor $51 in processing fees per ton of MGP delivered, reflecting the challenge of marketing mixed glass cullet.

Recycling is currently more expensive than disposing of this material as refuse, due mainly to the City's collection costs and the negative value of glass. The City's Independent Budget Office issued a study of the City's recycling program in February 2004, using data (and MGP processing contract prices to DSNY averaging $59/ton) from FY2002, and concluded that the MGP and paper recycling program cost the City $291 per ton for the approximately 800,000 tons recycled, about 13 percent more than the $257 per ton that DSNY incurred for managing refuse alone, for a total incremental cost of $33.7 million. The study also found that it cost the City $46/ton more (the "incremental cost") to recycle this material than it would have to dispose of it as refuse, although disaggregated out, the paper program resulted in a contractual payment by the processor to the City of $7/ton, was nearly $100/ton more cost effective than MGP to recycle, and saved the city money ($9/ton net) compared with disposing of such paper as refuse. Overall, the IBO concluded that the fully loaded, net costs of recycling Paper in 2002 was $248/ton, compared to $343/ton for MGP and $257/ton for refuse collection and disposal. New York City Independent Budget Office Fiscal Brief, Refuse and Recycling: Comparing the Costs (February 2004), available at www.ibo.nyc.ny.us.

Costs tend to be higher per ton of recyclables collected than per ton of refuse, as recyclables are lighter than refuse by volume and less is set out at each location, thus recycling routes are longer than refuse routes, and dual-bin Paper/MGP recycling collection trucks, while providing efficiencies, tend to reach capacity with lower volumes than do standard collection trucks. As a result, recycling truck routes frequently run out of shift time before the truck is full, or fill only one of the two bins on dual-bin trucks, leading to lower average tonnage per truck shift than is the case with refuse truck shifts. The study found that the incremental cost of the recycling program has fallen over time and may fall further as the cost of waste disposal increases and the City reduces the fees it pays recyclers to take metal, glass and plastic. The study noted that a higher diversion rate and productivity improvements resulting in lower collection costs per ton could eventually result in a net savings to the City from recycling. (The study did not attempt to quantify the many benefits from recycling, such as reduced energy use, avoided emissions to air, land and water, and other avoided natural resource losses associated with production of metals, plastics, glass and paper from virgin materials, or recycling's economic development benefits.)

As reported in the FY2007 Mayor's Management Report, DSNY recycling collection and processing costs (fully loaded) were $352 per ton, with an average of 5.8 tons per truck shift, while refuse collection and disposal costs per ton (fully loaded) were $277 per ton, with an average of 10.4 tons per truck shift.

Approximately 56.6 percent of MGP in the City's curbside waste stream is being correctly recycled (or "captured"), while for Paper, 47.5 percent was correctly being recycled from the overall waste stream, for an overall designated recyclables "capture rate" of 50.8 percent, according to the DSNY 2004-05 Residential and Street Basket Waste Characterization Study. DSNY and the City's Office of Recycling Outreach and Education are working to increase these percentages. Designated recyclables constitute an estimated 35.4 percent of the residential waste

stream. DSNY estimates that an overall capture rate of 70 percent of such recyclables is the realistic limit to what can be achieved, which would translate to a curbside recycling "diversion" rate of 25 percent from the residential waste stream.

DSNY's recycling program since 1994 has relied on short-term contracts (five years plus extensions of one or more years) with MGP recycling processors with provisions allowing cancellation by the City on short notice. The relatively short term combined with the cancellation provisions of these contracts has resulted in little incentive for the processors to make capital investments to take advantage of the latest technology in recyclables processing.

THE FUTURE WITHOUT THE PROPOSED ACTIONS

Current conditions would continue in the future without the Proposed Action, including the shortcomings associated with reliance on short-term recyclables processing and marketing contracts outlined above. The new SWMP projected MGP and Paper tonnages through 2026 (see Table 4) based on New York Metropolitan Transportation Council (NYMTC) population forecasts. Based on this projection, the projected recycling rate for DSNY curbside and containerized collection in 2026 is 35.0 percent, which would result in approximately 4.93 million tons of DSNY-managed waste disposed, and 1.73 million tons recycled.

PROBABLE IMPACTS OF THE PROPOSED ACTION

As discussed above, the proposed long term contract includes MGP from all of the City, and much of this material will be processed at the facility. The facility will also serve as a tipping location/receiving facility for DSNY MGP and paper collection trucks from select Brooklyn districts. At this time, receipt of private MGP, commercial carted paper, other plastics or materials such as textiles, and electronic waste is not contemplated. The facility would not accommodate single stream recycling or food waste. Under the contract, DSNY would continue to deliver MGP to Sims' facilities in the Bronx and Long Island City. DSNY deliveries of Paper to Pratt Industries would remain unchanged. Other current Paper vendors would see a reduction in or cessation of Paper deliveries from DSNY districts.

The proposed long-term contract with Sims will ensure a steady supply of MGP (and Paper starting in 5 years) over sufficient time to encourage the processor's investment in capital-intensive sorting technology that would render the sorted output more marketable than at present. In particular, under the stability afforded by a long term contract, the processor would have a strong incentive to invest resources into new technology and undertake research and development and invest in processing equipment to make higher value uses of glass cullet, such as optical sorting for color separation of clear, amber and green glass, washing, drying or other refining steps to access higher value end-uses for glass.

The SWMP calls for DSNY's current contractor (Sims) to test sorting equipment at its current processing facility under its interim MGP processing contract to determine the technical feasibility of separating both Designated and "Potentially Designated Plastics" (resin nos. 3-7). Next, DSNY, in consultation with its contractor, will determine if economically viable markets exist for the recovered Potentially Designated Plastics. DSNY's contractor will report to the City on the technical and economic viability of recovering all or some subset of Potentially Designated Plastics. Finally, the City will review the Contractor's recommendation and, if appropriate based upon the recommendation, the City will cause through appropriate Local Laws or rules all or some subset of Potentially Designated Plastic to become Designated Plastics.

The Sims SBMT facility would therefore be designed with the flexibility to eventually incorporate additional processing equipment to be able to accept certain plastics that are not currently designated for recycling, such as plastics numbered 3 through 7, should DSNY and the Contractor determine that separation of such materials is feasible and that economically viable markets exist. (If the City were to designate such new items, it would be subject to an appropriate environmental review.) For the present document, recyclable tonnages collected by DSNY are not projected to differ materially from those in the Future without the Proposed Action; both assume additional items and tonnages are designated for recycling, to be conservative. Tipping destinations would shift for a portion of MGP and for Paper from certain Brooklyn districts, as discussed in the Attachment B, "Traffic". Although the processing costs to the City for MGP under the proposed contract are expected to stabilize, overall recycling program costs are not expected to decline significantly, as a large majority of DSNY's recycling program costs are labor costs on the collection side. The contract provides for revenue sharing with the City from the sale of recyclables, which may partially offset processing fees charged to the City.

The additional tipping location for DSNY collection trucks will also result in less truck traffic on City and regional roadways, saving more than 200,000 DSNY vehicle miles travelled (VMTs) annually. The proposed facility itself will not result in a material increase in solid waste generation.

Operation of the proposed facility would support the new SWMP's goal to continue and improve the recycling, composting, and waste prevention programs that are already a part of the City's integrated waste management system. By providing a state-of-the-art facility in New York City to process and market recyclables, the Proposed Action would benefit the City's solid waste and sanitation services.

RECYCLING AND SUSTAINABILITY: PLANYC 2030

The Proposed Action would further the City's efforts to reduce its "carbon footprint" and become more environmentally sustainable in its operations, in accordance with Mayor Bloomberg's *PlaNYC 2030*, as further discussed below.

Sustainability generally refers to meeting the needs of the current generation without compromising the ability of future generations to meet their own needs. A principal concern of sustainability is the problem of the measured buildup of carbon dioxide and other gases in the atmosphere over the past 200 years that scientists believe is causing global warming. Mayor Bloomberg issued a directive on November 14, 2004 to all City Agency heads concerning the need to incorporate environmental sustainability into agency plans and programs. In June 2005, Mayor Bloomberg committed New York City to a voluntary effort by cities to achieve compliance with the Kyoto Protocol of the International Framework Convention Concerning Climate Change, pursuant to which parties are to reduce greenhouse gas emissions to 7 percent below 1990 levels. In April 2007, the Mayor released *PlaNYC 2030*, which presents a blueprint of initiatives to help the City become more environmentally sustainable. Presented below is a discussion of how recycling furthers the goal of sustainability.

In accordance with the Mayor's directive, the proposed Sims facility and contract between DSNY and Sims would continue and strengthen New York City's recycling program, resulting in continued sustainability benefits. It is well established that recycling of metal, glass, plastic and paper can save energy and natural resources, compared with producing these materials from raw materials. Plastics are made from petroleum, a non-renewable fossil fuel. Moreover, as

noted above, the Proposed Action would reduce the amount of fuel used to transport DSNY-managed recyclables from portions of Brooklyn (i.e., this material would be delivered to SBMT rather than Sims in Queens and Sims in Jersey City), due to the reduction in truck vehicle miles traveled (more than 200,000 VMT/year), and the greater fuel efficiency of barge[1] transport than truck transport per ton-mile).

As recycling rates increase, the amount of municipal solid waste (MSW) that must be disposed of decreases. Under the SWMP, much of Manhattan's DSNY-managed refuse will continue to be driven to the Essex County Resource Recovery Facility in Newark, N.J., a mass-burn waste-to-energy incinerator that recovers metals and generates steam from MSW to make electricity.[2] Waste that is combusted to generate energy represents a net reduction in greenhouse gases compared to the alternative of landfilling such waste, as the energy produced displaces use of fossil fuels and related carbon emissions, landfill gas emissions are avoided, and less transport to distant disposal sites and therefore less fuel would be required.[3] To the extent that the Proposed Action, which includes a recycling education center in addition to state-of-the-art sorting equipment, may help increase recycling rates, this would lead in turn to a corresponding reduction in the delivery of MSW from Manhattan to the Essex County waste-to-energy facility, which would save resources and free up capacity at that facility.

The proposed action may also help reduce the amount of waste that is sent to landfills, which would likewise be a benefit. The SWMP provides for landfilling of most of the City's post-recycling MSW, with rail transport to private landfills in Virginia and South Carolina, as New York City has no active landfills. Reliance on landfilling raises certain sustainability concerns with respect to emissions of greenhouse gases and potential risks to groundwater resources at landfills. The landfilling of biodegradable waste (e.g,, food scraps, yard waste, wood and paper) generates landfill gas, especially methane, the uncollected portion of which contributes to the "greenhouse effect" and therefore to global warming. Methane has a global warming potential 21 times greater than that of carbon dioxide, and landfills represent the second largest source of U.S. methane emissions from human activity after the oil and gas industry, according to the U.S. Environmental Protection Agency (USEPA). USEPA states in its publication *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2001* (2004) (Chapter 7 Waste):

Landfills are the largest anthropogenic source of CH4 [methane] emissions in the United States [accounting for 33 percent of the total]. In 2001, landfill CH4 emissions were approximately 202.9 Tg CO2 equivalent (9663 Gg). Emissions from municipal solid waste (MSW) landfills, which received about 61 percent of the total solid waste generated in the United States, accounted for 94 percent of total landfill emissions, while industrial landfills accounted for the

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[1] The US Department of Transportation estimates that one gallon of diesel fuel transports one ton of freight 59 miles by diesel truck, 202 miles by rail, and 514 miles by inland barge.

[2]The combustion of the biomass component of MSW does not contribute to global warming and is considered to be a renewable energy source by the U.S. Department of Energy and the European Union *Municipal Solid Waste and its Role in Sustainability*, International Energy Agency Bioenergy 2003. The 2003 IEA study found that "about 20-40 percent (depending strongly on the degree of separate collection of paper and organic waste) of the carbon in MSW is derived from fossil sources, e.g., plastics." Id. at 4. The study performed a lifecycle assessment of $C0_2$ emissions per kilowatt hour from the generation of electricity from MSW and found that it is considerably less (367 grams) than such emissions from combusting natural gas (446 g.) or coal (987 g). Id.

[3]Id. at 5.

remainder. Over 2,100 operating landfills exist in the United States (BioCycle 2001), with the largest landfills receiving most of the waste and generating the majority of the CH4.

After being released in a landfill, biogenic waste (such as paper, food scraps and yard trimmings) is initially digested by aerobic bacteria. After the oxygen has been depleted, the remaining waste is available for consumption by anaerobic bacteria, which can break down organic matter into substances such as cellulose, amino acids, and sugar. These substances are further broken down through fermentation into gases, and short-chain organic compounds that form the substrates for the growth of methanogenic bacteria. Methane-producing anaerobic bacteria convert these fermentation products into stabilized organic compounds and biogas consisting of approximately 50 percent carbon dioxide (CO2) and 50 percent CH4 by volume. Significant CH4 production typically begins one to two years after waste disposal in a landfill and may last from 10 to 60 years.

USEPA estimates that greenhouse gas emissions from waste (primarily from landfills, but also wastewater treatment plants and human sewage) accounted for 3.6 percent of total United States greenhouse gas emissions in 2001. Id. at 7-1. Due to a 1996 regulation, large landfills must collect and combust landfill gas (see 40 CFR Part 60, subparts Cc 2002) while smaller landfills may vent the gas to the atmosphere. In 2001, the estimated quantity of CH_4 recovered and combusted was 5,263 Gg. Id. at 7-2. Approximately 1077 Gg of landfill gas methane also oxidized, leaving a net increase to the atmosphere of 9,663 Gg in 2001 from U.S. landfills. Id. at 7-3. In addition to methane, MSW landfills also produce significant amounts of criteria air pollutants (regulated by the Federal Clean Air Act) in the form of nitrogen oxide, carbon monoxide, and non-methane volatile organic compounds. Id. at 7-10. There were an estimated 334 landfill gas-to-energy projects in the United States during the period 1990 to 2001. Id. at 7-4. USEPA notes that landfills "also store carbon, due to incomplete degradation of organic materials such as wood products and yard trimmings." Id. at 7-1. Accordingly, New York City has taken credit for carbon sequestration from landfilling of waste, in the *Inventory of New York City Greenhouse Gas Emissions* (April 2007).

Large modern landfills are much better designed than a generation ago and must be equipped with landfill gas control systems that typically collect and combust the methane in landfill gas via on-site flares. The landfills that currently receive DSNY-managed waste control methane emissions by the use of flares.[1] Landfills are also subject to closure requirements, including an impermeable cover, and post-closure monitoring for 30 years. However, it has been variously estimated that, even with modern landfill gas controls, only 50 percent to 80 percent of methane generated is captured, and the rest eventually will vent to the atmosphere over time. DSNY's Waste Characterization Study found that the greatest potential for improvement in capture rates of currently designated recyclables lies with mixed paper, which is biodegradable in landfills. Therefore, it is environmentally preferable to decrease the amount of biodegradable paper that is currently being sent to landfills, and to divert it to recycling instead.

Another sustainability concern associated with landfilling of municipal waste is that even state-of-the-art landfills with proper liners and leachate collection systems are considered at risk of leaking to groundwater over time. Modern landfills typically have double composite liners to limit this risk, but the long-term fate of such protections following the end of post-closure monitoring is uncertain. In addition, as noted above the fuel required to transport waste long

[1] DSNY Export Contract Management Unit.

distances to landfills poses sustainability concerns, so long as the fuels used are not renewable (such as bio-diesel or bio-ethanol) and are derived from fossil fuels that also contribute to global atmospheric carbon dioxide levels when combusted. For all these reasons, from a sustainability perspective recycling is preferable to reliance on long distance transport and landfilling, as reflected in the City's SWMP initiatives to promote recycling. In view of this fact, the nations of the European Union have greatly restricted the landfilling of biodegradable waste in recent years, and instead require this waste to be composted, recycled or otherwise diverted for energy generation or transformation.[1]

The Proposed Action will improve the City's recycling infrastructure, reduce truck traffic, and help reduce the amount of refuse that must be landfilled or incinerated. Therefore it will further the sustainability goals of *PlaNYC 2030.* ✷

[1] The European Union Landfill Directive (1999/31/EC) requires by 2016 that landfilling of biodegradable waste be reduced by each member state to no more than 35 percent of the 1995 level; Germany, Sweden, the Netherlands and Austria have already banned such disposal. See generally *Environmental Impacts of landfilling of solid waste compared to other options*, Moberg, Finnveden, Johansson and Lind (Environmental Strategies Research Group, Stockholm University, 2001); Smith, A., Brown, K., Oglive, S., Ruston, K and Bates, J. 2001, *Waste management options and climate change: Final report of a study contract for the European Commission Directorate General Environment undertaken by AEA Technology*. http://europa.eu.int/comm/environment/ waste/studies/climate_change.htm. *The Assessment of Social Costs and Benefits of Waste Disposal* (Powell, J. and Brisson I., Centre for Social and Economic Research on the Global Environment, University of East Anglia and University College London 1993).